

FILE COPY

August 26, 2021

SEP - 8 2021

Director
Office of Environmental Quality Control
State of Hawai'i
235 South Beretania Suite # 702
Honolulu, HI 96813

RE: Transmittal of Final Environmental Impact Statement

Dear Director:

With this letter, the Pet Industry Joint Advisory Council (PIJAC) hereby transmits the documents package for the Environmental Impact Statement (FEIS) for the Issuance of Commercial Aquarium Permits and Commercial Marine Licenses for the Honolulu, Ewa, Waianae, Waiialua, Koolauloa, Koolaupoko districts on the island of Oahu. We are providing the FEIS for publication of a notice of availability in the next available edition of the Environmental Notice and for evaluation for acceptability under Section 11-200-23, Hawai'i Administrative Rules.

Also enclosed is a distribution list for the verification of OEQC under Section 11-200-20, Hawai'i Administrative Rules. Upon receiving verification from OEQC we will make the FEIS available to those so indicated on the distribution list.

Finally, enclosed is a completed OEQC Publication Form, copies of the FEIS, and an electronic copy of the publication form in MS Word. Simultaneous with this letter, we have submitted the summary of the action in a text file by electronic mail to the OEQC.

Through this letter, a copy of this submittal is being provided to Hawai'i Department of Land and Natural Resources. If you have any questions or if you need additional information, please feel free to contact me.

Sincerely,



James M. Lynch

Enclosures

Cc: Hawai'i Department of Land and Natural Resources (with enclosures)
Kalanimoku Building
1151 Punchbowl St.
Honolulu, HI 96813
Email: dlnr@hawaii.gov

22 - 019

From: webmaster@hawaii.gov
To: [DBEDT OPSD Environmental Review Program](#)
Subject: New online submission for The Environmental Notice
Date: Thursday, August 26, 2021 10:59:30 AM

Action Name

Issuance of Commercial Aquarium Permits and Commercial Marine Licenses for the Island of O'ahu

Type of Document/Determination

Final environmental impact statement (FEIS)

HRS §343-5(a) Trigger(s)

- (1) Propose the use of state or county lands or the use of state or county funds
- (2) Propose any use within any land classified as a conservation district

Judicial district

O'ahu - multiple districts

Tax Map Key(s) (TMK(s))

Fishing areas around O'ahu identified in Figure 1 of the FEIS.

Action type

Applicant

Other required permits and approvals

Commercial Aquarium Fishing Permits issued pursuant to HRS §188-31, Commercial Marine License issued pursuant to HRS 189-2,3

Discretionary consent required

Commercial Aquarium Fishing Permits issued pursuant to HRS §188-31, Commercial Marine License issued pursuant to HRS 189-2,3,

Approving agency

Hawai'i Department of Land and Natural Resources

Agency contact name

David Sakoda

Agency contact email (for info about the action)

dlnr@hawaii.gov

Email address or URL for receiving comments

david.sakoda@hawaii.gov

Agency contact phone

(808) 587-0104

Agency address

1151 Punchbowl Street, Room 330
Honolulu, HI 96813

United States
[Map It](#)

Accepting authority

Hawai'i Department of Land and Natural Resources

Applicant

Pet Industry Joint Advisory Council (PIJAC)

Applicant contact name

James Lynch

Applicant contact email

lynchjm.wa@gmail.com

Applicant contact phone

(425) 463-8396

Applicant address

1615 Duke St., #100
Alexandria, VA 22314
United States
[Map It](#)

Was this submittal prepared by a consultant?

Yes

Consultant

Stantec Consulting Services Inc

Consultant contact name

Terry VanDeWalle

Consultant contact email

terry.vandewalle@stantec.com

Consultant contact phone

(319) 334-3755

Consultant address

2300 Swan Lake Blvd., Suite 202
Independence, IA 50644
United States
[Map It](#)

Action summary

The purpose of the Applicant's action is to ensure that commercial aquarium fish collection allows for the lawful, responsible, and sustainable commercial collection of various fish species from nearshore habitats. The objective of the proposed action is for the Department of Land and Natural Resources (DLNR) to issue 15 Aquarium Permits and 15 corresponding Commercial Marine Licenses for the island of O'ahu, create a "White List" of 31 fish species and 4 invertebrates that can be collected, and implement individual catch quotas for the 35 species on the proposed White List.

The need for the Applicant's action is to allow for commercial aquarium collection in compliance with all applicable laws, rules, and regulations pertaining to the industry.

Attached documents (signed agency letter & EA/EIS)

- [Appendix_D_Distribution-List-for-Oahu-FEIS1.pdf](#)
- [FEIS_Oahu_08-20-2021_complete.pdf](#)
- [FEIS_Oahu_08-20-2021_complete1.pdf](#)
- [FEIS_Oahu_08-20-2021_complete2.pdf](#)
- [FEIS_Oahu_08-20-2021_complete3.pdf](#)
- [APPLICANT-PUBLICATION-FORM1.pdf](#)
- [OEQC-Transmittal-Letter-Oahu-FEIS1.pdf](#)

Shapefile

- The location map for this Final EIS is the same as the location map for the associated Draft EIS.

Action location map

- [Map-file.zip](#)

Authorized individual

James M Lynch

Authorization

- The above named authorized individual hereby certifies that he/she has the authority to make this submission.

Final Environmental Impact Statement

Issuance of Commercial Aquarium Permits and Commercial Marine Licenses for the Island of O'ahu

August 20, 2021

Applicant

Name: Pet Industry Joint Advisory Council
(PIJAC)

Address: 1615 Duke St., #100 Alexandria, VA
22314

Phone: 202.452.1525

Approving Agency

Hawai'i Department of Land and Natural
Resources

Division of Aquatic Resources

1151 Punchbowl Street, Room 330

Honolulu, HI 96813-3088

APPLICANT PUBLICATION FORM

Project Name:	Issuance of Commercial Aquarium Permits and Commercial Marine Licenses for the Island of O'ahu
Project Short Name:	FEIS O'ahu Commercial Aquarium Permits
HRS §343-5 Trigger(s):	Trigger 1 (use of state lands) and Trigger 2 (use of conservation districts)
Island(s):	O'ahu
Judicial District(s):	Honolulu, Ewa, Waianae, Waialua, Koolauloa, Koolaupoko
TMK(s):	Fishing areas around O'ahu identified in Figure 1
Permit(s)/Approval(s):	Commercial Aquarium Fishing Permits issued pursuant to HRS §188-31, Commercial Marine License issued pursuant to HRS 189-2,3
Approving Agency:	Department of Land and Natural Resources
<i>Contact Name, Email, Telephone, Address</i>	David Sakoda, david.sakoda@hawaii.gov, 808-587-0104, 1151 Punchbowl Street, Room 330, Honolulu, HI 96813
Applicant:	Pet Industry Joint Advisory Council (PIJAC)
<i>Contact Name, Email, Telephone, Address</i>	Jim Lynch; lynchjm.wa@gmail.com 425.463.8396; 1615 Duke St., #100 Alexandria, VA 22314
Consultant:	Stantec Consulting Services Inc
<i>Contact Name, Email, Telephone, Address</i>	Terry VanDeWalle; terry.vandewalle@stantec.com; (319) 334-3755; 2300 Swan Lake Blvd., Suite 202, Independence, IA 50644

Status (select one)

DEA-AFNSI

Submittal Requirements

Submit 1) the approving agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEA, and 4) a searchable PDF of the DEA; a 30-day comment period follows from the date of publication in the Notice.

FEA-FONSI

Submit 1) the approving agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; no comment period follows from publication in the Notice.

FEA-EISPN

Submit 1) the approving agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; a 30-day comment period follows from the date of publication in the Notice.

Act 172-12 EISPN ("Direct to EIS")

Submit 1) the approving agency notice of determination letter on agency letterhead and 2) this completed OEQC publication form as a Word file; no EA is required and a 30-day comment period follows from the date of publication in the Notice.

DEIS

Submit 1) a transmittal letter to the OEQC and to the approving agency, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEIS, 4) a searchable PDF of the DEIS, and 5) a searchable PDF of the distribution list; a 45-day comment period follows from the date of publication in the Notice.

FEIS

Submit 1) a transmittal letter to the OEQC and to the approving agency, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEIS, 4) a searchable PDF of the FEIS, and 5) a searchable PDF of the distribution list; no comment period follows from publication in the Notice.

- ___ FEIS Acceptance Determination The approving agency simultaneously transmits to both the OEQC and the applicant a letter of its determination of acceptance or nonacceptance (pursuant to Section 11-200-23, HAR) of the FEIS; no comment period ensues upon publication in the Notice.
- ___ FEIS Statutory Acceptance The approving agency simultaneously transmits to both the OEQC and the applicant a notice that it did not make a timely determination on the acceptance or nonacceptance of the applicant's FEIS under Section 343-5(c), HRS, and therefore the applicant's FEIS is deemed accepted as a matter of law.
- ___ Supplemental EIS Determination The approving agency simultaneously transmits its notice to both the applicant and the OEQC that it has reviewed (pursuant to Section 11-200-27, HAR) the previously accepted FEIS and determines that a supplemental EIS is or is not required; no EA is required and no comment period ensues upon publication in the Notice.
- ___ Withdrawal Identify the specific document(s) to withdraw and explain in the project summary section.
- ___ Other Contact the OEQC if your action is not one of the above items.

Project Summary

The purpose of the Applicant's action is to ensure that commercial aquarium fish collection allows for the lawful, responsible, and sustainable commercial collection of various fish species from nearshore habitats. The objective of the proposed action is for the Department of Land and Natural Resources (DLNR) to issue 15 Aquarium Permits and 15 corresponding Commercial Marine Licenses for the island of O'ahu, create a "White List" of 31 fish species and 4 invertebrates that can be collected, and implement individual catch quotas for the 35 species on the proposed White List.

The need for the Applicant's action is to allow for commercial aquarium collection in compliance with all applicable laws, rules, and regulations pertaining to the industry.

Project Summary

Project Name: Issuance of Commercial Aquarium Permits and Commercial Marine Licenses for the Island of O'ahu

Proposed Action: Collection of aquarium fish pursuant to the issuance of 15 Commercial Aquarium Permits issued under HRS §188-31 and 15 Commercial Marine Licenses under HRS 189-2,3, creation of a White List of aquarium fish species which may be collected, and implementation of species-specific catch quotes by fisher, ensuring lawful, responsible, and sustainable commercial collection of various aquarium fish species from nearshore habitats of O'ahu.

[NOTE: Since the release of the DEIS, the proposed action has changed, reducing the number of Commercial Aquarium Permits from 20 to 15, establishing a "White List" of species that can be collected, and imposing catch limits on the White List species. These changes have resulted in changes to the environmental consequences in Section 5.0.]

The Applicant notes that the DLNR and/or BLNR has the authority to impose specific permit conditions, including altering the proposed White List or catch quotas, as appropriate.

Applicant: Pet Industry Joint Advisory Council (PIJAC)

Applicant Contact: Jim Lynch, KL Gates LLP, 206-370-6587

Approving Agency: Department of Land and Natural Resources

Project Location: Throughout the nearshore region (to 3 nautical miles from shore) of the island of O'ahu except in those areas already designated as no collection areas such as Marine Life Conservation Districts.

Land Use Classification: N/A

Land Area: N/A NON-MLCDs

Tax Map Key: N/A

State Land District: N/A

Land Owner: State of Hawai'i

Permits Required: Commercial Aquarium Fishing Permits issued under HRS §188-31, Commercial Marine Licenses issued pursuant to HRS 189-2.

HRS §343-5 Trigger: Trigger 1 (use of state lands) and Trigger 2 (use of conservation districts). Review of an Environmental Assessment (EA) prepared in 2018 determined an EIS was required based on Significance Criteria #1, #2, #3, #4, and #8.

Anticipated Determination: Acceptance

Table of Contents

EXECUTIVE SUMMARY	I
ABBREVIATIONS	IV
1.0 INTRODUCTION	1
1.1 BACKGROUND	2
1.1.1 Status of Aquarium Permits	3
1.1.2 Status of Commercial Marine Licenses	5
1.1.3 Previous HEPA Documents	5
1.2 RELEVANT POLICIES AND CONTROLS	7
1.2.1 Hawai'i Revised Statute (HRS) 188-31 [Commercial Aquarium Permits]	7
1.2.2 Hawai'i Revised Statute (HRS) 189-2,3 [Commercial Marine Licenses; CMLs]	8
1.2.3 Hawai'i Environmental Policy Act	9
1.2.4 Hawai'i Administrative Rule §13-77 - O'ahu Aquarium Life Management	13
1.2.5 Coral/Live Rock Damage	14
1.2.6 Enforcement/Compliance	14
2.0 PURPOSE AND NEED	15
2.1 PURPOSE FOR APPLICANT'S ACTION	15
2.2 NEED FOR APPLICANT'S ACTION	15
2.3 PURPOSE FOR APPROVING AGENCY'S (DLNR) ACTION	16
2.4 NEED FOR APPROVING AGENCY'S (DLNR) ACTION	16
2.5 SCOPE OF ANALYSIS	16
2.5.1 Resources Evaluated and Dismissed from Further Consideration	17
2.5.2 Resources Retained for Further Analysis	17
3.0 ALTERNATIVES	17
3.1 NO ACTION ALTERNATIVE	19
3.2 CML-ONLY ALTERNATIVE	19
3.3 PRE-AQUARIUM COLLECTION BAN ALTERNATIVE	20
3.4 EXPANDED WAIKIKI MLCD AND FLAME WRASSE CONSERVATION ALTERNATIVE	20
3.5 LIMITED PERMIT ISSUANCE ALTERNATIVE	22
3.6 ESTABLISHMENT OF A WHITE LIST AND LIMITED COLLECTION (PREFERRED) ALTERNATIVE	22
3.6.1 Proposed White List and Maximum Annual Total Allowable Catch	23
3.7 ALTERNATIVES CONSIDERED BUT DISMISSED	25
4.0 AFFECTED ENVIRONMENT	26
4.1 SOCIOECONOMIC RESOURCES	27
4.1.1 Socioeconomic Aspects of the Commercial Aquarium Fishery	29

4.2	CULTURAL RESOURCES	35
4.2.1	Cultural Aspects of the Commercial Aquarium Fishery	37
4.3	PHYSICAL RESOURCES	38
4.3.1	Climate	38
4.3.2	Physical Aspects of the Commercial Aquarium Fishery	40
4.4	BIOLOGICAL RESOURCES	41
4.4.1	Wildlife Species	41
4.4.2	Hawai'i Species of Greatest Conservation Need	42
4.4.3	Aquarium Fish	44
4.4.4	Top 20 Collected Aquarium Fish Species	49
4.4.5	Additional Fish Species on the Proposed White List	67
4.4.6	Other Regulated Species	77
4.4.7	Invertebrate Species	79
4.4.8	Threatened and Endangered Wildlife Species	82
4.4.9	Reef Habitat	83
4.4.10	Invasive Species	85
5.0	ENVIRONMENTAL CONSEQUENCES	87
5.1	HRS §189-3 AND DATA ANALYSIS	88
5.2	SOCIOECONOMIC RESOURCES	89
5.2.1	Direct Effects	89
5.2.2	Indirect Effects	94
5.2.3	Cumulative Impacts	98
5.2.4	Mitigation	98
5.3	CULTURAL RESOURCES	98
5.3.1	Direct and Indirect Impacts	98
5.3.2	Cumulative Impacts	99
5.3.3	Mitigation	100
5.4	BIOLOGICAL RESOURCES	100
5.4.1	Direct Effects	101
5.4.2	Indirect Effects	124
5.4.3	Cumulative Impacts	127
5.4.4	Mitigation	137
5.5	SUMMARY OF IMPACTS	137
5.5.1	Summary of Impacts on Fish Species Analyzed	139
5.5.2	Identification of Preferred Alternative	141
5.6	APPLICANT'S EVALUATION OF HEPA SIGNIFICANCE CRITERIA	141
6.0	AGENCIES, ORGANIZATIONS, AND INDIVIDUALS CONSULTED	145
6.1	CONSULTED PARTIES	145
6.2	FEDERAL AGENCIES	146
6.3	STATE AGENCIES	146
7.0	DRAFT EIS PUBLIC REVIEW	146
8.0	LIST OF PREPARERS	146

9.0 LITERATURE CITED147

LIST OF TABLES

Table 1-1. Statutory triggers for Hawai'i Environmental Policy Act (HEPA). 10

Table 3-1. Summary of alternatives..... 19

Table 3-2. Proposed Individual Catch Quotas for the proposed White List species.
Annual limit from January 1 through December 31 of each year. n/a = no
population estimate available. See Section 5.4.1 for a discussion on species
without population estimates..... 23

Table 3-3. Proposed Individual Catch Quotas for four invertebrate species. Annual limit
from January 1 through December 31 of each year. No population estimates
are available for invertebrates..... 25

Table 4-1. Summary of commercial Aquarium Permits and values by year from 2000-
2017 for the State of Hawai'i (DAR 2018a). These data include n.d. data and
O'ahu data, as well as the other islands that make up the state of Hawai'i. 30

Table 4-2. Number of Aquarium Permit holders, reports, total catch (fish and
invertebrates), and value by year on the island of O'ahu between 2000 and
2017 (DAR 2018a). These data are applicable to the analysis of the Pre-
Aquarium Collection Ban, Expanded Waikiki MLCD and Flame Wrasse, and
Limited Permit Issuance alternatives..... 31

Table 4-3. Average per fish or invertebrate values for the 35 species on the proposed
White List based on 2018 and 2019 reported sales from Oahu (DAR 2019b).
Values were calculated by dividing the total value by the number sold. These
data are applicable to the analysis of the Establishment of a White List and
Limited Collection Alternative (Preferred Alternative). 33

Table 4-4. Summary of species analyzed in the FEIS. Species on the proposed White
List are indicated with an asterisk (*)..... 44

Table 4-5. Total number of fish collected under Aquarium Permits from 2000-2017 on
the island of O'ahu (DAR 2018a). 50

Table 4-6. Top 20 fish species collected under Aquarium Permits on the island of O'ahu
from 2000-2017 (DAR 2018a)..... 51

Table 4-7. Additional collection data on 13 fish species collected under Aquarium
Permits on the island of O'ahu from 2000-2017 (DAR 2018a)..... 68

Table 4-8. Total number of invertebrates collected under Aquarium Permits from 2000-
2017 on the island of O'ahu (DAR 2018a). 80

Table 4-9. Top three marine invertebrate species collected under Aquarium Permits on
the island of O'ahu from 2000-2017 as well as the Halloween Hermit Crab and
the Cleaner Shrimp which would be on the proposed White List (DAR 2018a).
Species on the proposed White List are noted with an asterisk (*). 81

Table 4-10. Threatened and endangered marine species of Hawai'i. 83

Table 5-1. Summary of socioeconomic impact analysis by alternative. 89

Table 5-2. Minimum, maximum and average market values of the commercial aquarium
fishery from 2000 through 2017 (inflation-adjusted 2019 values). See Table 4-1
and Table 4-2 for additional data by year. These data are applicable to the
analysis of the Pre-Aquarium Collection Ban, Expanded Waikiki NLCD and
Flame Wrasse Conservation, and Limited Permit Issuance alternatives. 90

Table 5-3. Predicted gross annual sales based on average per fish values (see Section 4.1.1) from 2018/2019 and assuming the entire individual catch quota for each species for each fisher.....	93
Table 5-4. Summary of biological impact analysis by alternative.....	100
Table 5-5. Summary of the 2018-2019 collection of selected fish species on the island of O’ahu (DAR 2018, 2019b), O’ahu population estimates (PIFSC-ESD 2020), and the projected annual collection under the CML-only Alternative and the impact on populations. Projected collection is based on the species composition from 2018-2019 (without the use of fine mesh nets; total of 105,230 fish reported at the species level) multiplied by the total projected collection of 46,174 to 100,662 fish per year.....	102
Table 5-6. Summary of the 2000-2017 collection of selected invertebrate species on the island of O’ahu (DAR 2018a) and the projected annual collection under the CML-only Alternative. Projected collection is based on the species composition from 2000-2017 (total of 2,971,008 invertebrates reported at the species level for all fishers or total of 93,023 invertebrates for the 20 fishers) multiplied by the total projected collection (165,056 to 419,804 invertebrates per year for all fishers, or 5,168 to 12,643 invertebrates per year for the 20 fishers).....	106
Table 5-7. Resiliency to fishing pressure (adapted from Froese et al. 2005).	110
Table 5-8. Summary of 35 selected fish species collected on the island of O’ahu from 2000 to 2017 (DAR 2018a), O’ahu population estimates (PIFSC-ESD 2020), and predicted impact of collection under the Pre-Aquarium Collection Ban Alternative based on historic collection rates (DAR 2018a).....	113
Table 5-9. Selected fish species collected on the island of O’ahu from 2000 to 2017 (DAR 2018a), O’ahu population estimates (PIFSC-ESD 2020), and the predicted impact of collection under the Limited Permit Issuance Alternative based on historic collection by the 20 fishers.	118
Table 5-10. Available data on select species collected by commercial non-aquarium fishers on the island of O’ahu from 2000-2017, and from 2018-2020 (DAR 2020). n.d. = Not Disclosed. Averages are calculated without n.d. years (i.e., only years with reported catch or zero catch). Species on the proposed White List are noted with an asterisk (*).	130
Table 5-11. Summary of direct and indirect impacts by alternative over the 5-year analysis period.....	138
Table 5-12. Summary of the annual impact (percent collected by commercial aquarium collectors) on populations of 35 fish species analyzed in this EIS based on PIFSC-ESD (2020) population estimates and the projected annual collection under each alternative (see Section 5.4.1 for additional details). n/a indicates no population estimate available.....	139

LIST OF FIGURES

Figure 1. Division of Aquatic Resources Managed Areas – Island of O’ahu.	4
Figure 2. Expanded Waikiki MLC.....	21
Figure 3. Total visitor spending: nominal and real 2005-2017 (HTA 2018).	28
Figure 4. PIFSC-ESD survey locations - Island of O’ahu.....	48

LIST OF APPENDICES

APPENDIX A	Cultural Impact Assessment
APPENDIX B	Collection Data for Additional SGCN Species
APPENDIX C	Comments and Applicant Responses
APPENDIX D	Distribution List for the FEIS
APPENDIX E	Changes Made to the DEIS and Incorporated Into the FEIS

Executive Summary

In October 2017, the circuit court ruled that, based upon the Supreme Court of Hawai'i's opinion, existing Commercial Aquarium Permits (Aquarium Permits) for use of fine mesh nets to catch aquatic life for aquarium purposes are illegal and invalid. The circuit court ordered the Department of Land and Natural Resources (DLNR) not to issue any new Aquarium Permits pending environmental review. The DLNR has not issued new or additional Aquarium Permits under HRS §188-31 since September of 2017.

In January 2021, the court ruled that Commercial Marine Licenses (CMLs) for commercial aquarium collection were invalid as well, and the DLNR began the process of notifying all current permit holders that the CML could no longer be used for commercial aquarium purposes, updating the Specific Terms and Conditions of the CML to reflect that environmental review was needed prior to using a CML for commercial aquarium purposes.

The Applicant initially prepared and submitted an Environmental Assessment (EA) on April 8, 2018, evaluating the impacts of issuance of Aquarium Permits on the island of O'ahu, programmatically to any applicant over a 12-month analysis period. The DLNR determined on July 26, 2018, that preparation of an Environmental Impact Statement (EIS) was required, based on five significance criteria outlined in Title II, Chapter 200, Hawai'i Administrative Rules. An evaluation of the significance criteria, including the five identified by the DLNR, is provided in Section 5.6 of this document.

A Draft Environmental Impact Statement (DEIS) evaluating the impacts of issuance of 20 Aquarium Permits on the island of O'ahu was published on May 8, 2020¹, initiating a public comment period. The comment period provided an opportunity for the public to comment on the DEIS. The comments and responses are included in Appendix C of this EIS.

This Final Environmental Impact Statement (FEIS) evaluates the impacts of issuance of 15 Aquarium Permits and corresponding CMLs for the island of O'ahu, creation a "White List" of 31 fish species and 4 invertebrates that can be collected, and implementation of individual catch quotas for the species on the proposed White List. **Since the release of the DEIS, and in response to public and DLNR comments, the proposed action has changed, and now includes establishing a White List and imposing catch quotas for the species on the White List. In addition, the number of permits that would be issued under the Preferred Alternative has changed as only 15 fishers are now requesting Aquarium Permits and CMLs.** The Applicant has prepared this FEIS to inform the public of the proposed action (i.e., issuance of 15 Aquarium Permits, corresponding CMLs, creation of a White List, and implementation of individual catch quotas for the species on the White List) and the impacts of the proposed action and its alternatives, and to incorporate information gained through public involvement. The Preferred Alternative includes issuance of 15 Aquarium Permits and CMLs for the island of O'ahu, establishment of a White List. Implementation of the Preferred Alternative would ensure the lawful, responsible, and sustainable commercial collection of various fish species from nearshore habitats on the island of O'ahu.

Aside from the additional conservation measures included in the Preferred Alternative, the issuance of 15 Aquarium Permits and corresponding CMLs under the Preferred Alternative does not include any activities

¹ http://oeqc2.doh.hawaii.gov/EA_EIS_Library/2020-05-08-OA-DEIS-Oahu-Commercial-Aquarium-Permits.pdf

different from, or in addition to, those that have occurred in the past. There would be no construction of permanent or semi-permanent infrastructure, no discharges into coastal, surface or ground waters, no dredging, and no significant use of hazardous materials that could be released into the environment. The DLNR's issuance of 15 Aquarium Permits and corresponding CMLs is not anticipated to result in significant beneficial or adverse impacts to water and air quality, geology and soil resources, aesthetics, noise, vegetation, terrestrial wildlife, and avian species, threatened and endangered species, land use, public health and safety, communications, transportation, utilities, or population and demographics from their current condition.

The Preferred Alternative does not involve an irrevocable commitment or loss or destruction of any natural or cultural resource. The National Oceanic and Atmospheric Administration's (NOAA) Pacific Islands Fisheries Science Center (PIFSC) Coral Reef Ecosystems Program (CREP; now known as the Ecosystem Sciences Division or ESD) collects data on fish populations in the nearshore waters of the island of O'ahu. These data on population estimates serve as the primary basis for the impact analysis in this FEIS.

For the 31 species which are on the proposed White List, population estimates are available for 28 of them. Under the Preferred Alternative, of these 28 species, 18 would be collected at less than 1% of their estimated populations, 5 would be collected at 2% or less of their estimated populations, 3 would be collected at less than 4% of their estimated populations, and two would be collected at up to 4.5% of their estimated population size. Research suggests collection of between 5%-25% is sustainable for various reef species similar to those found on O'ahu (e.g., tang, wrasse, butterflyfish, angelfish, triggerfish). For the three species without population estimates, the Preferred Alternative still includes a catch quota to provide a hard upper limit on collection based on historic collection rates. Commercial aquarium collection will impact a low percentage of the overall populations and be spread throughout the year and across multiple areas. Commercial aquarium collection also targets smaller, less fecund individuals, further reducing impacts on populations in general.

Two studies have concluded that the aquarium fishery has no significant impact on coral or the reef ecosystem. Multiple studies have documented the importance of the protection of herbivorous fish for reef recovery, and the Preferred Alternative includes annual collection limits on herbivorous fish species (11 of the 31 species on the proposed White List), and only species on the proposed White List would be collected (i.e., no other herbivores would be collected). In addition, herbivores collected by the aquarium fishery typically consist of the smaller size classes which are the least effective sizes for cropping algae. One study found there were no increases in the abundance of macroalgae where the abundance of herbivores was reduced by aquarium collecting.

As concluded in the Cultural Impact Assessment (CIA; Appendix A), cultural impacts would occur if issuance of Aquarium Permits would cause a significant decline in the population of a species considered to be a cultural resource, either directly through the collection of fish or indirectly through habitat impacts. While not all species have a known Hawaiian cultural significance, for this analysis, it was assumed that the species identified as having a cultural use for food, medicinal, religious or ceremonial purposes could have a cultural impact if populations of those species were impacted. Populations of the 35 species analyzed in this EIS will be collected at less than 4.5% of their estimated population sizes under the Preferred Alternative, including 18 species which would be collected at less than 1% of their estimated

population size. However, given that some Hawaiians believe any collection for aquarium purposes is contrary to cultural practices, the Preferred Alternative would impact cultural practices, but the extent of the impact is unknown. Under the Preferred Alternative, cultural impacts on Oahu may be less than the other action alternatives due to implementation of the White List (limiting which species could be collected at all) and individual catch quotas by fisher for the species on the White List. No cultural impacts would occur under the No Action Alternative.

The Applicant's action does not substantially affect the economy but plays an important role as a nearshore fishery in the state. The Preferred Alternative would add up to an estimated \$4.3 million over the 5-year analysis period, and another five times this value in indirect economic benefits. Loss of the fishery would result in the loss of income, tax revenue, and jobs.

Abbreviations

BIAAF	Big Island Association of Aquarium Fishermen
CFR	Code of Federal Regulations
CML	Commercial Marine License
CREP	Coral Reef Ecosystems Program
CWCS	Hawai'i's Comprehensive Wildlife Conservation Strategy
DAR	Division of Aquatic Resources
DEIS	Draft Environmental Impact Statement
DLNR	Department of Land and Natural Resources
DOCARE	Division of Conservation and Resources Enforcement
DOH	Department of Health
EA	Environmental Assessment
EC	Environmental Council
EIS	Environmental Impact Statement
ENSO	El Niño Southern Oscillation
ESA	Endangered Species Act
ESD	Ecosystem Sciences Division
EQC	Environmental Quality Commission
FEA	Final Environmental Assessment
FEIS	Final Environmental Impact Statement
FMA	Fisheries Management Area
FONSI	Finding of No Significant Impact
HEPA	Hawai'i Environmental Policy Act
HAR	Hawai'i Administrative Rule
HRS	Hawai'i Revised Statute
IUCN	International Union for the Conservation of Nature and Natural Resources
MHI	Main Hawaiian Islands
MLCD	Marine Life Conservation District
MPA	Marine Protected Area
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
NWHI	Northwestern Hawaiian Islands
OEQC	Office of Environmental Quality Control
OHA	Office of Hawaiian Affairs

PIFSC	Pacific Islands Fisheries Science Center
PIJAC	Pet Industry Joint Advisory Council
QUEST	Quantitative Underwater Ecological Survey Techniques
SAIA	Sustainable Aquarium Industry Association
SAWCS	Statewide Aquatic Wildlife Conservation Strategy
SCUBA	Self-contained Underwater Breathing Apparatus
SGCN	Species of Greatest Conservation Need
SWAP	State Wildlife Action Plan
TL	Total Length
UH	University of Hawai'i
USFWS	United States Fish and Wildlife Service
WHAP	West Hawai'i Aquarium Project
WHFC	West Hawai'i Fishery Council
WHRFMA	West Hawai'i Regional Fishery Management Area
WHRFWG	West Hawai'i Reef Fish Working Group

1.0 INTRODUCTION

This Final Environmental Impact Statement (FEIS) has been prepared by the Pet Industry Joint Advisory Council (PIJAC; the Applicant) pursuant to the Hawai'i Environmental Policy Act (HEPA). This FEIS evaluates the impacts of issuance of 15 Commercial Aquarium Permits (Aquarium Permit) and corresponding Commercial Marine Licenses (CML) for the island of O'ahu, pursuant to Hawai'i Revised Statute (HRS) 188-31 (2013; Title 12 – Conservation and Resources; 188 – Fishing Rights and Regulations; 188-31 – Permits to take aquatic life for aquarium purposes) and HRS 189-2,3 (Title 12 – Conservation and Resources; 189 – Commercial Fishing; 189-2 – Commercial License; 189-3 – Monthly Catch Report). The 15 permittees covered by this FEIS may file individual permit applications with Department of Land and Natural Resources (DLNR) after the submission of this FEIS to Office of Environmental Quality Control (OEQC) and DLNR. DLNR will review such applications and take action upon them if this FEIS is accepted.

The Applicant has prepared this FEIS to inform the public of the proposed action (i.e., issuance of 15 Aquarium Permits and corresponding CMLs, establishment of a White List, and implementation of total allowable catch limits for the species on the White List) and the impacts of the proposed action and its alternatives, and to incorporate information gained through public involvement in order to aid decision makers in making an informed decision regarding the proposed action.

Since the release of the Draft Environmental Impact Statement (DEIS), the proposed action has changed, and now includes establishing a proposed White List of species which could be collected, and implementing total allowable catch limits for the species on the proposed White List. In addition, the number of permits that would be issued under the Preferred Alternative has changed as only 15 fishers are now requesting Aquarium Permits and CMLs. These changes have resulted in changes to the environmental consequences in Section 5.0. In addition, since publication of the DEIS, it has been determined that issuance of a CML for commercial aquarium collection is also a discretionary state action and subject to HEPA, so this FEIS includes CML issuance in the alternatives and environmental consequences. The previous No Action Alternative is now the CML-only Alternative. Additional changes in the FEIS were made in response to comments received on the DEIS and are noted in the Applicant's response to comments.

Hawai'i Revised Statute 188-31 states that, "Except as prohibited by law, the department (Department of Land and Natural Resources; DLNR), upon receipt of a written application, may issue an Aquarium Permit, not longer than one year in duration, to use fine meshed traps, or fine meshed nets other than throw nets, for the taking of marine or freshwater nongame fish and other aquatic life for aquarium purposes." As set down by the Supreme Court of Hawai'i (SCWC-13-0002125), issuance of an Aquarium Permit constitutes a discretionary State action by the DLNR and is thus subject to the HEPA, which requires that State agencies consider the impact of governmental actions on the environment by preparing an Environmental Assessment (EA) or an Environmental Impact Statement (EIS) to document the potential impacts of the State action. A Draft Environmental Assessment (DEA) evaluating the impacts of the proposed action of issuing Aquarium Permits to fishermen on the island of O'ahu and its alternatives was made available for public comment on April 8, 2018. After review of the EA, the DLNR determined on July 26, 2018, that

FINAL ENVIRONMENTAL IMPACT STATEMENT

Introduction

preparation of an EIS was required, based on the significance criteria outlined in Title II, Chapter 200, Hawai'i Administrative Rules. Accordingly, the Applicant prepared a DEIS to evaluate the potential impacts of alternatives to issuance of 20 Aquarium Permits and corresponding CMLs on the island of O'ahu, and a No Action Alternative. This FEIS includes changes to the DEIS based on public comments received, including a new Preferred Alternative that includes issuance of 15 Aquarium Permits and corresponding CMLs on the island of O'ahu, establishment of a proposed White List of species which could be collected, and implementation of total allowable catch limits for each of the species on the proposed White List. The FEIS evaluates alternatives to this Preferred Alternative, as well as a No Action Alternative. The consequences of these alternatives on various resources are discussed in this FEIS.

1.1 BACKGROUND

In 2017, the commercial aquarium fishery on the island of O'ahu reported landings greater than \$513,000, down from a record \$741,500 in 2015 (DAR 2018a). The fishery developed initially on O'ahu in the late 1940's, and then went through a period of expansion in the 1970's where it made up nearly 70% of the total commercial aquarium fish value from the state. Since then the total value of fish taken from O'ahu has decreased to approximately 30% of the total commercial aquarium fish value from the state (DAR 2018a).

Commercial aquarium fish collection in Hawai'i has long been a subject of controversy (DAR 2019a). As early as 1973, public concern over collecting activities prompted Hawai'i's DLNR, then Division of Fish and Game, to suspend the issuance of Aquarium Permits for a week while issues were considered and addressed (DAR 2014a). As a result, Aquarium Permit holders were required to submit monthly catch reports; however, no studies were conducted and no 'sanctuary' areas were created at that time. The first sanctuary areas were created through a gentileperson's agreement primarily between dive/snorkel operators and commercial aquarium fishers in 1987 and four of these sanctuaries were incorporated into the Kona Coast Fisheries Management Area (FMAs) off the coast of the island of Hawai'i in 1991 (DAR 2004).

On the island of O'ahu, three Marine Life Conservation Districts (MLCD) exist, where fishing activities of any kind are prohibited, including Hanauma Bay, Pūpūkea, and, Waikīkī (Figure 1). Hanauma Bay is located near Koko Head at the eastern end of Honolulu, which extends from the highwater mark seaward to a line across the bay's mouth from Palea Point on the left to Pai'olu'olu Point on the right. Pūpūkea MLCD is located on the north shore of O'ahu near the town of Waimea, extending offshore from the highwater mark seaward 100 yards along a line extending due west of Kulalua Point, then south to the most seaward exposed rock of the Wananapaoa Islets. Waikīkī MLCD is located at the Diamond Head end of Waikīkī Beach, extending from the groin at the end of Kapahulu Avenue to the west wall of the Natatorium, from the highwater mark seaward a distance of 500 yards or to the edge of the fringing reef, whichever is greater.

In addition, there are 10 marine locations that have fishing restrictions: Waikīkī-Diamond Head Shoreline Fisheries Management Area (FMA), Ala Wai Canal, Kapalama Canal, Coconut Island – Hawai'i Marine Laboratory Refuge, He'eia Kea Wharf, Honolulu Harbor, Poka'i Bay, Waialua Bay, and the 'Ewa Limu Management Area (Figure 1). Coconut Island does not allow any fishing of any kind within the boundaries of the refuge, while the other nine have specific permit restrictions on the number of fish allowed to be taken, type of equipment used, time of day, or time of year. None specifically prohibit collection under

FINAL ENVIRONMENTAL IMPACT STATEMENT

Introduction

Aquarium Permits; however, the majority of the habitat would not be conducive to aquarium fish collection (e.g., canal, harbor, wharf).

1.1.1 Status of Aquarium Permits

In October 2012, Earthjustice filed a complaint under the HEPA in the First Circuit Court on behalf of four individuals and three non-governmental organizations. The complaint sought a court order to force the State to comply with the HEPA's requirement to examine commercial aquarium fish collection's effects on the environment before issuing collection permits. The complaint also asked the court to halt collection under existing commercial aquarium permits and to stop DLNR from issuing new permits until the environmental review is complete (Earthjustice 2012). On June 24, 2013, the Circuit Court of the First Circuit announced their findings on the case through an 'Order Granting Department of Land and Natural Resources State of Hawai'i's, Motion for Summary Judgment filed February 4, 2013, and Denying Plaintiffs' Motion for Summary Judgment filed February 5, 2013 (Summary Judgment Order), and the Final Judgment in Favor of Defendant and Against Plaintiffs (Judgment), also filed on June 24, 2013. The Hawai'i Intermediate Court of Appeals upheld this decision in August of 2016. Permit issuance by DLNR's Division of Aquatic Resources (DAR) continued.

Through the appeals process, Earthjustice brought the case before the Supreme Court of Hawai'i. On September 6, 2017, the Supreme Court of Hawai'i ruled that aquarium collection using fine meshed traps or nets is subject to the environmental review procedures provided in the HEPA (SCWC-13-0002125). The issue was remanded to the circuit court for further proceedings. In light of the ruling, DLNR discontinued issuance of new Aquarium Permits and renewal of existing Aquarium Permits (DAR 2017).

On October 27, 2017, the circuit court ruled that, based upon the Supreme Court of Hawai'i's opinion, existing permits for use of fine mesh nets to catch aquatic life for aquarium purposes are illegal and invalid. The circuit court ordered the DLNR not to issue any new Aquarium Permits pending environmental review. The DLNR has not issued new or additional permits under HRS §188-31 since the Supreme Court's opinion issued in September of 2017 (DAR 2017).

FINAL ENVIRONMENTAL IMPACT STATEMENT

Introduction

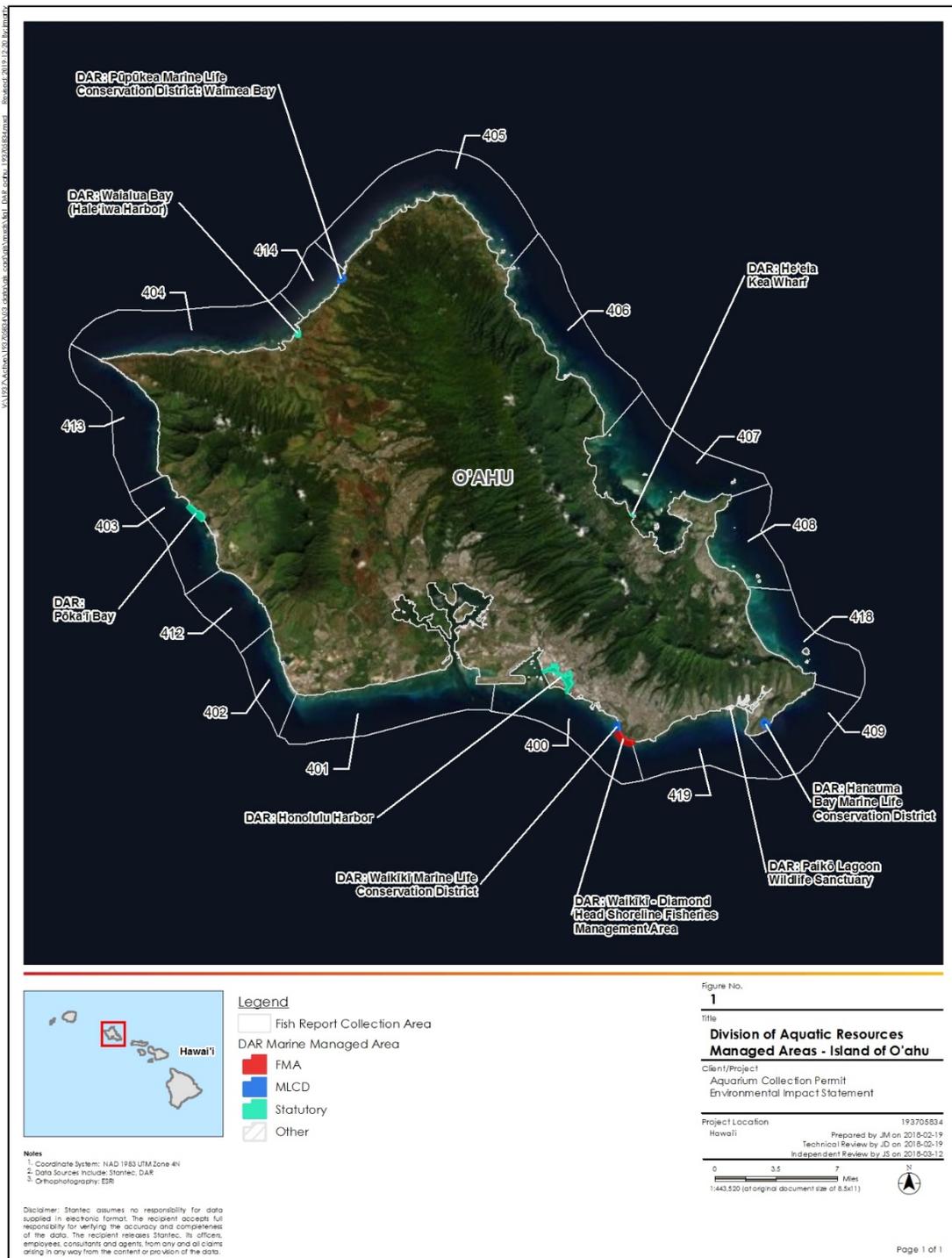


Figure 1. Division of Aquatic Resources Managed Areas – Island of O’ahu.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Introduction

1.1.2 Status of Commercial Marine Licenses

In January 2020, Earthjustice filed a lawsuit on behalf of three individuals and two non-governmental organizations. The lawsuit sought to “enforce the letter and intent of the courts’ prior rulings and ensure that all aquarium collection complies with the environmental review process required under the Hawaii Environmental Policy Act”. The lawsuit alleged that the DLNR continued to allow commercial aquarium collection after the October 2017 ruling described in Section 1.1.1 above by issuing or renewing CMLs to commercial aquarium collectors. A motion filed in May 2020 argued that the same HEPA review required for aquarium collection under Aquarium Permits should be required for collection under CMLs.

A Circuit Court Order on November 27, 2020 declared the DLNR’s issuance of CMLs for aquarium collection was invalid and illegal. At that time, the DLNR announced that they would not renew or issue new CMLs without a condition prohibiting the taking of marine life for aquarium fishing purposes until Chapter 343 environmental review is completed. The November 27 ruling specifically did not issue an injunction on the existing CMLs, allowing commercial aquarium collection to continue for those permit holders until their CMLs expired (permits are valid for one year, see Section 1.2.2).

A ruling on January 12, 2021 determined that all CMLs for commercial aquarium collection were invalid pending environmental review, banning all commercial aquarium collection. Following that ruling, the DAR updated its “Commercial License and Permit Specific Terms and Conditions” and began the process of notifying existing CML holders about the Court’s ruling.

In summary, commercial aquarium collection under both Aquarium Permits and CMLs occurred prior to October 2017. Between October 2017 and November 2020, the DLNR continued to issue CMLs for commercial aquarium collection, which allowed for the continued collection of aquarium fish for commercial purposes in O’ahu using gear other than fine mesh nets (which require an Aquarium Permit). After November 27, 2020, the DNLR stopped issuing new CMLs, but the existing CMLs could continue to be used for commercial aquarium collection until expiration until January 12, 2021, when all commercial aquarium collection was banned.

1.1.3 Previous HEPA Documents

PIJAC initially prepared and submitted an EA on April 8, 2018, evaluating the impacts of issuance of Aquarium Permits on the island of O’ahu programmatically to any applicant over a 12-month analysis period. In accordance with HEPA, the Draft EA was circulated for public review and comment through publication in The Environmental Notice and was also distributed via copies or email to a variety of elected officials, federal agencies, state, county and local offices, and individuals and organizations. Public comments were accepted during a 30-day period following publication. A total of 836 responses were received: 435 supported the conclusions of the DEA and issuance of Aquarium Permits; 398 did not support the conclusions of the DEA and opposed issuance of Aquarium Permits; and 3 did not express support or opposition. Comments received during the comment period were taken into account in assessing impacts

FINAL ENVIRONMENTAL IMPACT STATEMENT

Introduction

of the proposed action and resulted in some modifications in the Final EA, which are also reflected in this EIS. Responses to comments on the DEA can be found in Appendix B of the Final EA².

In the cover letter for the publication of the DEA, the DLNR requested comment on four specific issues:

1. The effects of the Commercial Aquarium Fishery on Flame Wrasse (*Cirrhilabrus jordani*) and Yellow Tang (*Zebrasoma flavescens*) and the estimated rate of annual take.
2. The adequacy of the analysis presented in the DEA, including but not limited to removal and replenishment rates for vulnerable species; specifically, how is the estimated sustainable range of 5% to 25% annual take of the estimated total population arrived at, and should the threshold be 5% or 25%.
3. The interpretation of data presented in the DEA, including the analysis of NOAA NMFS Coral Reef Ecosystem Project (CREP) data versus DLNR Division of Aquatic Resources West Hawai'i Aquarium Project (WHAP) data.
4. Conservation measures to minimize or avoid impacts to target species, and specifically, whether other alternatives might be proposed to minimize or avoid impacts other than the two presented of no action, with no Aquarium Permits issued, and the preferred alternative of programmatic issuance of Aquarium Permits for the Island of Oahu - such as consideration of specific management measures for Flame Wrasse, Yellow Tang, or other species.

The Applicant's responses to the request for comment along with an independent scientific reviewer's comments on the responses are found in Appendix D of the Final EA. After review of the Final EA, the DLNR determined on July 26, 2018, that preparation of an EIS is required, based on the significance criteria outlined in Title II, Chapter 200, Hawai'i Administrative Rules³. Specifically, the DLNR requested further analysis related to five specific significance criteria:

- Significance Criteria #1 - Is the annual take of cumulative numbers of fish as a percentage of the estimated population an irrevocable loss or destruction of said populations?
- Significance Criteria #2 - To what extent does the take of aquarium fish curtail the use of the environment, including:
 - Aquatic invasive algae control
 - Tourism industry
 - Integrity of diverse aquatic ecosystems
- Significance Criteria #3 - Does the take of aquarium fish conflict with the state's long-term environmental goals?

² http://oegc2.doh.hawaii.gov/EA_EIS_Library/2018-08-08-OA-FEA-EISPN-Oahu-Commercial-Aquarium-Permits.pdf

³ <https://governor.hawaii.gov/wp-content/uploads/2018/07/Final-EA-NOD-Aquarium-Permits-Oahu-7-26-18.pdf>

FINAL ENVIRONMENTAL IMPACT STATEMENT

Introduction

- Significance Criteria #4 - To what extent does the take of aquarium fish impact cultural practices in the state?
- Significance Criteria #8 - What is the cumulative impact of the take of aquarium fish when combined with:
 - Commercial take of aquarium fish using other legal methods
 - Recreational take of aquarium fish
 - Commercial and non-commercial take of aquarium fish for consumption (particularly the Achilles Tang and Kole)

In response to the determination that that preparation of an EIS is required, a DEIS was prepared and submitted on May 8, 2020, evaluating the impacts of issuance of 20 Aquarium Permits on the island of O’ahu over a 5-year analysis period. In accordance with HEPA, the DEIS was circulated for public review and comment through publication in The Environmental Notice and was also distributed via copies or email to a variety of elected officials, federal agencies, state, county and local offices, and individuals and organizations. Public comments were accepted during a 30-day period following publication. Comments received during the comment period were taken into account in assessing impacts of the proposed action and resulted in some modifications in this Final EIS. Responses to comments on the DEIS can be found in Appendix C.

1.2 RELEVANT POLICIES AND CONTROLS

1.2.1 Hawai’i Revised Statute (HRS) 188-31 [Commercial Aquarium Permits]

Hawai’i Revised Statute (HRS) §188-31 (2013; Title 12 – Conservation and Resources; 188 – Fishing Rights and Regulations; 188-31 – Permits to take aquatic life for aquarium purposes) states that:

(a) Except as prohibited by law, the department, upon receipt of a written application, may issue an aquarium fish permit, not longer than one year in duration, to use fine meshed traps, or fine meshed nets other than throw nets, for the taking of marine or freshwater nongame fish and other aquatic life for aquarium purposes.

(b) Except as prohibited by law, the permits shall be issued only to persons who can satisfy the department that they possess facilities to and can maintain fish and other aquatic life alive and in reasonable health.

(c) It shall be illegal to sell or offer for sale any fish and other aquatic life taken under an aquarium fish permit unless those fish and other aquatic life are sold alive for aquarium purposes. The department may adopt rules pursuant to HRS chapter 91 for the purpose of this section.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Introduction

1.2.2 Hawai'i Revised Statute (HRS) 189-2,3 [Commercial Marine Licenses; CMLs]

HRS 189-2 (Title 12 – Conservation and Resources; 189 – Commercial Fishing; 189-2 – Commercial Marine License) states that:

- (a) No person shall take marine life for commercial purposes whether the marine life is caught or taken within or outside of the State, without first obtaining a commercial marine license as provided in this section.
- (b) Additionally, any person providing vessel charter services in the State for the taking of marine life in or outside of the State shall obtain a commercial marine license.
- (c) The department may adopt rules pursuant to chapter 91 necessary for the purpose of this section and to set fees for commercial marine licensing.
- (d) The fees for commercial marine licenses and duplicate commercial marine licenses shall be established by the department by rules adopted in accordance with chapter 91.
- (e) The department shall suspend, shall refuse to renew, reinstate, or restore, or shall deny any license issued under this section if the department has received certification from the child support enforcement agency pursuant to section 576D-13 that the licensee or applicant is not in compliance with an order of support or has failed to comply with a subpoena or warrant relating to a paternity or child support proceeding. The department shall issue, renew, reinstate, or restore an affected license only upon receipt of authorization from the child support enforcement agency, the office of child support hearings, or the family court.

HRS 189-3 (Title 12 – Conservation and Resources; 189 – Commercial Fishing; 189-3 – Monthly Catch Report) states that:

- (a) Upon the demand of the department, every commercial marine licensee shall furnish to the department a report or reports with respect to the marine life taken and any other information the department may require for the purposes of this section.
- (b) Any information submitted to the department by any person in compliance with any requirement under this section shall be confidential and shall not be disclosed, except when required under court order or pursuant to subpoena issued by the department of the attorney general, or with the prior written consent of the person submitting the information, or under cooperative agreements with government agencies of the United States for exchange and use of the information specifically to manage marine life. The department, by rule, may establish procedures necessary to preserve the confidentiality, except that the department may release or make public any of the information in the aggregate or summary form which does not directly or indirectly disclose the identity of any person who submits information.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Introduction

Specific terms and conditions for CMLs were updated on January 13, 2021, and state:

1. Licenses issued to individuals are non-transferable and cannot be used by anyone else.
2. It is illegal to take fish or marine life with intent to sell without a valid commercial marine license. I must be a U.S. citizen, or be legally admitted into the United States of America, or be in compliance with U.S. Customs and Border Protection, Dept. of Homeland Security landing permit requirements in order to qualify for the license.
3. Although the Federal Privacy Act of 1974 was amended to allow disclosure of Social Security Number for federal and state Child Support Enforcement investigation, DLNR has not amended the Hawaii Administrative Rules to require disclosure for licensing purposes. I may, however, voluntarily provide this information.
4. I must pay an individual resident license fee of \$100.00 for resident or non-resident.
5. Unless exempted from the report requirement, I must complete and submit fishing reports to DLNR until my license expires.
 - a. Submit fishing reports on all fishing activities except for bottomfish fishing trips (refer to “b”) during a month by the tenth day of the following month, for example, the May fishing report must be submitted by June 10th.
 - b. Submit the ‘MHI “Deep 7” Bottomfish Fishing Trip Report’ within 5 days after the end of any fishing trip where a Deep 7 bottomfish species (Opakapaka, Onaga, Ehu, Kalekale, Gindai, Lehi, and Hapuupuu) was landed, released, or lost to predation.
6. Submit the “Did Not Fish” report postcard to DLNR by the tenth day of the following month, if you did not fish during a month.
7. It is illegal and a violation of this commercial marine license to:
 - a. take marine life for commercial aquarium purposes,
 - b. possess marine life that has been taken for commercial aquarium purposes, or
 - c. possess aquarium collecting gear in state marine waters,

without first completing the required environmental review process under the Hawai'i Environmental Policy Act (HEPA), HRS Chapter 343.

1.2.3 Hawai'i Environmental Policy Act⁴

The HEPA requires that State agencies consider the impact of governmental actions on the environment because humanity's activities have broad and profound effects upon the interrelations of all components of

⁴ The HEPA was updated in August 2019, however, the EISPN for this FEIS was published on August 8, 2018, prior to the adoption of the new rules. Therefore, as per the new rules, the previous HEPA regulations apply to this FEIS.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Introduction

the environment, and an environmental review process would integrate the review of environmental concerns with existing planning processes of both the State and county governments. The HEPA includes the following statutes and administrative rules: a) HRS Chapter 343, Environmental Impact Statements; b) Hawai'i Administrative Rule (HAR) 11-200, Environmental Impact Statement Rules; c) HAR 11-201, Environmental Council Rules of Practice and Procedure (OEQC 2012).

The authorities governing the HEPA process include:

1. The text of the statute (Chapter 343, HRS) and its implementing administrative rules (Chapters 11-200, and 11-201, HAR, Department of Health;
2. The State Environmental Policy (Chapter 344, HRS);
3. The enumerated and written advisory opinions of the Attorney General of the State of Hawai'i;
4. The declaratory rulings of the Environmental Quality Commission (EQC) and the Environmental Council (EC); and,
5. The appellate rulings of the Intermediate Court of Appeals and the Supreme Court of the State of Hawai'i.

The HEPA process also alerts decision makers to significant environmental effects that may result from the implementation of certain actions (HRS 343-1). The specific instances when a proposing agency or an approving agency must prepare an EA (for an action not declared exempt under Section 11-200-8, HAR) derive from Section 343-5(a) HRS and are listed in Table 1-1.

Table 1-1. Statutory triggers for Hawai'i Environmental Policy Act (HEPA).

	Instances	Responsible Agency
1.	Use of State or County lands or use of State or County funds, other than funds to be used for feasibility or planning studies for possible future programs or projects that the agency has not approved, adopted, or funded, or funds to be used for the acquisition of unimproved real property; provided that the agency shall consider environmental factors and available alternatives in its feasibility or planning studies; provided further that an EA for proposed uses under Section 205-2(d)(11) or 205-4.5(a)(13) shall only be required pursuant to Section 205-5(b).	The agency with title to the land or is using funds.
2.	Use of any land classified as conservation district by the state land use commission under Chapter 205.	Office of Conservation and Coastal Lands of the DLNR.
3.	Use within a shoreline area as defined in Section 205A-41. The shoreline area in question is defined by county ordinance and consists of a predetermined distance going inland from the certified shoreline. In the City and County of Honolulu, this is forty-feet.	The respective county planning department.
4.	Use within any historic site as designated in the National Register or Hawai'i Register, as provided for in the Historic Preservation Act of 1966, Public Law 89-665, or Chapter 6E.	The respective county planning department.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Introduction

	Instances	Responsible Agency
5.	Use within the Waikiki area of O'ahu, the boundaries of which are delineated in the land use ordinance as amended, establishing the "Waikiki Special District".	The Department of Planning and Permitting of the City and County of Honolulu.
6.	Any amendments to existing county general plans where the amendment would result in designations other than agriculture, conservation, or preservation, except actions proposing any new county general plan or amendments to any existing county general plan initiated by a county.	The respective county planning department.
7.	Any reclassification of any land classified as a conservation district by the state land use commission under Chapter 205.	The Land Use Commission, except in cases involving less than fifteen-acres (which cases are processed by the respective county planning department).
8.	Any construction of new or the expansion or modification of existing helicopter facilities within the State, that may affect: <ul style="list-style-type: none"> A. Any land classified as a conservation district by the state land use commission B. A shoreline area C. Any historic site as designated in the National Register or Hawai'i Register 	The respective county planning department where the project is located processes the clearance of this trigger.
9.	Propose any: <ul style="list-style-type: none"> A. Wastewater treatment unit, except an individual wastewater system or a wastewater treatment unit serving fewer than fifty single family dwellings or the equivalent B. Waste-to-energy facility C. Landfill D. Oil refinery E. Power-generating facility 	The agencies of the State or County government that issue discretionary approvals for the listed items.

The Supreme Court of Hawai'i ruled (SCWC-13-0002125) that an environmental review of the Aquarium Permit process is warranted based on the first (use of state lands) and second (use of conservation districts) statutory triggers identified in Table 1-1.

Actions that do not fall under one of the triggers are excluded by statute from the HEPA process. Any action that is not excluded by statute must undergo the HEPA environmental review process (OEQC 2012). The analysis within an EA is used to determine whether the impact on the environment will be significant enough to warrant the preparation of a full EIS or will be used to declare a Finding of No Significant Impact (FONSI) thus clearing the HEPA process.

In most cases, an agency determines that an action may have a significant impact on the environment and require an EIS if it meets any of the following 13 criteria:

1. Involves an irrevocable commitment to loss or destruction of any natural or cultural resource;
2. Curtails the range of beneficial uses of the environment;

FINAL ENVIRONMENTAL IMPACT STATEMENT

Introduction

3. Conflicts with the state's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders;
4. Substantially affects the economic or social welfare of the community or State;
5. Substantially affects public health;
6. Involves substantial secondary impacts, such as population changes or effects on public facilities;
7. Involves a substantial degradation of environmental quality;
8. Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions;
9. Substantially affects a rare, threatened, or endangered species, or its habitat;
10. Detrimentially affects air or water quality or ambient noise levels;
11. Affects or is likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters;
12. Substantially affects scenic vistas and view planes identified in county or state plans or studies; or
13. Requires substantial energy consumption.

Since its inception, the HEPA process has bifurcated into two separate procedural tracks (OEQC 2012):

1. Agency actions (set forth in Section 343-5(b), HRS); refers to those proposed by a government agency; and
2. Applicant actions (set forth in Section 343-5(c), HRS); refers to those that are initiated by a private party and "triggers" an environmental review.

The need for this FEIS is based on the proposed action (i.e., DLNR issuance of 15 Aquarium Permits and corresponding CMLs) and the agency determination that an EIS is required due to possible significant impacts on the environment.

The environmental review process described in the findings and purpose section of Chapter 343, HRS, necessitates integrating citizen concerns into the planning process and forewarning decision makers of potential significant environmental effects should implementation take place. The Hawai'i OEQC finds that the process of reviewing environmental effects is desirable because environmental consciousness is enhanced, cooperation and coordination are encouraged, and public participation during the review process benefits all parties involved and society as a whole (OEQC 2012).

FINAL ENVIRONMENTAL IMPACT STATEMENT

Introduction

1.2.4 Hawai'i Administrative Rule §13-77 - O'ahu Aquarium Life Management

The DAR proposed an Administrative Rule (HAR §13-77) for the management of the O'ahu aquarium fishery within 3 nautical miles of the O'ahu shoreline. The rule proposal was developed by commercial aquarium fishers from O'ahu and presented to DAR in August 2011. A Public Hearing on the proposed rule was held on December 5, 2012. The Administrative Rule was adopted on October 24, 2014 and applies to the collection of aquatic life for an aquarium purpose from the waters of O'ahu while using fine or small mesh traps or fine or small mesh nets, but not throw nets. While governing the taking of aquatic life intended for live aquarium displays, HAR §13-77 shall not apply to the use of nets to take aquatic life for food, bait, or other consumptive purposes.

From HAR §13-77:

1. It is unlawful for any person in or on the waters of O'ahu (3 nautical miles from the shore), possessing a small mesh net authorized under a commercial aquarium fish permit or recreational aquarium fish permit, to possess a small mesh net that is more than 30 feet long; provided that 2 or more permittees may join 2 nets, each no more than 30 feet long, for a total net length of no more than 60 feet long; or more than 6 feet in height. Restriction regarding net length and height took effect after July 1, 2015.
2. It is unlawful for any person, while possessing, using, or having used a small mesh net authorized under a commercial aquarium fish permit and in or on the waters of O'ahu, to possess a small mesh net and take or possess a daily bag limit of more than:
 - One hundred (100) Yellow Tang (*Zebrasoma flavescens*);
 - Seventy-five (75) Kole (= Goldring Surgeonfish; *Ctenochaetus strigosus*);
 - Fifty (50) Potter's Angelfish (*Centropyge potteri*);
 - Fifty (50) Orangespine Unicornfish (= Naso Tang; Clown Tang; *Naso lituratus*);
 - Twenty-five (25) Moorish Idol (*Zanclus cornutus*); or
 - Ten (10) Achilles Tang (*Acanthurus achilles*).

A daily bag limit includes the cumulative number of regulated aquatic life taken or possessed by a person on any day.

3. It is unlawful for any person while possessing, using, or having used a small mesh net authorized under a commercial aquarium fish permit and in or on the waters of O'ahu, to possess a small mesh net and to take or possess more than six of any of the following per day:
 - Yellow Tang less than one and one-half inches in length;
 - Yellow Tang more than five inches in length;
 - Kole more than five inches in length; or
 - Cleaner Wrasse (*Labroides dimidiatus*) of any size.
4. It is unlawful for any person while possessing, using, or having used a small mesh net authorized under a commercial aquarium fish permit and in or on the waters of O'ahu, to take or possess more

FINAL ENVIRONMENTAL IMPACT STATEMENT

Introduction

than two Bandit Angelfish (*Apolemichthys arcuatus*) that are longer than five and a half inches in length, per day.

5. It is unlawful for any person while possessing, using, or having used a small mesh net authorized under a commercial aquarium fish permit, to operate a vessel on the waters of O'ahu with:
 - More than the daily bag limits as provided above, and for the number of permittees on board the vessel; or
 - More than three times the number of any daily bag limit, regardless of the number of permittees on board.
6. It is unlawful for any person, while possessing a small mesh net authorized under a commercial aquarium fish permit or recreational aquarium fish permit while in or on the waters of O'ahu, to take or possess any of the following species:
 - Ornate Butterflyfish (*Chaetodon ornatissimus*);
 - Oval Butterflyfish (*Chaetodon lunulatus*); and
 - Reticulated Butterflyfish (*Chaetodon reticulatus*).

1.2.5 Coral/Live Rock Damage

State law prohibits the breaking or damaging, with any implement, any stony coral from the waters of Hawai'i, including any reef or mushroom coral (HAR 13-95-70). It is unlawful to take, break or damage, any implement, any rock or coral to which marine life of any type is visibly attached or affixed (HAR 13-95-71). The taking of sand, coral rubble or other marine deposits is permitted in certain circumstances. The material may not exceed one gallon per person per day, and may be taken only for personal, noncommercial purposes (HRS §171-58.5, §205A-44).

Fines per specimen may be imposed for each damaged coral head or colony less than one square meter in surface area or for a colony greater than one square meter in surface area, each square meter of colony surface area and any fraction remaining constitutes an additional specimen. Penalties for damage to live rock are based on each individual rock or if the violation involves greater than one square meter of bottom area, then the penalty is based on each square meter of bottom area.

No liability shall be imposed for inadvertent breakage, damage, or displacement of an aggregate area of less than one half square meter of coral if caused by a vessel with a single anchor damage incident, in an area where anchoring is not otherwise prohibited, and not more frequently than once per year; or by accidental physical contact by an individual person.

1.2.6 Enforcement/Compliance

Enforcement and compliance are within the purview of the State of Hawai'i. DOCARE is responsible for enforcement activities and has full police powers to enforce all State laws and rules involving State lands, State Parks, historic sites, forest reserves, aquatic life and wildlife areas, coastal zones, Conservation districts, State shores, as well as county ordinances involving county parks.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Purpose and Need

Any person violating any provision of this chapter, or any term or condition of any permit issued pursuant to this chapter, shall be guilty of a petty misdemeanor and penalized as provided by section 187A-13, Hawaii Revised Statutes. This includes, in addition to any other penalties, a fine not less than (1) \$250 for a first offense, (2) \$500 for second offense, and (3) \$1,000 for a third or subsequent offense. These fines shall not be suspended or waived.

In addition to any criminal penalty, any violation of these rules shall also be subject to civil and administrative penalties as provided by section 187A-12.5, Hawaii Revised Statutes. These include the following:

- For violations involving threatened or endangered species, the administrative fines shall be as follows: (1) For a first violation, a fine of not more than \$5,000; (2) For a second violation within five years of a previous violation, a fine of not more than \$10,000; and (3) For a third or subsequent violation within five years of the last violation, a fine of not more than \$15,000.
 - In addition, a fine of up to \$5,000 may be levied for each specimen of threatened or endangered aquatic life taken, killed, or injured in violation of subtitle 5 of title 12 or any rule adopted thereunder.
- For all other violations the administrative fines shall be as follows: (1) For a first violation, a fine of not more than \$1,000; (2) For a second violation within five years of a previous violation, a fine of not more than \$2,000; and (3) For a third or subsequent violation within five years of the last violation, a fine of not more than \$3,000.
 - In addition, a fine of up to \$1,000 may be levied for each specimen of all other aquatic life taken, killed, or injured in violation of subtitle 5 of title 12 or any rule adopted thereunder.
- Any criminal penalty for any violation of subtitle 5 of title 12 or any rule adopted thereunder shall not be deemed to preclude the State from recovering additional administrative fines, fees, and costs, including attorney's fees and costs. [L 1998, c 243, §1]

2.0 PURPOSE AND NEED

2.1 PURPOSE FOR APPLICANT'S ACTION

The purpose of the Applicant's action is to ensure that commercial aquarium fish collection allows for the lawful, responsible, and sustainable commercial collection of 31 fish species and 4 invertebrates from nearshore habitats on the island of O'ahu. The objective of the proposed action is to allow for the issuance of Commercial Aquarium Permits and CMLs to 15 fishers for the island of O'ahu.

2.2 NEED FOR APPLICANT'S ACTION

The need for the Applicant's action is to allow for commercial aquarium collection in compliance with all applicable laws, rules, and regulations pertaining to the industry.

2.3 PURPOSE FOR APPROVING AGENCY'S (DLNR) ACTION

The purpose of an environmental review process under the HEPA is to provide the Approving Agency (DLNR) with the framework necessary for reviewing the Applicant's action and the environmental effects of issuing Aquarium Permits and corresponding CMLs for O'ahu. The HEPA review also provides an opportunity for the public to be involved in the DLNR's decision-making process. The DLNR can also use a properly conducted HEPA analysis to review and improve plans, functions, programs, and resources under its jurisdiction. Furthermore, this FEIS is the mechanism for recording the results of a comprehensive planning and decision-making process surrounding the Applicant's action.

The underlying purpose of the DLNR's action is to determine the level of significance that issuing 15 Aquarium Permits and CMLs for the island of O'ahu may have on the environment, based on the 13 criteria listed in Section 1.2.3., with emphasis on the 5 criteria the DLNR determined to need further evaluation (Section 1.1.3). The final determination will be either acceptance or non-acceptance.

2.4 NEED FOR APPROVING AGENCY'S (DLNR) ACTION

The need for DLNR's action is the Applicant's submittal of this FEIS, to which the DLNR must respond.

2.5 SCOPE OF ANALYSIS

The scope of this FEIS's analysis incorporates accepted methods, regulations, and historical data to determine past influences the commercial aquarium fishery and its management have had on resources, including socioeconomic, cultural, and biological resources, in order to evaluate the potential direct, indirect, and cumulative impacts that the six alternatives presented in Section 3.0 would have annually over a 5-year period for the island of O'ahu. Regarding biological resources, this FEIS focuses primarily on the effects of aquarium fishing on wild populations of fish species, as it is at the population level that DAR measures changes in fish species and makes management decisions (e.g., issuance of harvest permits, implementation of bag limits). Therefore, because population effects have already occurred once an individual fish has been removed from the ocean, it is beyond the scope of this analysis to evaluate effects on individual fish once they are removed from the population; nevertheless, post-collection mortality is discussed as an indirect effect in Section 5.4.2.

Commercial Aquarium Permits issued by DLNR under HRS §188-31 are valid for no longer than one year and, therefore, must be renewed annually. Accordingly, every year, DLNR must take an action to issue Commercial Aquarium Permits. As Aquarium Permits for the 15 fishers who would be issued Aquarium Permits under the Proposed Action come up for renewal each year, DLNR will evaluate whether there are significant new circumstances or information relevant to environmental concerns and bearing on the commercial aquarium fishery or its impacts requiring a supplemental HEPA review. Under this approach, any changes in resource data (e.g., increase or decrease in collection numbers, unforeseen circumstances, etc.) would be addressed, as necessary, by supplemental HEPA documents, allowing for the HEPA process to quickly recognize and address any potential issues (i.e., adaptive management). Section 5.0 addresses the cumulative impacts of reasonably foreseeable future commercial aquarium collection.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Alternatives

2.5.1 Resources Evaluated and Dismissed from Further Consideration

This FEIS evaluates the impacts of six commercial aquarium fish collection alternatives on the nearshore habitat (3 nautical miles from shore) in which commercial aquarium fishing (or lack thereof) will take place, over a 5-year period. During the evaluation process, it was determined that some resources typically evaluated in an EIS will not be impacted by any of the alternatives under consideration. The evaluation includes past use and potential impacts by the commercial aquarium fishery because it has been a part of the baseline condition of these resources since the late 1940s. Because a significant increase in commercial aquarium fishing is not anticipated during the 5-year assessment period evaluated in this FEIS, and in fact a decrease when compared to historic conditions is anticipated due to the issuance of only 15 Aquarium Permits, this FEIS does not anticipate a significant change in the current baseline condition of these resources.

The proposed action and resulting commercial aquarium collection do not include any activities different from or in addition to those that have occurred in the past. There will be no construction of permanent or semi-permanent infrastructure, no discharges into coastal, surface or ground waters, and no dredging, and no significant use of hazardous materials that could be released into the environment.

The DLNR's issuance of 15 Aquarium Permits and corresponding CMLs is not anticipated to result in significant beneficial or adverse impacts to water and air quality, geology and soil resources, aesthetics, noise, vegetation, terrestrial wildlife and avian species, threatened and endangered species, land use, public health and safety, communications, transportation, utilities, or population and demographics from the current baseline condition; therefore, these resources will not be evaluated further.

2.5.2 Resources Retained for Further Analysis

The following resources could be impacted by the alternatives under consideration. Current baseline conditions of these resources are presented in Section 4.0 and impacts to these resources are evaluated in Section 5.0 of this FEIS:

- Socioeconomic Resources
- Cultural Resources
- Biological Resources
 - Fish Species (top 20 O'ahu collected species, other species on the proposed White List, other regulated species, and Hawai'i Species of Greatest Conservation Need with a history of aquarium collection)
 - Invertebrate Species
 - Reef Habitat
 - Invasive Species

3.0 ALTERNATIVES

Reasonable alternatives include those that are practical or feasible from cultural, scientific, technical, and economic perspectives. The HEPA recommends that applicants consider and objectively evaluate

FINAL ENVIRONMENTAL IMPACT STATEMENT

Alternatives

reasonable alternatives to the preferred alternative and briefly explain the basis for eliminating any alternatives that were not retained for detailed analysis.

The DLNR has been working with stakeholders (e.g., public, various fishing and tourism industries, local governments) since the 1970's, and continues to work with them to ensure the commercial aquarium fishery is environmentally sustainable and prevents degradation of fish populations and the habitats in which they occur. As a result, many aspects of the fishery have changed over the past 40+ years due to the various alternatives recommended by stakeholders and implemented by the DLNR. The Applicant has no legislative or regulatory authority and cannot create, eliminate, or alter conservation areas (e.g., MLCDs); create, eliminate, or alter current regulations (e.g., bag and size limits, season length, permit term); or change reporting requirements. Despite this, during the public comment period on the Draft EA that was published on April 8, 2018, in response to DNLNR concerns and in coordination with the DNLNR, the Applicant developed an alternative, that required regulation creation by DLNR (i.e. implementation of bag limits). After review of the FEA, the DLNR determined on July 26, 2018 that preparation of an EIS was required based on five specific significance criteria outlined in Title II, Chapter 200, Hawai'i Administrative Rules (Criteria 1,2,3,4, and 8, see Section 1.1.3). Based on DNLNR comments on the Draft and Final EAs, the Applicant analyzed four alternatives in the DEIS, including a new alternative based on issuance of a limited number of Aquarium Permits. Based on public and agency comments received on the DEIS, the Applicant added a new alternative to this FEIS which includes further limiting the number of Aquarium Permits to be issued, creation of a White List of species which can be collected (and banning collection of any species not on the list), and creation of individual catch quotas. In addition, since publication of the DEIS, the use of CMLs to collect aquarium fish without the use of fine mesh nets has been banned pending HEPA review⁵. Therefore, the No Action Alternative has been revised; the previous No Action Alternative has become the CML-only Alternative, and edits have been made to the other alternatives accordingly to reflect this recent change.

While the Applicant has no legislative or regulatory authority, the Applicant and the 15 fishers who would receive permits under the Preferred Alternative are supportive of changes to HAR §13-77, including establishment of Fish Replenishment Areas (FRAs) on the island of O'ahu. The six alternatives were evaluated based on their capacity to meet the purpose and need of the Approving Agency's action (Section 2.3 and 2.4). The potential impacts on the environment of each alternative are described and analyzed in Section 5.0; Environmental Consequences. The alternatives are summarized in Table 3-1 and discussed in detail in Sections 3.1 through 3.6.

Under any alternative, the existing policies and controls described in Section 1.2 would remain in effect, including the MLCDs described in Section 1.1.

⁵ <https://dlnr.hawaii.gov/dar/announcements/commercial-fishers-notified-that-all-aquarium-collection-is-banned/>

Table 3-1. Summary of alternatives.

Alternative	Aquarium Permits	CMLs	Aquarium Collection	Catch Quotas
No Action	None	None	No	n/a
CML-only	None	Unlimited #	Yes, without the use of fine mesh nets	No
Pre-Aquarium Collection Ban	Unlimited #	Unlimited #	Yes, no White List	No
Expanded Waikiki MLCD and Flame Wrasse Conservation	Unlimited #	Unlimited #	Yes, no White List	No; bag limit reduced for Flame Wrasse
Limited Permit Issuance	20	20	Yes, no White List	No; bag limit reduced for Flame Wrasse
Preferred Alternative	15	15	Yes, limited to 31 fish species and 4 invertebrate species on the White List	Yes

3.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, the court order would remain in place, and no Aquarium Permits would be issued for the entire island of Oahu and the taking of aquarium fish or other aquatic life for commercial aquarium purposes would be prohibited. In addition, the changes to CMLs would remain in place, and CMLs could not be used to collect aquarium fish for commercial purposes. Therefore, no commercial aquarium collection would occur on the island of Oahu under this Alternative.

The No Action Alternative meets the DLNR’s objectives to ensure an applicant’s actions do not lead to degradation of fish populations and the habitats in which they occur in the context of commercial aquarium collection alone (i.e., does not address impacts from other Hawaiian fisheries and influences discussed in Sections 4.0 and 5.0). However, the No Action Alternative does not meet the Applicant’s purpose and need to for lawful, responsible, and sustainable commercial collection of approved fish species from nearshore habitats (0-600 feet; 0-100 fathoms).

3.2 CML-ONLY ALTERNATIVE

Under the CML-only Alternative, the court order would remain in place and no Aquarium Permits would be issued for the state of Hawai’i, including the island of O’ahu. Under this Alternative, CMLs for commercial aquarium collection would be issued, and aquarium collection using legal gear or methods other than fine mesh nets would be allowed. Permittees would abide by all existing rules and regulations set forth in HRS 189-2,3 (Commercial Marine Permit).

3.3 PRE-AQUARIUM COLLECTION BAN ALTERNATIVE

Under the Pre-Aquarium Collection Ban Alternative, the DLNR would issue an unlimited number of Aquarium Permits and CMLs allowing commercial aquarium collection, as was done prior to the September 6, 2017 Supreme Court ruling, thereby allowing commercial aquarium fish collection using fine mesh nets (and other legal methods) on the island of O’ahu. It is assumed that, upon issuance of an Aquarium Permit and CML, a permit condition would be included in each permit limiting the geographic area covered by the permit to the island of O’ahu. Permittees would abide by all existing rules and regulations set forth in HRS-188-31 (Section 1.2.1), governing Aquarium Permit use and HRS 189-2,3, governing Commercial Marine Permit use. For the island of O’ahu, these rules and regulations include restrictions on equipment, restrictions on access to various areas, bag limits on various collected fish species, and reporting requirements (Section 1.2.3).

3.4 EXPANDED WAIKIKI MLCD AND FLAME WRASSE CONSERVATION ALTERNATIVE

Under the Expanded Waikiki MLCD and Flame Wrasse Conservation Alternative, the DLNR would issue an unlimited number of Aquarium Permits and CMLs, as was done prior to the September 6, 2017 Supreme Court ruling, thereby allowing commercial aquarium fish collection using fine mesh nets (and other legal methods) on the island of O’ahu. It is assumed that, upon issuance of an Aquarium Permit and CML, a permit condition would be included in each permit limiting the geographic area covered by the permit to the island of O’ahu. Permittees would abide by all existing rules and regulations set forth in HRS-188-31 (Section 1.2.1), governing Commercial Aquarium Permit use and HRS 189-2,3, governing Commercial Marine Permit use. For the island of O’ahu, these rules and regulations include restrictions on equipment, restrictions on access to various areas, bag limits on various collected fish species, and reporting requirements (Section 1.2.3).

In addition to the existing rules and regulations, a conservation measure in the Expanded Waikiki MLCD and Flame Wrasse Conservation Alternative would add a permit condition that would prohibit commercial aquarium collection north from the existing Waikiki MLCD to the southern tip of DAR’s Honolulu Harbor Kapalama Canal Fish Management Area (Figure 2). The current Waikiki MLCD covers approximately 77.3 acres (31.3 hectares). The area proposed in the Expanded Waikiki MLCD and Flame Wrasse Conservation Alternative expands this area by 740 acres (299.5 hectares) to 817.3 acres, more than 10.5 times the size of the current Waikiki MLCD (though this additional area would only apply to commercial aquarium collection). In addition, the current Waikiki MLCD is bordered to its south by the Waikiki-Diamond Head Shoreline Fisheries Management Area (WDHSFMA) covering approximately 239 acres (96.7 hectares). The WDHSFMA is open to fishing (with restrictions) in even numbered years only. Within the expanded Waikiki MLCD, no commercial aquarium fish collection would occur; however, no restrictions would be placed upon other fisheries (e.g., commercial, recreational).

An additional conservation measure in the Expanded Waikiki MLCD and Flame Wrasse Conservation Alternative would limit the commercial aquarium collection of Flame Wrasse to 10 individual fish per day.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Alternatives

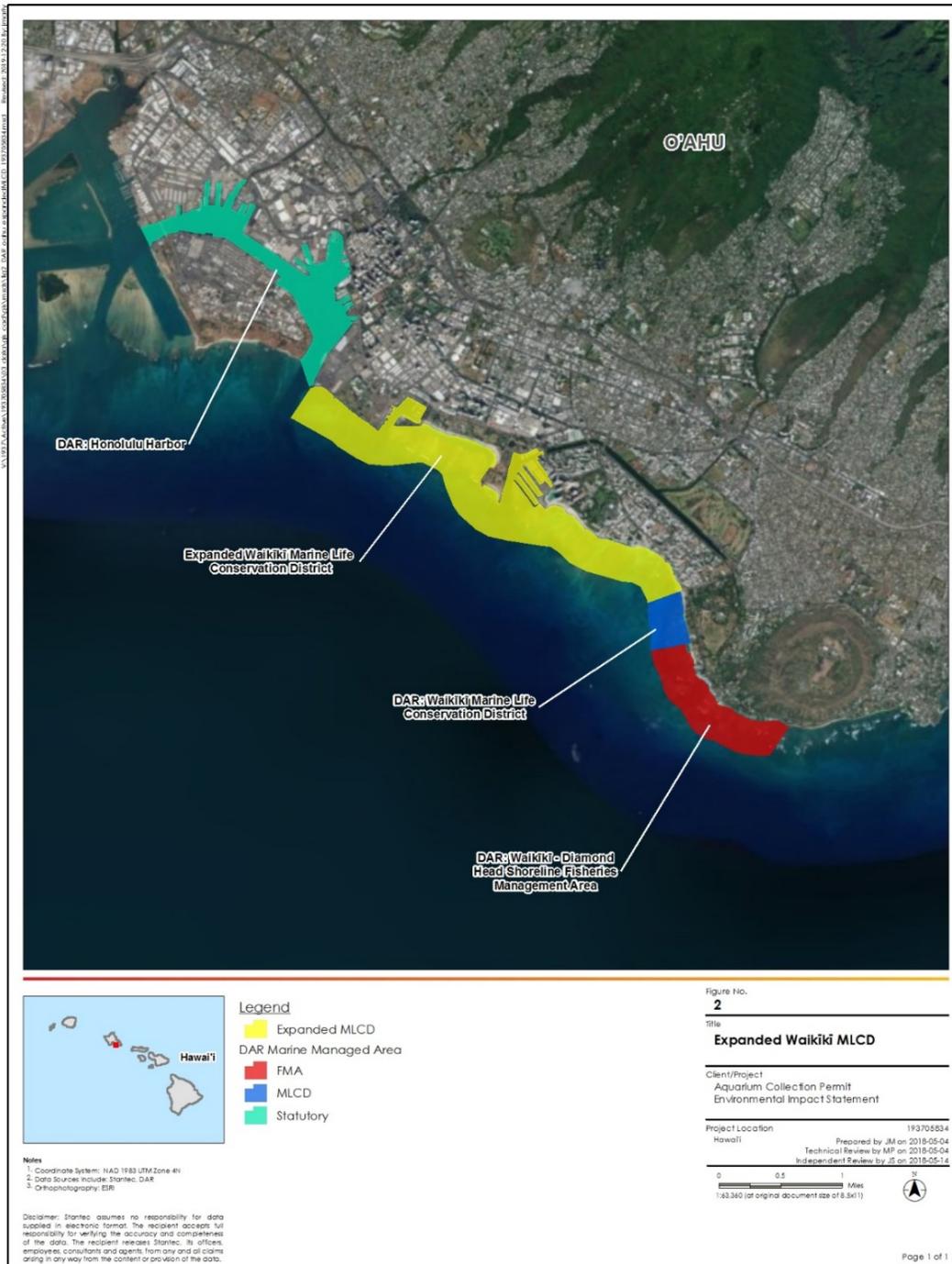


Figure 2. Expanded Waikiki MLCD.

3.5 LIMITED PERMIT ISSUANCE ALTERNATIVE

Under the Limited Permit Issuance Alternative, the DLNR would issue Aquarium Permits and corresponding CMLs to 15 aquarium fishers in O’ahu, thereby allowing these 15 individuals to resume commercial aquarium fish collection on O’ahu. It is assumed that, upon issuance of an Aquarium Permit, a permit condition would be included in each permit limiting the geographic area covered by the permit to the island of O’ahu. Permittees would abide by all existing rules and regulations set forth in HRS-188-31 (Section 1.2.1), governing Commercial Aquarium Permit use. For the island of O’ahu, these rules and regulations include restrictions on equipment, restrictions on access to various areas, bag limits on various collected fish species, and reporting requirements (Section 1.2.3).

In addition to the existing rules, under this Alternative, the daily bag limit for commercial aquarium collection of Flame Wrasse would be limited to 10 individuals per day, and the Waikiki MLCD would be expanded northward to the southern tip of DAR’s Honolulu Harbor Kapalama Canal Fish Management Area (Figure 2), as described in Section 3.3.

3.6 ESTABLISHMENT OF A WHITE LIST AND LIMITED COLLECTION (PREFERRED) ALTERNATIVE

Under the Establishment of a White List and Limited Collection Alternative, the DLNR would issue Aquarium Permits and CMLs to 15 aquarium fishers for the island of Oahu, thereby allowing 15 individuals to collect commercial aquarium fish using only fine mesh nets (no other fish collection methods would be allowed) and to collect invertebrates . No Aquarium Permits would be issued for areas outside of Oahu under this alternative. In addition to limited permit issuance, collection would be limited to 31 fish species (Proposed White List) and 4 invertebrate species permitted for aquarium take and individual catch quotas per species would be implemented (see Section 3.6.1 below for details). By limiting collection of aquarium fish to the use of fine mesh nets, all collection will need to follow the rules outlined in Section 1.2.4.

It is assumed that, upon issuance of an Aquarium Permit and CML, permit conditions would be included in each permit limiting the geographic area covered by the permit to Oahu, limiting collection to the 31 fish species and 4 invertebrates on the proposed White List, limiting the fish collection method to fine mesh nets, and implementing individual catch quotas by species for each of the 31 fish species and 4 invertebrate species on the proposed White List with the total across all 15 fishers not exceeding the maximum annual total allowable catch (TAC) shown in Table 3-2. Permittees would abide by all rules and regulations set forth in HRS 189-2,3 (Commercial Marine Permit) and HRS-188-31 (Section 1.2.1) governing Aquarium Permit use. Existing bag and slot limits as set forth in HAR §13-77 (O’ahu Aquarium Life Management; see Section 1.2.3) would remain in effect in addition to the individual catch quotas per species. This alternative is based on the best available science, supports the DLNR’s purpose to ensure Applicant’s Actions do not lead to degradation of fish and invertebrate populations and the habitats in which they occur in the context of commercial aquarium collection, specifically addresses the DNLN’s and the public’s concerns related to declining fish populations and the need for catch limits and limiting the number of fishers. In addition, it supports the Applicant’s purpose and need to continue fishers’ livelihoods participating in the lawful, responsible, and sustainable commercial collection of 31 aquarium fish species and 4 invertebrate species from nearshore habitats.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Alternatives

3.6.1 Proposed White List and Maximum Annual Total Allowable Catch

The proposed White List species are shown in Table 3-2 and Table 3-3. Individual catch quotas for the 31 fish species were based on the historic maximum annual catch by all fishers from 2000-2017 (Table 5-6), with the maximum catch capped at 4.5% of the population. In other words, if the historic maximum catch was greater than 4.5% of the estimated population, the TAC was lowered to 4.5% of the population⁶. The use of the all-fisher historic maximum is justified by:

1. The low percentage of the population represented by the historic maximum collection (of the 28 species with an available population estimate, 82% would be collected at less than 1.5% of the population; 64% would be collected at less than 1% of the population)
2. The reduction in the number of species allowed to be collected from over 200 fish species down to 31 fish species.

An annual species-specific individual catch quota would be allotted to each fisher and therefore the total potential catch shown in Table 3-2 and Table 3-3 would only occur if all 15 fishers individually reached their individual catch quota for all 31 fish species and 4 invertebrates. It is noted that the individual catch quotas may be revised (i.e., increased or decreased) over time during the annual permit renewal period based on re-evaluation by the DLNR and/or BLNR of each proposed White List species' population status (e.g., new population estimates, new population trend data, etc.). In addition, the DLNR and/or BLNR has the authority to alter these proposed TAC limits through permit conditions.

Table 3-2. Proposed Individual Catch Quotas for the proposed White List species. Annual limit from January 1 through December 31 of each year. n/a = no population estimate available. See Section 5.4.1 for a discussion on species without population estimates.

Species	Scientific Name	Mean O'ahu Population Estimate (lower-upper estimation limit)	Individual Catch Quota (per fisher)	Maximum Annual TAC (All 15 fishers)	Percent of Population (2019 PIFSC-ESD)
Yellow Tang	<i>Zebrasoma flavescens</i>	728,777 (0-1,540,367)	1,568	23,524	3.23%
Kole	<i>Ctenochaetus strigosus</i>	1,690,372 (803,819-2,576,925)	799	11,983	0.71%
Potter's Angel	<i>Centropyge potteri</i>	512,697 (69,122-956,271)	488	7,321	1.43%
Orange-spine Unicornfish (Clown Tang)	<i>Naso lituratus</i>	837,112 (89,180-1,575,044)	162	2,432	0.29%
Moorish Idol	<i>Zanclus cornutus</i>	251,451 (129,331-373,571)	71	1,067	0.42%
Bandit Angelfish (SGCN)	<i>Apolemichthys arcuatus</i>	n/a	43	638	n/a
Flame Wrasse	<i>Cirrhilabrus jordani</i>	n/a	232	3,480	n/a
Crosshatch (Redtail) Trigger	<i>Xanthichthys mento</i>	n/a	51	759	n/a

⁶ A threshold of 4.5% was chosen as this is 10% lower than the lower end of the 5% to 25% range provided by Ochavillo and Hodgson (2006).

FINAL ENVIRONMENTAL IMPACT STATEMENT

Alternatives

Species	Scientific Name	Mean O'ahu Population Estimate (lower-upper estimation limit)	Individual Catch Quota (per fisher)	Maximum Annual TAC (All 15 fishers)	Percent of Population (2019 PIFSC-ESD)
Ornate Wrasse (Pinkface)	<i>Halichoeres ornatissimus</i>	2,137,281 (568,609-3,705,953)	271	4,066	0.19%
Shortnose (Geoffroy's) Wrasse	<i>Macropharyngodon geoffroy</i>	481,899 (207,785-756,013)	173	2,592	0.54%
Fourline Wrasse	<i>Pseudocheilinus tetrataenia</i>	134,617 (0-285,987)	181	2,722	2.0%
Gilded Triggerfish (Bluethroat Trigger)	<i>Xanthichthys auromarginatus</i>	162,831 (0-333,479)	99	1,483	0.91%
Yellowtail Coris (Clown Wrasse)	<i>Coris gaimard</i>	397,004 (181,127-612,880)	103	1,543	0.39%
Forcepsfish	<i>Forcipiger flavissimus</i>	345,009 (88,777-601,240)	188	2,817	0.82%
Bicolor Anthias	<i>Pseudanthias bicolor</i>	69,760 (0-194,445)	227	3,140	4.5%
Brown Surgeonfish (Lavender, Forktail Tang)	<i>Acanthurus nigrofuscus</i>	10,523,860 (6,948,387-14,099,332)	65	969	0.009%
Hawai'i Whitespotted Toby (Puffer)	<i>Canthigaster jactator</i>	2,513,096 (1,939,093 - 3,087,100)	225	3,382	0.13%
Crowned Puffer (Saddleback, Crown Toby)	<i>Canthigaster coronata</i>	319,076 (151,702-486,450)	123	1,848	0.58%
Milletseed (Lemon) Butterflyfish	<i>Chaetodon miliaris</i>	1,452,891 (0-3,298,935)	210	3,154	0.22%
Orangeband (Shoulder) Surgeonfish	<i>Acanthurus olivaceus</i>	1,534,094 (821,719-2,246,470)	258	3,875	0.25%
Heniochus Butterfly (Pennantfish)	<i>Heniochus diphreutes</i>	301,466 (0-697,765)	71	1,061	0.35%
Eightline Wrasse	<i>Pseudocheilinus octotaenia</i>	59,945 (0-135,882)	127	1,905	3.18%
Saddle Wrasse	<i>Thalassoma duperrey</i>	17,655,664 (14,778,717-20,532,611)	106	1,597	0.009%
Fisher's Angelfish (SGCN)	<i>Centropyge fisheri</i>	117,920 (8,395-227,445)	108	1,627	1.38%
Dragon Wrasse (Rockmover)	<i>Novaculichthys taeniourus</i>	54,784 (2,249-107,318)	31	470	0.86%
Zebra Moray	<i>Gymnothorax zebra</i>	11,501 (0-34,495)	17	258	2.24%
Whitemouth Moray	<i>Gymnothorax meleagris</i>	58,821 (5,662-111,981)	9	140	0.24%
Golden Dwarf Moray (Dwarf Moray)	<i>Gymnothorax melatremus</i>	4,761 (0-14,275)	16	215	4.5%
Spotted Boxfish	<i>Ostracion meleagris</i>	104,861 (27,348-182,375)	79	1,178	1.12%
Raccoon Butterfly	<i>Chaetodon lunula</i>	201,288 (57,190-345,385)	42	626	0.31%
Threadfin Butterfly	<i>Chaetodon auriga</i>	31,081 (0-65,523)	24	366	1.18%

FINAL ENVIRONMENTAL IMPACT STATEMENT

Alternatives

Table 3-3. Proposed Individual Catch Quotas for four invertebrate species. Annual limit from January 1 through December 31 of each year. No population estimates are available for invertebrates.

Species	Scientific Name	Individual Catch Quota (per fisher)	Maximum Annual TAC (All 15 fishers)
Zebra Hermit	<i>Clibanarius zebra</i>	9,128	136,917
Halloween Hermit	<i>Calcinus elegans</i>	635	9,519
Cleaner Shrimp	<i>Lysmata amboinensis</i>	196	2,946
Feather Duster Worm	<i>Sabellastare sanctijosephi</i>	3,414	51,213

The DAR will receive the collection data by zone and can review any necessary changes when they issue the permits on an annual basis. In the unlikely event that all collection occurred within a single AQ reporting zone, the DAR would be able to evaluate this information; however, this would effectively leave the rest of the coast completely free of collecting, and essentially create an FRA everywhere else. Given that on the island of Hawaii there is connectivity between adjacent reefs (up to 184 kilometers), with fish from protected FRAs being documented to seed unprotected areas (Christie et al. 2010), it is similarly assumed that the population growth occurring in non-fished areas on O'ahu would seed the collection zones where fishing occurred, and therefore the total allowable catch limits should be based upon the entire population, not subpopulations along the O'ahu coast.

3.7 ALTERNATIVES CONSIDERED BUT DISMISSED

The following alternatives were considered but dismissed from further consideration:

- Creation of species-specific bag limits
 - This alternative was dismissed because the Preferred Alternative instead ends collection of any species not on the proposed White List and imposes individual catch quotas for the remaining 31 fish species and 4 invertebrate species on the proposed White List, thereby negating the need for species-specific bag limits.
- Moratorium on collection of herbivores
 - This alternative was dismissed because research on the island of Hawai'i shows that commercial aquarium collection is not causing declines in herbivores. The DAR (2019a) reported that herbivore biomass has not changed since 2003 in areas open to commercial aquarium collection, and while not significant, there has been an increasing trend, with a 26.0% increase in herbivore biomass in Open Areas between 2003 and 2017 (DAR 2019a, Gove et al. 2019).

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

- Moratorium on collection of Species of Greatest Conservation Need (SGCN)
 - The Preferred Alternative would impose a moratorium on 24 SGCN species which had previously been collected but would allow limited collection of 2 SGCN species – Fisher’s Angelfish (*Centropyge fisheri*) [see Section 4.4.4.20], and Bandit Angelfish (see Section 4.4.5.2). The Preferred Alternative would include a total allowable catch quota (i.e., hard upper limit) for the two SGCN species on the proposed White List; in addition, the Bandit Angelfish would continue to be regulated under HAR §13-77 which restricts the number of fish greater than 5.5 inches in length which can be collected. This alternative was dismissed because the Preferred Alternative would impose a moratorium on all but two of the SGCN species previously collected, and would impose a limit on collection for the two SGCN species on the proposed White List.
- Moratorium on species experiencing population declines
 - This alternative was dismissed because it is unknown which, if any, species are experiencing population declines, as population trend data is not available for the fish species analyzed in this EIS for the island of O’ahu. Therefore, this alternative could not be meaningfully developed or analyzed.
- Captive breeding program
 - This alternative was dismissed because it does not meet the Purpose and Need (see Section 2.0). In addition, the environmental consequences would be similar to the No Action Alternative, since no collection from the wild would occur. Although captive breeding is becoming a growing alternative to the aquarium industry, it is not currently a viable alternative for most species of saltwater fish. The 15 fishers requesting permits under the Preferred Alternative do not have the capability to breed saltwater aquarium fish.

4.0 AFFECTED ENVIRONMENT

The affected environment is the area and its resources (i.e., socioeconomic, cultural, physical, biological) potentially impacted by the proposed action and the alternatives under consideration. The purpose of describing the affected environment is to define the current baseline of conditions in which the impacts will occur. To make an informed decision about which alternative to select, it is necessary to first understand which resources will be affected and to what extent each alternative would result in changes from the baseline. This section attempts to provide the baseline for this understanding. Relative to the proposed action, the affected environment includes nearshore habitats (3 nautical miles from the shore) along the island of O’ahu.

Commercial aquarium fish collection has occurred in Hawaiian waters since the late 1940s. In 1953, the territorial government of Hawai’i enacted Act 154, which authorized the Board of Agriculture and Forestry to establish a permit system for the use of fine-mesh nets and traps for the taking of aquarium fish (DAR 2014a). Beginning in 1973, collectors were required to report their monthly catch on a detailed aquarium

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

fish catch report. As of 2014, Aquarium Permit holders are required to keep daily trip reports and submit on a monthly basis. The number of permitted commercial aquarium fishers reporting statewide for the period 2000 to 2017 ranged from 61 - 99 (DAR 2018a); however, the number of commercial aquarium permits issued ranged from 113 – 226 (DAR 2018a). For the island of O‘ahu, the number of permitted commercial aquarium fishers reporting catch ranged from 28-52 for the same time-period (DAR 2018a). The 20 commercial fishers who disclosed their data (see Section 5.1) made up 3 to 16 of the fishers in any given year from 2000 – 2017. Permitted commercial aquarium fishing has been a part of the socioeconomic, cultural, physical, and biological resources for decades and is considered a part of the baseline condition of the affected environment.

The DLNR’s mission statement is to ‘Enhance, protect, conserve and manage Hawai‘i’s unique and limited natural, cultural, and historic resources held in public trust for current and future generations of the people of Hawai‘i nei, and its visitors, in partnership with others from the public and private sectors.’ In pursuit of this mission, the DLNR has compiled, analyzed, and reported on the many facets of Hawai‘i’s socioeconomic, cultural, physical, and biological resources that make up the affected environment. The following sections rely heavily on the DLNR’s *Hawai‘i’s Comprehensive Wildlife Conservation Strategy* (CWCS; Mitchell et al. 2005) and the DLNR’s Hawai‘i’s State Wildlife Action Plan (SWAP; DLNR 2015), with numerous other sources cited as appropriate.

4.1 SOCIOECONOMIC RESOURCES

The state of Hawai‘i has four local governments: the City and County of Honolulu (island of O‘ahu and the Northwestern Hawaiian Islands), the County of Kaua‘i (islands of Kaua‘i and Ni‘ihau), the County of Maui (islands of Maui, Moloka‘i, Lāna‘i, and Kaho‘olawe), and the County of Hawai‘i (island of Hawai‘i). Hawai‘i also has a fifth county, Kalawao County, which does not have a separate government unit (Mitchell et al. 2005). Kalawao County covers the former Hansen’s disease settlement at Kalaupapa (Moloka‘i) and is managed by the National Park Service (NPS) under a cooperative agreement with the State Department of Health (Mitchell et al. 2005).

The population of the State of Hawai‘i was estimated at 1,420,491 in 2018, with the majority (69%) found in the County of Honolulu, which includes the island of O‘ahu (980,080) (HDBEDT 2019). The over nine million visitors in 2017 included over 5.5 million visitors to O‘ahu and contributed an additional average of over 105,141 people per day on O‘ahu (HTA 2018).

Much of the state’s economy is based on the island’s coastal and marine resources. Tourism accounts for the majority of the state’s economy, with a significant portion of the tourist activities associated with beaches and marine wildlife (DLNR 2015). Coastal development and land values have both increased with the growth in tourism. In 2002, the Hawai‘i Coral Reef Initiative funded a study regarding the economic valuation of the coral reefs of Hawai‘i, where the value of coral reefs to the Hawai‘i economy was estimated to be about \$380 million dollars per year (DLNR 2015). In 2001, Cesar et al. documented the annual recreational value of the coral reefs of the Hawaiian reefs for snorkelers and divers was estimated to be \$281 million and \$44 million, respectively. Although the direct expenditure per diver is much larger than the direct expenditures of snorkelers, the overall value related to the latter group is much larger due to their large numbers. A report published in 2003 concluded that, worldwide, the goods and services that coral reefs

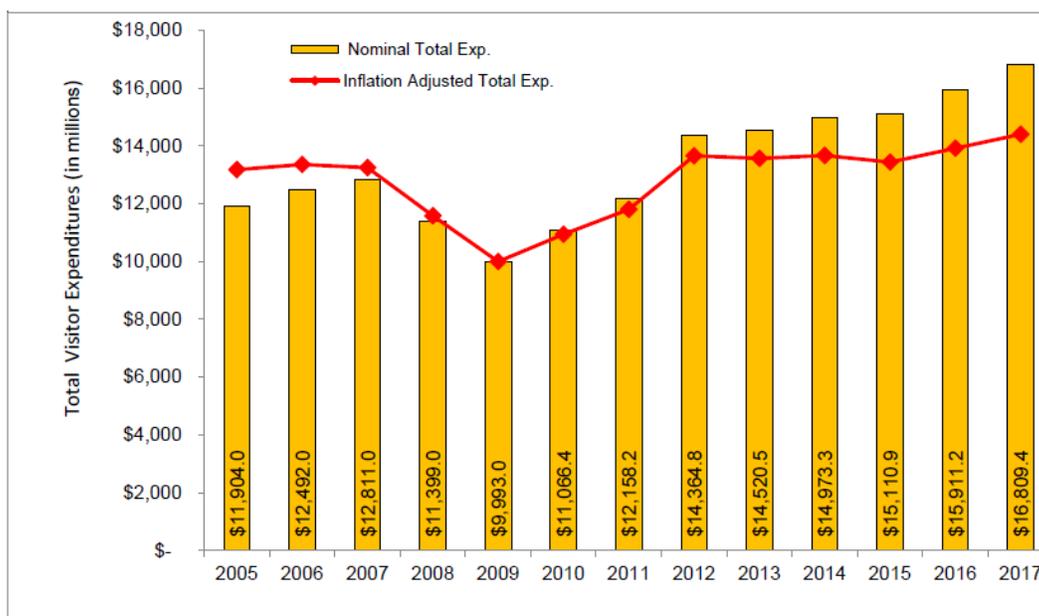
FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

provide (e.g., tourism, fisheries, coastal protection) are estimated to be worth nearly \$30 billion per year (Cesar et al. 2003), which would be over \$42 billion in 2021 dollars.

According to the 2019 National Oceanic and Atmospheric Administration (NOAA) Report on the Ocean and Great Lakes Economy of the United States, in 2016 (most recent data), Hawai'i employed 647,544 people and generated \$31.2 billion in wages and \$84.9 billion in gross domestic product. Hawai'i's ocean economy then employed 118,083 people and generated \$4.5 billion in wages and \$8.6 billion in gross domestic product. The ocean economy accounted for 18.2% of Hawai'i's employment, 14.3% of its wages, and 10.2% of its gross domestic product (NOAA 2019). Commercial fish landings in Hawai'i have increased annually since 2006 and NOAA reported total landings in 2013 were valued near \$108 million dollars (DLNR 2015).

Hawai'i's tourism industry achieved new records in total visitor spending and visitor arrivals in 2017, marking the sixth consecutive year of record growth in both categories. Total spending by visitors to the Hawaiian Islands increased 5.6% to a new high of \$16.21 billion (HTA 2018). When adjusted for inflation, total visitor spending was up 3.5% from 2016 (Figure 3). A total of 9,404,346 visitors came by air or by cruise ship to the state, up 5.3% from the previous record of 8,934,277 visitors in 2016. Total visitor days rose 4.8% compared to 2016. The average spending per day by these visitors (\$198 per person) was also higher than 2016 (\$197 per person; HTA 2018).



Note: Implicit price deflator (2009=100)

Source: 2017 State of Hawai'i Data Book Table 7.35.

Figure 3. Total visitor spending: nominal and real 2005-2017 (HTA 2018).

Arrivals by airlines in 2016 grew 3% compared to 2015, to 8,821,802 visitors. Additionally, there were 112,475 visitors who came to the islands by cruise ship, but this was down 3.5% from 2015 due to fewer out-of-state cruise ships that visited the islands (HDBEDT 2017).

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

Total Spending by Category (HTA 2018):

- Lodging was the largest spending category by visitors to Hawai'i, rising 3.4% to \$6.96 billion and making up 41.4% of the total visitor spending in 2017.
- Food and beverage category was the second largest category, increasing 6.4% to \$3.48 billion (20.7%) of total visitor spending in 2017.
- Shopping expenses rose 5.0% to \$2.36 billion.
- Transportation expenditures rose 7.9% to \$1.67 billion.
- Entertainment and recreation spending rose 10.8% to \$1.57 billion.
- Supplemental business spending grew 5.9% to \$125.1 million. This includes additional business spending spent locally on conventions and corporate meetings by out-of-state visitors that were not included in personal spending (i.e., costs on space and equipment rentals, transportation, etc.).

The military has a significant presence in Hawai'i with large Naval installations located on estuarine and coastal areas such as Pearl Harbor and Kāne'ohe Bay on O'ahu, the Pacific Missile Range Facility on the south shore of Kaua'i, and the Pōhakuoloa Training Area on Hawai'i Island the largest United States Department of Defense installation in the state of Hawai'i, or anywhere in the Pacific.

The history of Hawai'i has always included agriculture, and it continues to be an important industry, adding \$2.9 billion to the state's annual economy, and providing 42,000 direct and indirect jobs (HDA 2013). The sugar and pineapple industries boomed during the plantation era, covering thousands of acres of prime agricultural lands. As these industries have been declining, these lands are being converted to smaller farms growing diversified agricultural product (HDA 2013). Specialty exotic fruits, coffee, macadamia nuts, flowers and foliage are examples of crops that have become major exports to destinations around the globe, as well as providing fresh produce and flowers to local Hawaiian markets. High-tech aquaculture ventures have evolved from the early fishponds, farming varieties of fish, shrimp, lobster, abalone, and seaweed (HDA 2013).

4.1.1 Socioeconomic Aspects of the Commercial Aquarium Fishery

Early aquarium collectors operated almost exclusively in the nearshore waters along the leeward coast of O'ahu, utilizing rudimentary equipment for collecting (Stevenson et al. 2011). Today, commercial aquarium fishers on the island of O'ahu often perform day trips, or operate individually or with a partner, using more advanced equipment such as self-contained underwater breathing apparatus (SCUBA) and synthetic hand nets (nets used to exclude, contain, or direct fish) to capture fish (Stevenson et al. 2011). Most aquarium fishers are between the ages of 30 and 60 years, have remained active in the fishery for more than 20 years, and fish approximately 2–3 days per week (Stevenson et al. 2011), though the fishers included in the proposed action fish only 1-2 days per week. As throughout the state, O'ahu fishers are required to report their monthly catch on an aquarium fish catch report separate from, and more detailed than, the Commercial Marine License (CML) reports and aquarium fish dealers are also required to report their sales. At present, there is no provision for the verification of submitted reports, so any catch numbers and dollar

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

amounts should be regarded as minimum, not absolute values (DAR 2018a). The aquarium fish catch reports can thus be cross-referenced with the aquarium fish dealer reports to check for underreporting.

The commercial aquarium fishery has contributed an average of \$2,172,028 (inflation-adjusted 2019 dollars) to the State's economy over the past 18 years (Table 4-1). According to DAR (2019a), the marine aquarium fishery is the most economically valuable commercial inshore fishery in the State of Hawai'i.

Table 4-1. Summary of commercial Aquarium Permits and values by year from 2000-2017 for the State of Hawai'i (DAR 2018a). These data include n.d. data and O'ahu data, as well as the other islands that make up the state of Hawai'i.

Fiscal Year ¹	Number of Commercial Aquarium Permits	Number Reporting	Total Value	Total Value Adjusted for Inflation ²
2000	113	82	\$1,000,750	\$1,491,077
2001	128	75	\$936,811	\$1,357,958
2002	139	63	\$935,009	\$1,333,497
2003	123	68	\$1,174,168	\$1,637,269
2004	145	77	\$1,442,946	\$1,959,863
2005	142	79	\$1,579,370	\$2,074,862
2006	186	87	\$2,093,857	\$2,664,797
2007	195	99	\$1,646,167	\$2,037,015
2008	178	94	\$2,065,816	\$2,461,779
2009	197	92	\$1,894,015	\$2,265,107
2010	178	91	\$2,282,618	\$2,685,794
2011	172	87	\$2,188,227	\$2,495,946
2012	166	77	\$2,306,179	\$2,577,152
2013	153	64	\$2,172,561	\$2,392,786
2014	165	61	\$2,322,564	\$2,517,161
2015	163	69	\$2,502,178	\$2,708,609
2016	166	66	\$2,257,021	\$2,412,789
2017	226	68	\$1,932,747	\$2,023,037
Average	163	78	\$1,818,500	\$2,172,028

¹Fiscal year runs from July 1 through June 30.

²<http://www.usinflationcalculator.com/>, adjusted for 2019 values in August 2019.

Since 2000, the commercial aquarium fishery has averaged annual total catch landings (fish and invertebrates) on the island of O'ahu valued at \$540,542 (inflation-adjusted 2019 dollars), representing 25% of the state-wide landings described above. Landings on O'ahu have ranged from a low of \$211,246 (inflation-adjusted 2019 dollars) in 2003 to a high of \$778,491 (inflation-adjusted 2019 dollars) in 2012 (Table 4-2; DAR 2018a). The economic value of fish collected has ranged from 67.2% to 91.1% of the total value, with an average of 79.4%, whereas the economic value of invertebrates has ranged from 6.8% to 31.3% of the total value, with an average of 16.7% (Table 4-2; DAR 2018a).

For the 20 fishers who disclosed their data, 3 to 16 fishers reported catch in any given year between 2000 and 2017, contributing from 34.3% to 74.2% of the total overall O'ahu fishery value (Table 4-2).

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

Table 4-2. Number of Aquarium Permit holders, reports, total catch (fish and invertebrates), and value by year on the island of O’ahu between 2000 and 2017 (DAR 2018a). These data are applicable to the analysis of the Pre-Aquarium Collection Ban, Expanded Waikiki MLC and Flame Wrasse, and Limited Permit Issuance alternatives.

Fiscal Year ¹	Number of Commercial Aquarium Permits	Number of Permits Reporting	All Fishers				20 Fishers				
			Fish Value (% of total)	Invertebrate Value (% of total)	Total Value ²	Total Value Adjusted for Inflation ³	Fish Value (% of total)	Invertebrate Value (% of total)	Total Value ²	Percent Contribution of 20 fishers	Total Value Adjusted for Inflation ³
2000	68	47	\$186,592 (76.8%)	\$40,220 (16.6%)	\$242,856	\$362,939	\$66,958 (86.3%)	\$10,533 (13.6%)	\$77,575	31.9%	\$115,932
2001	75	39	\$141,314 (69.3%)	\$55,567 (27.2%)	\$203,984	\$296,579	\$54,481 (77.9%)	\$14,699 (21.0%)	\$69,981	34.3%	\$101,748
2002	72	28	\$117,055 (74.4%)	\$32,915 (20.9%)	\$157,387	\$225,141	\$57,124 (80.9%)	\$13,358 (18.9%)	\$70,571	44.8%	\$100,951
2003	66	30	\$115,503 (76.5%)	\$30,734 (20.3%)	\$151,039	\$211,246	\$77,203 (81.8%)	\$17,155 (18.2%)	\$94,365	62.5%	\$131,981
2004	68	39	\$233,937 (68.6%)	\$103,608 (30.4%)	\$341,049	\$464,265	\$113,943 (88.7%)	\$14,478 (11.3%)	\$128,439	37.7%	\$174,978
2005	76	39	\$241,628 (67.2%)	\$112,463 (31.3%)	\$359,424	\$473,612	\$150,680 (93.0%)	\$11,229 (6.9%)	\$161,959	45.1%	\$213,413
2006	102	46	\$372,229 (76.4%)	\$102,273 (21.0%)	\$487,187	\$621,903	\$157,353 (93.0%)	\$11,920 (7.0%)	\$169,272	34.7%	\$216,079
2007	106	50	\$344,658 (71.8%)	\$129,251 (26.9%)	\$480,341	\$596,183	\$162,611 (95.6%)	\$7,556 (4.4%)	\$170,166	35.4%	\$211,204
2008	85	52	\$445,274 (84.7%)	\$73,949 (14.1%)	\$525,791	\$628,464	\$218,407 (96.4%)	\$8,242 (3.6%)	\$226,651	43.1%	\$270,910
2009	100	46	\$422,842 (83.3%)	\$54,249 (10.7%)	\$507,860	\$609,199	\$287,586 (97.1%)	\$8,511 (2.9%)	\$296,097	58.3%	\$355,181
2010	81	45	\$475,564 (86.3%)	\$54,463 (9.9%)	\$550,940	\$650,210	\$290,922 (96.2%)	\$11,403 (3.8%)	\$302,325	54.9%	\$356,799

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

Fiscal Year ¹	Number of Commercial Aquarium Permits	Number of Permits Reporting	All Fishers				20 Fishers				
			Fish Value (% of total)	Invertebrate Value (% of total)	Total Value ²	Total Value Adjusted for Inflation ³	Fish Value (% of total)	Invertebrate Value (% of total)	Total Value ²	Percent Contribution of 20 fishers	Total Value Adjusted for Inflation ³
2011	81	39	\$516,577 (81.8%)	\$70,086 (11.1%)	\$631,632	\$722,631	\$365,365 (97.4%)	\$9,845 (2.6%)	\$375,210	59.4%	\$429,267
2012	84	41	\$578,042 (83.2%)	\$76,836 (11.1%)	\$694,539	\$778,491	\$297,987 (96.5%)	\$10,714 (3.5%)	\$308,710	44.4%	\$346,025
2013	71	32	\$406,585 (80.0%)	\$73,652 (14.5%)	\$508,251	\$561,461	\$314,627 (96.3%)	\$12,255 (3.7%)	\$326,882	64.3%	\$361,104
2014	78	32	\$488,314 (82.7%)	\$63,785 (10.8%)	\$590,659	\$642,081	\$415,902 (98.4%)	\$6,680 (1.6%)	\$422,589	71.5%	\$459,379
2015	93	42	\$622,529 (91.1%)	\$46,357 (6.8%)	\$683,282	\$741,887	\$443,709 (98.9%)	\$4,707 (1.0%)	\$448,429	65.6%	\$486,891
2016	92	39	\$500,152 (88.8%)	\$44,865 (8.0%)	\$563,418	\$604,121	\$297,187 (98.2%)	\$5,544 (1.8%)	\$302,733	53.7%	\$324,604
2017	126	41	\$448,258 (87.3%)	\$46,669 (9.1%)	\$513,723	\$539,346	\$302,998 (98.5%)	\$4,493 (1.5%)	\$307,496	59.9%	\$322,833
2018 ⁴	NA	NA	\$353,967 (93.5%)	\$24,482 (6.5%)	\$378,449	\$387,852	\$278,673 (99.2%)	\$2,127 (0.8%)	\$280,799	74.2%	\$287,776
Average (2000-2017)	85	40	\$369,836 (79.4%)	\$67,330 (16.7%)	\$455,187	\$540,542	\$238,153 (96.1%)	\$9,718 (3.9%)	\$247,926	54.5%	\$286,174
Total (2000-2017)	NA	NA	\$6,657,053 (81.2%)	\$1,211,943 (14.8%)	\$8,193,363	\$9,729,759	\$4,353,716 (95.9%)	\$185,449 (4.1%)	\$4,540,249	55.4%	\$5,267,055

¹Fiscal year runs from July 1 through June 30

²Total value includes non-disclosure data (Section 5.1) and collection that was not identified to the finfish or invertebrate categories (i.e., unknown or miscellaneous species)

³ <http://www.usinflationcalculator.com/>, adjusted for 2019 values

⁴Data from 2018 were provided for the calendar year for all fishers, and for the fiscal year for the 20 fishers. However, both datasets contain 12 calendar months, and are considered comparable for analysis.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

It should be noted that the dollar value of these fisheries represents only the ex-vessel value, i.e., what the fishers are paid for their catch, and does not include the value which would be generated by additional dealer and retail sales. The actual economic value of the catch is thus substantially greater than the ex-vessel values. A study done in 1994 found that the DAR reported total average value for FY 1993/FY 1994 at only \$819,957 (Miyasaka 1994 as cited in Walsh 2004), while analysis in 1993 by an aquarium trade group (Hawai'i Tropical Fish Association) estimated the total sales of Hawaiian aquarium fish (including freight and packaging) to be nearly 6 times this, at \$4.9 million (Walsh et al. 2003). Although specific export data do not exist for the aquarium fishery, it is clear that most of the aquarium catch is shipped out of the state to dealers on the mainland United States, Europe, and Asia (Dierking 2002). This is neither surprising nor atypical for commercial fisheries in Hawai'i (DAR 2014a). For example, seafood exports of various Hawaiian species exceed 3.7 million pounds annually (Loke et al. 2012).

From 2000-2017, the total catch value (fish and invertebrates) of the commercial aquarium collection on O'ahu was \$9,729,759 (inflation-adjusted 2019 dollars) (Table 4-3). Of the 304 species collected from O'ahu between 2000 and 2017, 238 have been fish species and 66 have been invertebrates. Six species (5 fish and 1 invertebrate) compose over 52% of the total economic value of the catch (DAR 2018a):

- Yellow Tang - 15.0%
- Potter's Angelfish - 10.3%
- Feather Duster Worms (*Sabellastarte spectabilis*) - 7.3%
- Bandit Angelfish – 7.3%
- Kole - 6.6%
- Flame Wrasse (*Cirrhilabrus jordani*) - 6.4%

For the 31 fish species and 4 invertebrates on the proposed White List, the average sold values from 2018 and 2019 are shown in Table 4-3.

Table 4-3. Average per fish or invertebrate values for the 35 species on the proposed White List based on 2018 and 2019 reported sales from Oahu (DAR 2019b). Values were calculated by dividing the total value by the number sold. These data are applicable to the analysis of the Establishment of a White List and Limited Collection Alternative (Preferred Alternative).

Species	Number Sold	Total Value	Average Value per Fish
Bandit Angelfish	489	\$79,297.50	\$162.16
Bicolor Anthias	975	\$5,955.00	\$6.11
Brown Surgeonfish (Lavender, Forktail Tang)	481	\$681.75	\$1.42
Crosshatch (Redtail) Trigger	456	\$53,813.00	\$118.01
Crowned Puffer (Saddleback, Crown Toby)	135	\$238.25	\$1.76
Dragon Wrasse (Rockmover)	27	\$122.00	\$4.52
Eightline Wrasse	101	\$317.00	\$3.14

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

Species	Number Sold	Total Value	Average Value per Fish
Fisher's Angelfish	407	\$2,118.00	\$5.20
Flame Wrasse	530	\$14,041.00	\$26.49
Forcepsfish	848	\$2,393.25	\$2.82
Fourline Wrasse	324	\$2,634.00	\$8.13
Gilded Triggerfish (Bluethroat Trigger)	412	\$3,344.25	\$8.12
Golden Dwarf Moray (Dwarf Moray)	94	\$2,975.00	\$31.65
Hawai'i Whitespotted Toby (Puffer)	433	\$648.25	\$1.50
Henicocus Butterfly (Pennantfish)	70	\$221.50	\$3.16
Kole	22,296	\$101,108.70	\$4.53
Milletseed (Lemon) Butterflyfish	455	\$1,206.75	\$2.65
Moorish Idol	732	\$3,791.50	\$5.18
Orangeband (Shoulder) Surgeonfish	742	\$1,943.75	\$2.62
Orange-spine Unicornfish (Clown Tang)	1,901	\$12,233.25	\$6.44
Ornate Wrasse (Pinkface)	520	\$1,871.50	\$3.60
Potter's Angel	4,731	\$39,904.50	\$8.43
Raccoon Butterfly	42	\$193.00	\$4.60
Saddle Wrasse	32	\$52.00	\$1.63
Shortnose (Geoffroy's) Wrasse	868	\$3,483.00	\$4.01
Spotted Boxfish	118	\$690.50	\$5.85
Threadfin Butterfly	152	\$1,540.00	\$10.13
Whitemouth Moray	9	\$229.00	\$25.44
Yellow Tang	62,316	\$404,561.50	\$6.49
Yellowtail Coris (Clown Wrasse)	98	\$499.50	\$5.10
Zebra Moray	11	\$97.00	\$8.82
Zebra Hermit Crab ¹	142,325	\$11,354	\$0.08
Halloween Hermit Crab	10,589	\$2,010	\$0.19
Cleaner Shrimp	335	\$787	\$3.00
Feather Duster Worm	6,283	\$11,390	\$1.81

¹This species is based on collection from all of Hawai'i, and is not restricted to O'ahu due to n.d. data.

4.2 CULTURAL RESOURCES

The cultural significance of the species analyzed in this FEIS is discussed in Section 4.4.

Cultural, historic, and archaeological resources were evaluated within the nearshore habitats (3 nautical miles from the shore, where commercial aquarium collection occurs). A Cultural Impact Assessment (CIA) was prepared assessing the potential cultural impacts of issuance of 20 Aquarium Permits, and is included as Appendix A. It is assumed that the same potential cultural impacts could occur under any alternative involving collection. A brief overview of cultural resources is provided here. The ocean, its ecosystem, and the practice of fishing were and continue to be important in Native Hawaiian culture and tradition.

The belief system of Native Hawaiians links people with all living and non-living things (Mitchell et al. 2005). Under this belief system, because all components of ecosystems were descended from *Wākea* (sky father) and *Papahānau-moku* (earth mother) and their offspring, *kini akua* (multitude of gods), both living and non-living elements possess spiritual qualities and *mana* (spiritual power). As such, Native Hawaiians, as *kanaka maoli* (native people), are guardians of these ecosystems and their well-being is directly related to the well-being of these ecosystems (Mitchell et al. 2005).

For example, areas such as *wao akua* (upland forests) are sacred places, the realm of the gods (Mitchell et al. 2005). Native Hawaiian land ownership and resource management were often based on a unit called the *ahupua'a*, which typically corresponded with what we today call watershed areas. This understanding of the link from uplands to the ocean was ahead of its time (Mitchell et al. 2005). *Kapu* (taboo) systems that limited certain classes or sexes from eating certain animals or fishing in certain places or at certain times may have aided in the conservation of some species (e.g., only men were allowed to eat *honu* (green sea turtle) and only royalty could eat certain fishes) (Mitchell et al. 2005).

Additionally, native species in Hawai'i play a significant role in Native Hawaiian culture. Historically, feathers from forest birds were used to make elaborate capes, leis, and helmets for the *ali'i* (royalty). Whale ivory, shells, and shark's teeth were used for necklaces and other adornments (Mitchell et al. 2005). Fish and sea turtle bones were used as kitchen implements, tools, and fishhooks, while sea turtle shells and scutes were used as containers. *Koa* (*Acacia koa*) trees were used for the ocean-voyaging canoes (Mitchell et al. 2005).

Native wildlife also play an important role in Native Hawaiian culture as many species such as *the pueo* (*Asio flammeus sandwichensis* [Hawaiian short-eared owl]), *'io* (*Buteo solitarius* [Hawaiian hawk]), *'elepaio* (*Chasiempis sandwichensis* [Hawaiian elepaio]), *'alalā* (*Corvus hawaiiensis* [Hawaiian crow]), sea turtles (e.g., *Caretta* spp., *Chelonia* spp., *Dermochelys* spp., *Eretmochelys*, and *Lepidochelys* spp.), and sharks (*Hexanchus* spp.) are believed to be *'aumakua* (ancestors or guardians) of certain Hawaiian families (Mitchell et al., 2005). Hawaiian names have been given to many of the native wildlife and they have been incorporated into *oli* (chants) and *mo'olelo* (legends).

Native Hawaiian culture also contains specific customs, beliefs, and practices related to fisheries and aquatic resources (Maly and Maly 2003). Historical narratives include specific references to cultural sites, such as *ko'a* (on shore and in ocean fishing shrines and station markers), resources procurement sites (both on land and in the water), and the traditional and customary laws governing the care for, and use of, the wide range of resources from the uplands to the ocean (Maly and Maly 2003). These historical accounts

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

demonstrate that Native Hawaiians worked the land, water, and marine resources and, through a system of religious-based fisheries management protocols, were able to sustain themselves through the natural resources of the islands (Maly and Maly 2003). Native Hawaiian traditions surrounding aquatic resources demonstrate the cultural-historical importance of fisheries and land in the lives of Native Hawaiians and form the basis for Native Hawaiian's cultural attachment to the ocean and fishing today (Maly and Maly 2003).

Historical accounts demonstrate that Native Hawaiians were expert fishermen, and that fishing was a skill passed down generation to generation (Maly and Maly 2003). Native Hawaiians relied on fishing in the ocean for subsistence and consumption and employed traditional fishing methods that included the use of nets, hooks and lines, baskets, and hands (Maly and Maly 2003). In addition to serving as a source of food, aquatic resources and the practice of fishing were also linked to religious practices. Fishing was associated with religious ceremonies and fishermen traditionally worshipped fishing gods and goddesses and performed rituals related to certain species of fish (Maly and Maly 2003).

Numerous other examples of the use of native plants and animals in both daily life and ritual exist. In present day Hawai'i, the link between Native Hawaiian culture and native species has not been lost and continues to be practiced in belief systems, as well as in traditional practices such as gathering of native plants for hula, traditional medicines, carving, weaving, and ceremonies (Mitchell et al. 2005).

Today, Native Hawaiian teachings play an increasing role in natural resource management, especially in areas of cultural significance like *Kaho'olawe* or *Wao Kele o Puna* (island of Hawai'i). The CWCS recognizes that the State and its agencies are obligated to protect the reasonable exercise of customarily and traditionally exercised rights of Native Hawaiians to the extent feasible, in accordance with Public Access Shoreline Hawai'i versus Hawai'i County Planning Commission and subsequent case law (Mitchell et al. 2005).

4.2.1 Cultural Aspects of the Commercial Aquarium Fishery

From Jokiel et al. (2011):

For the past century Hawai'i has been dominated by a "Western" model of marine environmental management. Recently, however, there has been a renewed interest in the traditional management practices of ancient Hawaiians. Throughout Hawai'i, a growing cultural, sociological, and scientific movement is working to investigate and revive some of these traditional management tools and to integrate them with modern scientific methodology. The native islanders had devised and implemented every basic form of what are now considered modern marine fisheries conservation measures centuries ago, long before the need for marine conservation was even recognized in Western nations (Johannes 1982). Traditional restrictions on fishing in Hawai'i were achieved by the use of closed seasons, closed areas, size restrictions, gear restrictions, and restricted entry. Additional social, cultural, and spiritual controls strengthened the conservation ethic under the old system. Ancient Hawaiians used a holistic approach that we might now recognize and strive for as integrated coastal management. Bridging the gap between traditional management and Western science represents a challenge to researchers, government agencies, resource managers, cultural practitioners and organizations, and to the people of Hawai'i.

Commercial aquarium fish collection has been on-going in Hawai'i since the late 1940's, with most fishers active in the fishery for more than 20 years and many active for 35 – 40 years. Hawai'i is their home and the fish are their livelihood. Protecting and preserving the reef, the fish, and the cultural heritage of both Hawai'i and the fishery, is in their best personal and business interest. Commercial aquarium fish collection is not a part of Native Hawaiian culture; however, Native Hawaiians do participate in the fishery and Hawaiian culture has been a significant aspect of the fishery's management since the 1970's. For example, significant review and incorporation of Hawaiian culture was incorporated Act 306 SLH – West Hawai'i Regional Fishery Management Area. Although Act 306 initiatives do not directly pertain to O'ahu, it does demonstrate the overall management strategy and public involvement with the aquarium fishery in the state. Section 4.4.4 summarizes the cultural significance of the 20 most collected fish species and Section 4.4.5 includes the cultural significance of other regulated species.

4.2.1.1 Public and Private Aquariums

More than 700 million people visit zoos and aquariums worldwide each year, and these zoos and aquariums spent more than \$350 million on wildlife conservation in 2008 (Gusset and Dick 2011). Visits to aquariums may be for entertainment or educational purposes (as cited in Cracknell et al. 2015), but there are psychological benefits as well. Cracknell et al. (2015) looked at the behavioral, physiological and psychological reactions of people viewing a large aquarium exhibit, and found greater reduction in heart rate, greater increases in self-reported mood, higher interest, and longer spontaneous viewing times when species diversity within the aquarium was higher. Aquarium fish are also sold to home aquaria owners, of which 70% report that their fish are calming and stress reducing (Kidd and Kidd 1999, as cited in Cracknell et al. 2015), and for this reason aquariums are often present in health care settings as well, to provide a relaxing and calm environment (Cracknell et al. 2015).

4.3 PHYSICAL RESOURCES

The Hawaiian archipelago is composed of 8 main islands and approximately 124 smaller islands, reefs, and shoals spanning over 1,500 miles that vary in size from fractions of acres to thousands of square miles (Mitchell et al. 2005). The archipelago was formed over the last 70 million years through volcanic eruptions from a relatively stationary hotspot beneath the slowly moving seafloor. The island of O'ahu was created by two large shield volcanoes (Ko'olau and Wai'anae; Mitchell et al. 2005). O'ahu has a number of large estuaries and bays and one of only two barrier reef complexes in the State. Millions of years of erosion, subsidence, and reef building resulted in the formation of the atolls which form the Northwestern Hawaiian Islands (NWHI) and the submersion under the sea surface of the seamounts which used to be islands (Mitchell et al. 2005).

Located over 2,000 miles from the nearest continent, Hawai'i is the most remote island chain in the world (Mitchell et al. 2005). Despite its relatively small area (less than 4.1 million acres), an elevation range from sea level to 13,796 feet results in Hawai'i containing all the major known ecological zones. With a wide temperature range due to the elevational gradient and with average annual rainfall ranging from less than 15 inches to over 480 inches per year, Hawai'i displays most of the earth's variation in climatic conditions. Finally, Hawai'i possesses many natural wonders: the most active volcano in the world, the wettest place on earth, the tallest seacliffs, and extensive coral reefs (Mitchell et al. 2005).

Due to the large number and the varied geology of the islands, Hawai'i has diverse marine habitats, which range from estuaries, tidepools, sandy beaches, and seagrass beds to nearshore deep waters, extensive fringing and atoll reef systems, and smaller barrier reef systems (DLNR 2015). However, introduced mangroves have altered native coastal habitats in a number of places. The distribution of marine ecosystems in Hawai'i is a result of island age, reef growth, water depth, exposure to wave action, geography, and latitude. The marine habitats found on each island depend on the type of island: large and young, mature, or drowned islands and seamounts (DLNR 2015). Large and young islands such as the island of Hawai'i have recent lava flows and few, living structural coral reefs. Beaches are rocky except around bays, and drowned reefs may be found in deep waters or off parts of the east coast of Maui. Mature islands, such as O'ahu and Kaua'i in the MHI and Nihoa and Necker in the NWHI are the most diverse, with habitat types ranging from estuaries and sandy beaches to rocky beaches and fringing and barrier reefs to lagoons with patch or pinnacle reefs. Drowned islands, such as atolls in the rest of the NWHI, are the remains of volcanic islands with habitats ranging from coral islets and benches to caves and terraces along the slope of the atoll (DLNR 2015).

4.3.1 Climate

Features of Hawai'i's climate include mild temperatures throughout the year, moderate humidity, persistence of northeasterly trade winds, significant differences in rainfall within short distances, and infrequent severe storms (Price 1983). For most of Hawai'i, there are only two seasons: "summer," between May and October, and "winter," between October and April. Hawai'i's length of day and temperature are relatively uniform throughout the year. Hawai'i's longest and shortest days are about 13.5 hours and 11 hours, respectively, compared with 14.5 and 10 hours for Southern California and 15.5 hours and 8.5 hours for Maine (Price 1983). Uniform day lengths result in small seasonal variations in incoming solar radiation

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

and, therefore, temperature. On a clear winter day, level ground in Hawai'i receives at least 67% as much solar energy between sunrise and sunset as it does on a clear summer day. By comparison the percentages are only 33 and 20 at latitudes 40 and 50 degrees respectively (Price 1983).

Over the ocean near Hawai'i, rainfall averages between 25 and 30 inches per year. The islands receive as much as 15 times that amount in some places and less than one third of it in others. This is caused mainly by orographic or mountain rains, which form within the moist trade wind air as it moves from the sea over the steep and high terrain of the islands (Price 1983). Over the lower islands, the average rainfall distribution resembles closely the topographic contours. Amounts are greatest over upper slopes and crests and least in the leeward lowlands. On the higher mountains, the belt of maximum rainfall lies between 2,000 to 3,000 feet and amounts decrease rapidly with further elevation. As a result, the highest slopes are relatively dry (Price 1983). Another source of rainfall is the towering cumulus clouds that build up over the mountains and interiors on sunny calm afternoons. Although such convective showers may be intense, they are usually brief and localized. Hawai'i's heaviest rains are come from winter storms between October and April. On O'ahu, the Wai'anae and Ko'olau mountain ranges combine to produce distinctive windward and leeward climates, with average rainfalls exceeding 250 inches per year on the crest of the Ko'olau Range. The leeward coast of the Ko'olau Range receives less than 20 inches per year.

While the effects of terrain on storm rainfall are not as great as on trade wind showers, large differences over small distances do occur, because of topography and location of the rain clouds. Differences vary with each storm. Frequently, the heaviest rains do not occur in areas with the greatest average rainfall. Relatively dry areas may receive, within a day or a few hours, totals exceeding half of their average annual rainfall (Price 1983). The leeward and other dry areas receive their rainfall mainly from a few winter storms. Therefore, their rainfall is usually seasonal and, their summers are dry. In the wetter regions, where rainfall comes from both winter storms and trade wind showers, seasonal differences are much smaller (Price 1983).

At the opposite extreme, drought is not unknown in Hawai'i, although it rarely affects an entire island at one time. Drought may occur when there are either no winter storms or no trade winds (Price 1983). If there are no winter storms, the normally dry leeward areas are hardest hit. A dry winter, followed by a normally dry summer and another dry winter, can have serious effects. The absence of trade winds affects mostly the windward and upland regions, which receive a smaller proportion of their rain from winter storms (Price 1983).

The waters surrounding Hawai'i are affected by seasonal variations in climate and ocean circulation. The surface temperature of the oceans around Hawai'i follow a north-south gradient and range from 75°F in the MHI to 68°F to 72°F in the NWHI in winter and spring to 79°F to 81°F throughout all the islands in the late summer and fall (DLNR 2015). The depth of the thermocline, where water temperature reaches 50°F, is 1,500 feet northwest of the islands and 1,000 feet off the island of O'ahu. Surface currents generally move east to west and increase in strength moving southward (DLNR 2015). The seas are rougher between islands than in the open ocean, because wind and water are funneled through the channels. Waves generated by north Pacific low-pressure systems are larger in the winter months than in the spring and are generally bigger on the northern shores of the islands than the southern shores. Marine organisms have adapted to these general climatological and oceanographic conditions (DLNR 2015).

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

Climate and oceanographic indicators highlight long-term trends and recent anomalous conditions in Hawai'i's natural environment. The El Niño Southern Oscillation (ENSO), an irregular, large-scale climate phenomenon that drives changes in regional oceanic and atmospheric conditions, has shifted over the last four decades towards increased frequency and severity in El Niño conditions, with the recent 2015 El Niño as one of the strongest on record (Gove et al. 2016). Rainfall, which can influence salinity, temperature, sediment load, and nutrient concentrations in the marine environment, has been at or below the long-term average over the past 15 years while the intensity of short-term events has increased over the same time period. Long-term sea level, an important indicator for coastal erosion and flooding, is rising by an estimated 0.15 inch per year and is expected to reach 1.6 feet higher than present day levels by 2100. Sea surface temperature, an indicator of regional and climatic forcing that is highly influential to a myriad of ecological processes, was anomalously warm in recent years and reached a record level of thermal stress in September 2015, resulting in widespread and severe coral reef bleaching in West Hawai'i (Gove et al. 2016).

4.3.2 Physical Aspects of the Commercial Aquarium Fishery

O'ahu's commercial aquarium fish collectors typically leave from one of four ports of entry: Hawai'i Kai, Sand Island, Waianae, or Haleiwa. Most collectors go out with partners and have boats that range in size between 17 to 26 feet. These boats are equipped with dive gear, scuba tanks, collecting buckets, nets, and containers to hold the fish. Before leaving the harbor, the collector is given instructions by their supplier on which fish to target for that particular day.

Most collectors leave in the morning and travel to their collecting sites, which range from 1-5 miles away. Although divers average 3-4 scuba bottles/day, typically, most collection sites are rotated every dive. Average dives are conducted in the 30–50-foot range, although some rarer fish are collected in the 150 foot range. A typical collector has between 150-250 dive sites on the island from which to choose, depending on surf, wind, and currents.

Collection is done primarily with the use of two hand nets, a fence net, and a collecting bucket, from which the targeted fish are placed upon capture. Most collectors chase the fish into the fence net, where they are corralled long enough so that the collector can use their hand nets to capture the fish. Fence nets range in length between 12-30 feet and are 4-6 feet tall. At the end of the dive, the fish in the collection bucket are brought back to the boat and placed between 20-25 feet on a decompression line hung from the boat. At this level, most fish can be safely decompressed within 30-40 minutes. If a fish cannot be decompressed correctly, they are released. Most experienced collectors can collect 10-40 fish per dive.

Once the dives are completed, the collector returns to the harbor and takes their catch to the wholesaler's facility.

In lieu of collection with fine mesh nets, other gear types are legal to use when collecting aquarium fish with a CML. These methods can include using larger sized nets, fishing pole and hook-and-line fishing, slurp guns which suction individual fish directly into the diver's catch bag, and night fishing.

Fine mesh nets and hand nets are the preferred method, as these are the safest, most efficient methods. The use of larger nets, slurp guns, or hook and line are only used in areas where small mesh nets are not

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

allowed. If fishing at night, only hand nets are used (rather than barrier nets) since the fish are in a sleeping state. The Preferred Alternative only allows the use of fine mesh nets, and these other methods would not be permitted. Any other alternative allowing the use of fine mesh nets would likely involve only minimal use of other methods; whereas the CML-only Alternative would require the use of these alternative methods (which are not preferred by the fishers).

4.4 BIOLOGICAL RESOURCES

Because of Hawai'i's geographical isolation, many of its coastal and marine species are endemic (i.e., native or restricted to a certain country or area). Approximately 15 to 25% of Hawai'i's marine species are endemic to the Hawaiian Archipelago (including Johnston Atoll), one of the largest proportions of marine endemism for any island chain in the world (DLNR 2015). Of the 612 known nearshore fish species in Hawai'i, 25% are endemic to the Hawaiian Archipelago (including Johnston Atoll) (Randall 2007). Yet because of the isolation, Hawai'i has relatively low marine species richness (i.e., diversity), with approximately 580 shallow reef fish species in contrast to areas of the Pacific further west with thousands of species. In total though, Hawai'i still has over 6,000 marine species (DLNR 2015).

Toonen et al. (2011) conclude that the Hawaiian Archipelago is not a single, well-mixed marine community, but rather there are at least four significant multi-species barriers to dispersal along the length of the island chain, and that species that appear capable of extensive dispersal, such as Yellow Tang and Kole, show significant population differentiation within the Hawaiian Archipelago. In addition, there are significant consensus genetic breaks that restrict gene flow between islands, including a barrier between the island of Hawai'i and the rest of the Main Hawaiian Islands (MHI). Conversely, around the island of Hawai'i, there is connectivity between adjacent reefs (up to 184 km), with fish from protected FRAs being documented to seed unprotected areas, highlighting the effectiveness of protected areas (Christie et al. 2010). It is assumed that this would also be applicable to the smaller island of O'ahu.

4.4.1 Wildlife Species

Marine species in Hawai'i include over 1,200 species of fishes, with around 500 species adapted to live on coral reefs, and the rest adapted to the pelagic open surface waters, mesopelagic or bathypelagic zones (middle or deep waters), estuaries, or sandy bottoms (DLNR 2015). At the top of the food chain are the apex predators such as sharks and large predatory reef and pelagic fishes. Approximately 4,100 marine invertebrates are known from Hawai'i and include over 100 species of hard, soft, and precious corals as well as hundreds of types of snails, crabs, shrimps and small numbers of worms, jellyfish, sponges, starfish, and tunicates (DLNR 2015). Five marine turtles occur in Hawai'i: two are common residents that nest on Hawai'i's beaches and three are more occasional visitors. All sea turtles are listed as threatened or endangered under the federal Endangered Species Act (ESA) of 1973, as amended. Approximately 26 species of marine mammals, mostly cetaceans, are considered resident or occasional visitors to Hawai'i. These include the Humpback Whale or *koholā* (*Megaptera noveangliae*), False Killer Whale (*Pseudorca crassidens*), Spinner Dolphin (*Stenella longirostris*), and Bottlenose Dolphin (*Tursiops truncatus*). Humpback Whales and Hawaiian Monk Seals (*Monachus schauinslandi*) are common marine mammals in Hawai'i and are listed as endangered under the ESA (DLNR 2015). All marine mammals are protected by

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

the Marine Mammal Protection Act. Many of the resident whales and dolphins feed on fishes and squids that occur in the moderately deep waters off Hawai'i's coasts.

4.4.2 Hawai'i Species of Greatest Conservation Need

Species of Greatest Conservation Need (SGCN) are identified in Hawai'i's State Wildlife Action Plan (SWAP) but are not threatened, endangered, or otherwise legislatively protected species. However, recognizing the need to take action to protect endemic species, the DLNR identified Hawai'i's indigenous SGCN in Exhibit 1 of Hawai'i Administrative Rules Chapter 124. This list includes terrestrial mammals, marine mammals, and marine reptiles only. Additional native species were identified and added based on their presence on the following lists (DLNR 2018):

- The Federal list of threatened, endangered, candidate and concern species;
- Species protected by the U.S. Marine Mammal Protection Act;
- The State list of threatened and endangered species;
- The Checklist of the Birds of Hawai'i; and
- Species identified as present in Hawai'i by groups or organizations with significant experience or expertise (e.g., Audubon Watch List; national and regional Bird Plans, such as the U.S. Shorebird Conservation Plan, Waterbird Conservation for the Americas; Regional Seabird Conservation Plan).

For any terrestrial indigenous species not represented by any of the lists, their status as indigenous automatically included them as Hawai'i's SGCN. For aquatic fishes and invertebrates only, endemic species were added to the list (DLNR 2018). In addition, the DAR also included native species on the International Union for the Conservation of Nature and Natural Resources' (IUCN) Threatened Red List, and the Convention on International Trade in Endangered Species (CITES) list. The IUCN Red List is a comprehensive inventory of the global conservation status of biological species, which uses a set of criteria to evaluate the extinction risk of many species, whereas CITES is an international agreement between governments, and includes appendices which group species according to how threatened they are by international trade. A Statewide Aquatic Wildlife Conservation Strategy (SAWCS) Advisory Council was developed to advise on additional species that were at risk due to specific threats. The SAWCS Advisory Council is a panel with representatives from federal and state agencies, resource user groups, and non-profit organizations that helps the DAR develop its CWCS (DLNR 2018).

Additional species considered must meet one or more of the following biological criteria (DLNR 2018):

- Species with low or declining populations;
- Species indicative of the diversity and health of the state's wildlife;
- Species with small, localized "at-risk" populations;
- Keystone species;
- Indicator species;
- Species with limited dispersal;

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

- Disjunct species;
- Vulnerable species;
- Species of conservation concern;
- “Responsibility” species, (i.e., species that have their center of range within a state); and,
- Species with fragmented or isolated populations.

Currently nearly 25% of fish, 20% of mollusks, 18% of algae, and 20% of the corals are considered endemic to Hawai‘i and listed as SGCN species (Randall 2007, DLNR 2015).

Three of the SGCN fish species that have been reported as being collected by commercial aquarium collectors on O‘ahu between 2000 and 2017 are analyzed in this EIS:

1. Psychedelic Wrasse [see Section 4.4.4.16]
2. Fisher’s Angelfish [see Section 4.4.4.20]
3. Bandit Angelfish [see Section 4.4.5.2]

Additional SGCN fish species that have been reported as being collected by commercial aquarium collectors on O‘ahu between 2000 and 2017 include the Spotted Cardinalfish (*Apogon maculiferus*), Hawaiian Orbicular Velvetfish (*Caracanthus typicus*), Hawaiian Flame Angelfish (*Centropyge loricula*), Bluestriped Butterflyfish (*Chaetodon fremblii*), Tinker’s Butterflyfish (*Chaetodon tinkeri*), Hawaiian Morwong (*Cheilodactylus vittatus*), Chocolate-dip Chromis (*Chromis hanui*), Oval Chromis (*Chromis ovalis*), Yellowstripe Coris (*Coris flavovittata*), Elegant Coris (*Coris venusta*), Hawaiian Knifefish (*Cymolutes lecluse*), Redstripe Pipefish (*Doryrhamphus baldwini*), Marbled Blenny (*Entomacrodus marmoratus*), Masked Angelfish (*Genicanthus personatus*), Steindachner’s Moray (*Gymnothorax steindachneri*), Blackside Razorfish (*Iniistius umbrilatus*), Hawaiian Flagtail (*Kuhlia xenura*), Sunset Bass (*Liopropoma aurora*), Whitesaddle Goatfish (*Parupeneus porphyreus*), Hawaiian Rock Damselfish (*Plectroglyphidodon sindonis*), Hawaiian Anthias (*Pseudanthias thompsoni*), Hawaiian Turkeyfish (*Pterois sphex*), and Titan Scorpionfish (*Scorpaenopsis cacopsis*). Additional SGCN fish may have been collected and reported under broader category names such as frogfish, parrotfishes, pipefishes, gobies, moray eels, seahorses, blennies, snake eels and worm eels, boxfish, bigeyes, scorpionfishes, lizardfishes, pufferfishes or butterflyfish, among others, but specific species identification cannot be made.

The SWAP (2015) addresses these species and identifies the following actions to ensure the species conservation and sustainability:

1. Conservation Actions: The goals of conservation actions are to not only protect current populations, but to also establish further populations to reduce the risk of extinction. Commercial licenses are required for aquarium collectors. In addition to common statewide and island conservation actions, specific actions include:
 - Restoration of habitat; and,
 - Maintaining healthy populations with appropriate fishing regulations and education.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

2. Monitoring:

- Continue to survey for populations and distribution in known and likely habitats.

3. Research Priorities:

- Improve understanding of factors affecting the species population size and distribution; and,
- Support aquaculture research to develop captive breeding for species used in the aquarium trade.

4.4.3 Aquarium Fish

This FEIS evaluates the impacts of the alternatives on 35 species of aquarium fish, including the 20 top collected species from 2000-2017 (Section 4.4.4), 13 additional species on the proposed White List (Section 4.4.5), and 2 other regulated species (Section 4.4.6) (Table 4-4).

Table 4-4. Summary of species analyzed in the FEIS. Species on the proposed White List are indicated with an asterisk (*).

Common Name(s)	Scientific Name	Hawaiian Name(s)	Hawaiian Status ¹	Diet ²
Yellow Tang*	<i>Zebrasoma flavescens</i>	<i>lāʻī pala, lauʻī pala</i>	Indigenous	Herbivore (filamentous algae)
Kole (Goldring Surgeonfish, Yelloweye, Goldring)*	<i>Ctenochaetus strigosus</i>	<i>kole, kole makaonaona</i>	Endemic	Herbivore (detritus)
Potter's Angelfish*	<i>Centropyge potteri</i>	unknown	Endemic	Herbivore (algae and detritus)
Orangespine Unicornfish (Clown Tang)*	<i>Naso lituratus</i>	<i>umaumalei, kala umaumalei</i>	Indigenous	Herbivore (leafy brown algae)
Ornate Wrasse (Pinkface)*	<i>Halichoeres ornatus</i>	<i>lāʻō</i>	Endemic	Carnivore (small benthic crustaceans and mollusks)
Flame Wrasse*	<i>Cirrhilabrus jordani</i>	species of <i>hīnālea</i>	Endemic	Herbivore (zooplankton)
Fourlined Wrasse*	<i>Pseudocheilinus tetrataenia</i>	species of <i>hīnālea</i>	Indigenous	Carnivore (demersal eggs, copepods, amphipods, alpheid shrimp, crab megalops, larval shrimp and gastropod)
Hawaiian Whitespotted Toby (Puffer)*	<i>Canthigaster jactator</i>	unknown	Endemic	Carnivore (sponges, algae, detritus, tunicates, polychaetes, bryozoans, sea urchins, brittle stars, crabs, peanut worms, shrimps, zoanths, fishes, amphipods and foraminiferans)

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

Common Name(s)	Scientific Name	Hawaiian Name(s)	Hawaiian Status ¹	Diet ²
Forcepsfish*	<i>Forcipiger flavissimus</i>	<i>lauwiliwili nukunuku 'oi'oi</i>	Indigenous	Carnivore (wide variety, preferably tube feet of echinoderms, pedicellaria of sea urchins, and polychaete tentacles)
Milletseed (Lemon) Butterflyfish*	<i>Chaetodon miliaris</i>	<i>kīkākāpu</i>	Endemic	Omnivorous (plankton and benthic invertebrates)
Shortnose (Geoffroy's) Wrasse*	<i>Macropharyngodon geoffroy</i>	species of <i>hīnālea</i>	Endemic	Carnivore (prosobranch gastropods and foraminiferans)
Bicolor Anthias*	<i>Pseudanthias bicolor</i>	unknown	Indigenous	Omnivore
Orangeband (Shoulder) Surgeonfish*	<i>Acanthurus olivaceus</i>	<i>na'ena'e</i>	Indigenous	Herbivore (detritus, diatoms, and fine filamentous algae)
Moorish Idol*	<i>Zanclus cornutus</i>	<i>kihikihi</i>	Indigenous	Carnivore (small encrusting animals)
Multiband (Pebbled) Butterflyfish	<i>Chaetodon multicinctus</i>	species of <i>kīkākāpu</i>	Endemic	Carnivore (coral polyps, polychaete worms and small shrimps)
Psychedelic Wrasse	<i>Anampses chrysocephalus</i>	species of <i>hīnālea</i>	Endemic	Carnivore
Eightline Wrasse*	<i>Pseudocheilinus octotaenia</i>	species of <i>hīnālea</i>	Indigenous	Carnivore (benthic crustaceans, small mollusks, sea urchins, fish eggs, and crab larvae)
Crowned Puffer (= Saddleback Puffer)*	<i>Canthigaster coronata</i>	<i>pu'u 'ōla'i</i>	Endemic	Carnivore (benthic organisms: gastropods, sponges, algae, bivalves, polychaetes, tunicates, crabs, sea urchins, heart urchins, brittle stars, bryozoans, peanut worms, various small crustaceans, and foraminiferans)
Saddle Wrasse*	<i>Thalassoma duperrey</i>	<i>hīnālea lauwili</i>	Endemic	Carnivore (benthic animals, sometimes act as cleaners)
Fisher's Angelfish*	<i>Centropyge fisheri</i>	unknown	Indigenous	Herbivore
Bandit Angelfish*	<i>Apolemichthys arcuatus</i>	unknown	Endemic	Omnivore (mainly sponges and sometimes algae, hydroids, and eggs)
Brown Surgeonfish (Lavender, Forktail Tang)*	<i>Acanthurus nigrofuscus</i>	<i>mā'i'i'i, mā'i'i</i>	Indigenous	Herbivore (filamentous algae)
Crosshatch (Redtail) Trigger*	<i>Xanthichthys mento</i>	species of <i>humuhumu</i>	Indigenous	Herbivore (zooplanktons)
Dragon Wrasse (Rockmover)*	<i>Novaculichthys taeniourus</i>	unknown	Indigenous	Carnivore (mollusks, sea urchins, brittle stars, polychaetes, and crabs)
Gilded Triggerfish (Blue-throat Triggerfish)*	<i>Xanthichthys auromarginatus</i>	species of <i>humuhumu</i>	Indigenous	Herbivore (zooplankton, particularly copepods)
Golden Dwarf Moray (Dwarf Moray)*	<i>Gymnothorax melatremus</i>	species of <i>puhi</i>	Indigenous	Carnivore

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

Common Name(s)	Scientific Name	Hawaiian Name(s)	Hawaiian Status ¹	Diet ²
Heniochus Butterfly (Pennantfish)*	<i>Heniochus diphreutes</i>	unknown	Indigenous	Herbivore (plankton, sometimes act as cleaners)
Raccoon Butterfly*	<i>Chaetodon lunula</i>	species of <i>kīkākapu</i>	Indigenous	Omnivore (nudibranchs, tubeworm tentacles, and other benthic invertebrates, also algae and coral polyps)
Spotted Boxfish (Boxfish)*	<i>Ostracion meleagris</i>	<i>pahu, moa</i>	Indigenous	Omnivore (didemnid tunicates, polychaetes, sponges, mollusks, copepods, and algae)
Threadfin Butterfly*	<i>Chaetodon auriga</i>	species of <i>kīkākapu</i>	Indigenous	Omnivore (polychaetes, sea anemones, coral polyps, and algae)
Whitemouth Moray*	<i>Gymnothorax meleagris</i>	species of <i>puhi</i>	Indigenous	Carnivore (mainly fishes but also crustaceans)
Yellowtail Coris (Clown Wrasse)*	<i>Coris gaimard</i>	<i>hīnālea 'akilolo</i>	Indigenous	Carnivore (mollusks, crabs, and hermit crabs, and occasionally tunicates and forams)
Zebra Moray*	<i>Gymnothorax zebra</i>	species of <i>puhi</i>	Indigenous	Carnivore (primarily xanthid crabs, but also other crustaceans, mollusks and sea urchins)
Achilles Tang	<i>Acanthurus achilles</i>	<i>pākukui, pākuikui, pāku'iku'i</i>	Indigenous	Herbivore (filamentous and small fleshy algae)
Hawaiian Cleaner Wrasse	<i>Labroides phthirophagus</i>	species of <i>hīnālea</i>	Endemic	Carnivore (obligate cleaner, picks parasitic crustaceans from other fishes)

¹Indigenous species are species that are native to Hawaii (but may also be found elsewhere). Endemic species are found only within the Hawaiian Islands (including Johnston Atoll). Invasive species were introduced due to humans.

²<http://fishbase.us/> and Hoover (2008)

4.4.3.1 Coral Reef Ecosystems Program (CREP; now known as the NOAA's Pacific Islands Fisheries Science Center Ecosystem Sciences Division) Surveys

The NOAA has been involved in a large-scale monitoring program that surveys coral reef fish assemblages and habitats, encompassing the bulk of the US-affiliated tropical Pacific. This effort, now known as the NOAA Pacific Islands Fisheries Science Center (PIFSC) Ecosystem Sciences Division (ESD) (formerly known as the Coral Reef Ecosystem Program (CREP)), has included over 5,500 surveys around 39 islands, including the island of O'ahu. The dataset was developed as a resource that could be used to understand how human, environmental, and oceanographic conditions influence coral reef fish community structure, providing a basis for research to support effective management outcomes (PIFSC-ESD 2020).

In 2010, the Pacific Reef Assessment and Monitoring Program (RAMP) developed and implemented a standardized survey methodology focusing on reef fish and paired benthic habitat-monitoring using monitoring methods specified in the National Coral Reef Monitoring Plan (NCRMP). The aim of the current

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

systematic sampling design is to maximize survey site replication, while the overarching goal was to generate data representative of coral reef hard-bottom substrate at the islands-scale (Heenan et al. 2017).

Surveys were conducted on the island of O’ahu in 2010, 2012, 2013, 2015, 2016, and 2019. Surveys were conducted at 228 stationary point count locations with a randomized depth-stratified design, at depths from approximately 0-98 feet (0-30 meters; Figure 4). At each point count location divers conducted fish counts, estimated benthic cover, and habitat structural complexity. Typically, 3–5 days were spent at each island during each visit (generally once every 3 years), conducting 30–50 fish surveys during that time. Detailed explanations of the study sites and survey methods are found in Heenan et al. (2017). To establish survey points, a 30 meter transect is measured out along the substrate. For each point count, a pair of divers conducts simultaneous counts in adjacent, 49.2-foot (15-meter) cylindrical plots along the transect (i.e., diver 1 surveys from the 7.5-meter mark along the transect and diver 2 surveys from the 22.5 meter mark) extending from the substrate to the limits of vertical visibility (Heenan et al. 2017).

Each fish count consists of two parts, a 5-minute species enumeration in which divers generates a list of taxa observed within their cylinder to species when possible; and, a tally portion in which divers systematically work through their species list recording the number and estimated size of fish present within the cylinder. Tallying is done by conducting a series of rapid visual sweeps of the plot with one species-group (e.g., mid-water, surgeonfish, benthic butterflyfish) counted per sweep. At the end of the sweeps, divers carefully search for small, site-attached, and semi-cryptic species. Surveys were not conducted if horizontal visibility was <25 feet (Heenan et al. 2017).

To facilitate analysis in this FEIS, PIFSC-ESD provided the updated estimated population size for 2019 for each fish species for the island of O’ahu with the exception of Bandit Angelfish, Flame Wrasse, and Crosshatch Trigger for which no population estimate was available. PIFSC-ESD calculated the population estimates using its data by converting survey counts to abundance per unit area, and then multiplying by the estimated area of hard-bottom habitat in <30 meters of water (16,840 Ha).

Due to the large spatial coverage and range of depths surveyed by the PIFSC-ESD, PIFSC-ESD data were considered to be the best estimator of island-wide fish population size, and therefore serve as the primary basis for the impact analysis found in Section 5. Estimated population size for each of the 35 fish species analyzed in this FEIS is included in the brief overview of each species in the following sections.

Although PIFSC-ESD data are the most comprehensive data publicly available for the island of O’ahu, certain limitations of the surveys may lead to an underestimate of some populations of aquarium fish. Specifically, surveys are concentrated into a short period of survey effort (about one month each year) located in different locations from one year to the next, allowing for a larger coverage of the entire island, but over five years during a seven-year period. Also, population estimates may be an underestimate for certain species as surveys were only conducted at depths <30 meters (approximately 98 feet) in areas of hardbottom habitat. No data were collected from soft-bottom habitat, as these tend to not be important habitats for most aquarium species, but certain species may utilize these areas, and therefore are not represented in the population estimate. No data were collected from depths greater than 30 meters (approximately 98 feet), but certain species may utilize these areas as well, and are therefore not represented in the population estimate. In addition, divers are trained in the identification of aquarium fish; however, certain species may be cryptic, skittish, or difficult to identify in the field, which may lead to

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

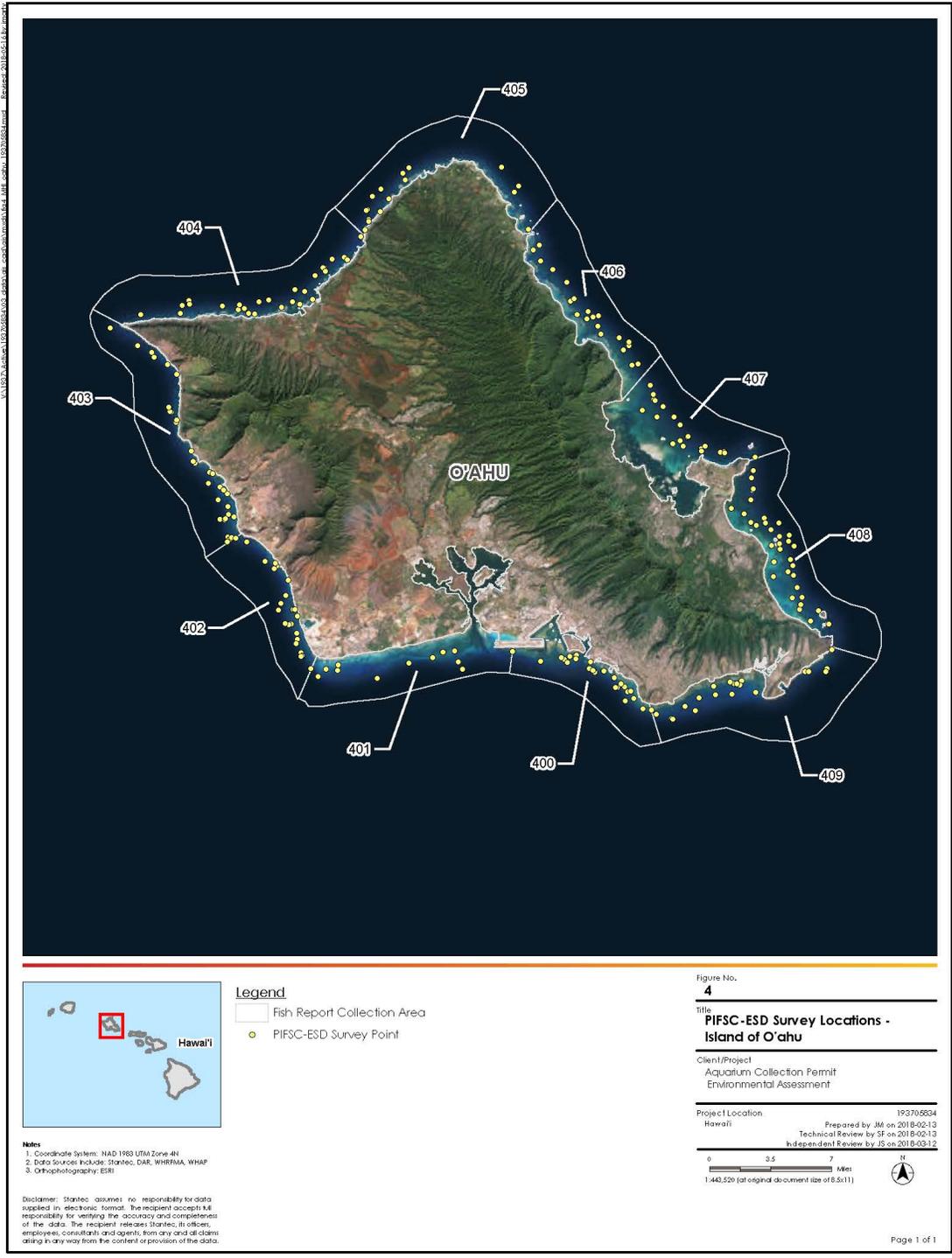


Figure 4. PIFSC-ESD survey locations - Island of O'ahu.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

underestimates of the population of those species. All data collection methods have a range of variation, or uncertainty. For the PIFSC-ESD data, this results in a high and low range for population estimates, which are included in the tables in Section 5.4 for reference. For the purposes of this FEIS, we used the mean of those ranges to assess impacts.

Additionally, there is uncertainty about the percent of the population that would be collected due to uncertainty in the population estimate. A recent study (Heenan et al. 2017) found that PIFSC-ESD data may underestimate some population estimates due to species' behavior; specifically, the SCUBA gear used by PIFSC-ESD surveyors leads to significantly lower counts of target fish species by divers when compared to divers using closed-circuit re-breathers (CCR), which do not emit noisy and conspicuous bubbles. Therefore, it is conceivable that many of the impacts calculated in this FEIS are overestimates, as the populations of reef fish may be higher than PIFSC-ESD surveys report. Lindfield et al. (2014) found that, within areas open to fishing (e.g., not MPAs), bubble-free survey methods may record up to 260% higher fish abundance. Nonetheless, the PIFSC-ESD population estimates are the best available science and are the population estimates used for the analysis of impacts in this FEIS.

4.4.4 Top 20 Collected Aquarium Fish Species

Since 2000, approximately 238 fish species have been collected under Aquarium Permits in O'ahu waters (204 species when analyzing just the 20 fishers); however, some of these included those species reported as a general group (e.g., squirrelfishes, soldierfishes, damselfishes) (DAR 2018a). Only 161 species were reported by enough permits (>2 permits reporting from each collection area (Figure 1) during each year of collection) to determine total number of individuals collected (Table 4-5). Collection areas with less than three permits reporting fall under the DAR confidentiality statute, in which totals are not released publicly (Section 5.1).

A total of 1,295,700 individual fish have been collected from O'ahu under Aquarium Permits since 2000, with 694,831 individuals collected by the 20 fishers who would be issued permits (53.6%; DAR 2018a, 2019). The total number of aquarium fish collected from O'ahu since 2000 has ranged from 35,811 in 2003 to 100,662 in 2012, averaging 71,983 annually for the period (Table 4-5; DAR 2018a).

The top 20 fish species collected from O'ahu from 2000-2017 made up 80.0% (1,035,272 fish) of the total number of fish collected, and 81.8% of the total fish number of fish collected by the 20 fishers (Table 4-6; DAR 2018a). The top three collected species (Yellow Tang [273,356], Kole [175,425], and Potter's Angelfish [138,669]) from O'ahu make up 45.3% of the overall fish collection total and 46.1% of the fish collected by the 20 fishers. No other individual species had more than 60,000 individuals collected during that time. Approximately 75% of the top 20 collected species on O'ahu from 2000-2017 were collected in numbers below 30,000 individuals (DAR 2018a). Two of these are SGCN species, the Psychedelic Wrasse and Fisher's Angelfish, which collectively made up 2.4% (30,036 individuals) of the total fish catch since 2000.

The following sections provide a brief overview of the ecology of the top 20 collected fish species on O'ahu since 2000.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

Table 4-5. Total number of fish collected under Aquarium Permits from 2000-2017 on the island of O’ahu (DAR 2018a).

Fiscal Year¹	Number of Permits Reporting	Number Individuals Kept (all fishers)	Number Individuals Kept (20 fishers)	Percent Contribution of 20 fishers
2000	47	66,896	28,848	43.1%
2001	39	43,687	22,709	52.0%
2002	28	37,470	21,319	56.9%
2003	30	35,811	24,205	67.6%
2004	39	73,911	32,746	44.3%
2005	39	70,073	42,344	60.4%
2006	46	99,143	36,099	36.4%
2007	50	81,959	33,072	40.4%
2008	52	76,304	37,446	49.1%
2009	46	75,902	46,074	60.7%
2010	45	81,464	45,006	55.2%
2011	39	81,173	49,676	61.2%
2012	41	100,662	46,495	46.2%
2013	32	65,751	42,754	65.0%
2014	32	77,016	53,905	70.0%
2015	42	91,196	53,920	59.1%
2016	39	71,223	37,278	52.3%
2017	41	66,059	40,935	62.0%
2018²	NA	46,174	31,759	68.8%
Average (2000-2017)	40	71,983	38,602	53.6%
Total (2000-2017)	1,524	1,295,700	694,831	53.6%

¹Fiscal year runs from July 1 through June 30

² Data from 2018 were provided for the calendar year for all fishers, and for the fiscal year for the 20 fishers. However, both datasets contain 12 calendar months, and are considered comparable for analysis.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

Table 4-6. Top 20 fish species collected under Aquarium Permits on the island of O’ahu from 2000-2017 (DAR 2018a).

Common Name	Scientific Name	All fishers			20 fishers		
		Number Collected	Percentage of Total Collected ¹	Average # Collected per Year	Number Collected	Percentage of Total Collected	Average # Collected per Year (20 fishers)
Yellow Tang ²	<i>Zebrasoma flavescens</i>	273,356	21.1%	15,186	114,420	16.5%	6,357
Kole (= Goldring Surgeonfish, Yelloweye) ²	<i>Ctenochaetus strigosus</i>	175,425	13.5%	9,746	120,792	17.4%	6,711
Potter’s Angelfish ²	<i>Centropyge potteri</i>	138,669	10.7%	7,704	84,718	12.2%	4,707
Orangespine Unicornfish (= Clown Tang) ²	<i>Naso lituratus</i>	59,133	4.6%	3,285	28,934	4.2%	1,607
Ornate Wrasse (= Pinkface)	<i>Halichoeres ornatissimus</i>	46,113	3.6%	2,562	27,978	4.0%	1,555
Flame Wrasse	<i>Cirrhilabrus jordani</i>	28,894	2.2%	1,605	19,510	2.8%	1,084
Fourline Wrasse	<i>Pseudocheilinus</i>	28,882	2.2%	1,604	22,824	3.3%	1,268
Hawaiian Whitespotted Toby (= Puffer)	<i>Canthigaster jactator</i>	28,619	2.2%	1,590	14,261	2.1%	792
Forcepsfish	<i>Forcipiger flavissimus</i>	28,502	2.2%	1,583	17,162	2.5%	953
Milletseed Butterflyfish (= Lemon)	<i>Chaetodon miliaris</i>	25,293	2.0%	1,405	13,014	1.9%	723
Shortnose Wrasse (= Geoffroy’s)	<i>Macropharyngodon geoffroy</i>	24,381	1.9%	1,355	15,711	2.3%	873
Bicolor Anthias	<i>Pseudanthias bicolor</i>	24,188	1.9%	1,343	18,771	2.7%	1,043
Orangeband Surgeonfish (= Orange shoulder)	<i>Acanthurus olivaceus</i>	24,175	1.9%	1,343	11,853	1.7%	659
Moorish Idol ²	<i>Zanclus cornutus</i>	23,449	1.8%	1,303	9,069	1.3%	504

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

Common Name	Scientific Name	All fishers			20 fishers		
		Number Collected	Percentage of Total Collected ¹	Average # Collected per Year	Number Collected	Percentage of Total Collected	Average # Collected per Year (20 fishers)
Multiband Butterflyfish (= Pebbled)	<i>Chaetodon multincinctus</i>	18,118	1.4%	1,006	8,568	1.2%	476
Psychedelic Wrasse (= Redtail) ³	<i>Anampses chrysocephalus</i>	16,426	1.3%	913	8,796	1.3%	489
Eightline Wrasse	<i>Pseudocheilinus octotaenia</i>	16,053	1.2%	892	11,002	1.6%	611
Crowned Puffer (= Saddleback Puffer)	<i>Canthigaster coronata</i>	14,558	1.1%	809	7,331	1.1%	407
Saddle Wrasse	<i>Thalassoma duperrey</i>	14,470	1.1%	804	6,038	0.9%	335
Fisher's Angelfish ³	<i>Centropyge fisheri</i>	13,610	1.1%	756	7,506	1.1%	417
Total		1,035,272	80.0%	2,615	568,831	81.8%	31,570

¹Percentage calculated based on total individuals reported collected on O'ahu and do not include any non-disclosure data.

²Regulated species (e.g., bag and/or size limits) on the island of O'ahu.

³Hawai'i SGCN.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

4.4.4.1 Yellow Tang (*Zebrasoma flavescens*)

Ecology

The Yellow Tang is one of the most popular aquarium species, growing to 8 inches, oval in shape and laterally compressed, with a small mouth and eyes set high on the head. Adults are bright yellow and have modified scales along the base of the tail which can be exposed when the fish flexes its tail. These modified scales or spines are used for defense from predators and competition for feeding areas. At night, the yellow color darkens, and a white band appears along the lateral line (University of Hawai'i 2016).

The Yellow Tang is the only solid yellow fish common throughout Hawai'i. This species is found in subtropical waters and is rare on the western extremes of its range. Flexible comb-like teeth are used to pick algae and seaweed that grow along the reefs. Young Yellow Tang are associated with finger coral (*Porites compressa*) which is abundant in the coastal waters of the island of Hawai'i, but less so on O'ahu (Dr. Bruce Carlson, pers. comm.). They spend a large amount of time feeding and aggressively protect prime feeding territories (University of Hawai'i 2016). Yellow Tang are found from shallow surge zones to a depth of 130 feet. They occur in the Pacific Ocean: Ryukyu, Mariana, Marshall, Marcus, Wake, and Hawaiian Islands. (Froese and Pauly 2020).

Yellow Tang are broadcast spawners. Many broadcast spawners migrate to the edge of the reef drop off to spawn at dusk or dawn (Thresher 1984). Males and females simultaneously release eggs and sperm into the water column where the eggs are fertilized before floating to the surface until they hatch 20-30 hours later (Thresher 1984).

PIFSC-ESD (2020) data indicate that the 2019 island of O'ahu population of Yellow Tang at the 0–98-foot depth in hardbottom habitats was approximately 728,777 individuals. The species is listed as 'Least Concern' by the IUCN (McIlwain et al. 2012a).

Cultural Significance

The Yellow Tang, called *lā'ī pala* or *lau'ī pala* in Hawai'i, although small was considered a delicacy and also involved in healing rituals.

4.4.4.2 Kole (Goldring Surgeonfish, Yelloweye) (*Ctenochaetus strigosus*)

Ecology

The Kole is endemic to the Hawaiian Islands (Randall and Clements 2001) and Johnston Atoll (Lobel 2003). It is brown with light blue to yellow horizontal stripes over its body which change into spots towards the face. It also has a yellow ring surrounding the eye.

Individuals are usually solitary and mainly found in shallow water, although it has been recorded at depths of 370 feet. This species is herbivorous, grazing on diatoms and algae from the sand or reef (Randall and Clements 2001), and has also been commonly observed to clean algal growths from the shells of sea turtles (Work and Aeby 2014).

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

Kole are broadcast spawners. Many broadcast spawners migrate to the edge of the reef drop off to spawn at dusk or dawn (Thresher 1984). Males and females simultaneously release eggs and sperm into the water column where the eggs are fertilized before floating to the surface until they hatch 20-30 hours later (Thresher 1984).

PIFSC-ESD (2020) data indicate that the 2019 island of Oa’hu population of Kole at the 0–98-foot depth was approximately 1,690,372 individuals. Kole are listed as ‘Least Concern’ by the IUCN, and 80% of the species range is within the Papahānaumokuākea Marine National Monument, where fishing is prohibited (McIlweine et al. 2012b).

Cultural Significance

Kole, meaning “raw” or “red” (Pakui and Elbert 1986), are also known as *ukole* or *pākole*. The *kole makaonaona* (specifically, *Ctenochaetus strigosus*), is the more popular eating variety of *Kole*. Pukui (1983) explains that the English word “story” was Hawaiianized to “*kole*,” and that this proverbial saying uses *kole* as a metaphor for describing the excitement of getting together to share stories.

Although the *kole* is known as being tough-skinned, it is considered a favorite fish to eat raw. *Kole* was also important for traditional practices and customs relating to the home, as it was believed to *hole*, or strip, the house of unwanted spiritual energy (Titcomb 1972).

4.4.4.3 Potter's Angelfish (*Centropyge potteri*)

Ecology

The bright orange and blue Potter’s Angelfish is an endemic species found along Hawaiian reefs and Johnston Atoll (Lobel 2003). Like other angelfishes, this species is recognized by a heavy, curved spine on its “cheek” near the edge of the gill cover. However, because it generally only reaches approximately 5 inches, it is considered a ‘pygmy’ angelfish. Its slender, disc-shaped body is well-suited to life on a coral reef.

Individuals limit their movements to a well-defined area close to the shelter of finger coral branches, usually at depths of at least 15 feet. Active by day, it feeds on algae and detritus on dead coral surfaces. At night, it remains alert but inactive, protected within the coral. Angelfishes are very dependent upon the protection of coral caves and crevices and are rarely seen over sandy stretches or other areas that offer little cover. They are often territorial and spend most of their time near the bottom in search of food. They have small mouths and many flexible, comb-like teeth used for plucking or scraping food from the rocks (University of Hawai’i 2016).

Potter’s Angelfish are broadcast spawners, with males and females simultaneously releasing eggs and sperm into the water column where the eggs are fertilized before floating to the surface until they hatch 20-30 hours later (Thresher 1984).

PIFSC-ESD (2020) data indicate that the 2019 island of O’ahu population of Potter’s Angelfish at the 0–98-foot depth was approximately 512,697 individuals. The IUCN lists the Potter’s Angelfish as ‘Least Concern’, and states that this species is usually very common with stable populations (Pyle and Myers 2010a).

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

Cultural Significance

The Potter's Angelfish is named after Frederick A. Potter, who was the first Director of the Honolulu Aquarium. The species is endemic, but a review of cultural-historical literature (see Appendix A) did not reveal any specific Hawaiian names, or any specific cultural information related to this species.

4.4.4.4 Orangespine Unicornfish (Clown Tang) (*Naso lituratus*)

Ecology

The Orangespine Unicornfish has a black dorsal fin, with the black continuing onto the back as a pointed projection, with a pale blue line at base. The anal fin is mainly orange while the caudal fin is yellow. The caudal peduncle bears two forward-directed spines (Randall and Clements 2001). Orangespine Unicornfish are found at depths of 16 to 100 feet along coral, rock, and rubble of seaward reefs. They feed mostly on leafy brown algae and sometimes in groups (Randall and Clements 2001). Distinct pairs are formed during breeding.

The species is found throughout the Indo-Pacific from the Red Sea (except the Gulf of Oman and Persian Gulf) south to Natal and east to Hawai'i and French Polynesia. In the western Pacific from Suruga Bay to the southern Great Barrier Reef (Randall and Clements 2001).

Orangespine Unicornfish are broadcast spawners. Many broadcast spawners migrate to the edge of the reef drop off to spawn at dusk or dawn (Thresher 1984). Males and females simultaneously release eggs and sperm into the water column where the eggs are fertilized before floating to the surface until they hatch 20-30 hours later (Thresher 1984).

PIFSC-ESD (2020) data indicate that the 2019 island of O'ahu population of Orangespine Unicornfish at the 0–98-foot depth was approximately 837,112 individuals. This species is listed as 'Least Concern' by the IUCN (McIlwain et al. 2012c).

Cultural Significance

The Orangespine Unicornfish is also known as the *umaumalei*. This species has been paired with its land counterpart the 'ūlei (Hawaiian Rose; *Osteomeles anthyllidifolia*) (Beckwith 1951, Liliuokalani 1978). While the *umaumalei* is a specific species within the family Acanthuridae, some traditional accounts classify it under the name *kala* or *kala umaumalei* (Ka Nupepa Kuokoa 1867; Titcomb 1972).

Kala in all of its forms was a popular Hawaiian delicacy, containing white meat and usually eaten broiled over coals and rarely eaten raw. The soft parts of the fish are described as good *palu* (fish bait). *Kala* is very abundant and easy to catch which is why it is eaten often (Titcomb 1972). The skin of the *kala* was also used to cover the *pūniu*, a small drum that was lashed onto the thigh of a *hula* dancer.

During the spawning seasons, certain fish were prohibited from being caught and consumed, which included *kala* (Titcomb 1972). They were traditionally caught in the 'ie *kala* (lit. *kala* basket), which has been described as the largest type of *hīna'i* (basket fish trap) (Manu et al. 2006). Additional methods for catching *kala* included the use of a *holoholo*, a net tied to a 12-foot-long piece of *alahe'e* (*Canthium odoratum*) wood.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

The net was lowered down in an area with swift-ebbing tides with one person holding the net and the other corralling fish into it (Manu et al. 2006). *Hina'i pai kala*, was a method of using a plaited basket as a net. The basket was filled with *limu kala* (seaweed), *kalo* (taro) and pumpkin and then let down for the fish to feed. This process was continued until the fish became plump and accustomed to feeding in the basket, then a "catching net" was lowered down to collect *kala*.

4.4.4.5 Ornate Wrasse (Pinkface) (*Halichoeres ornatissimus*)

Ecology

This small wrasse has a pinkish head that is marked with horizontal green lines. The throat and belly are blue; scales on the sides are marked by a vertical, crescent-shaped stripe followed by blue. The dorsal fin is dark red with green spots and is traced by green and blue lines. A large dark spot on the dorsal fin and one just behind the eye are common identifiers. Males usually have more intense coloration than females (University of Hawai'i 2016).

The Ornate Wrasse has an elongate soft body that is tapered and spindle-shaped. The dorsal fin is continuous, rounded, and soft. The pectoral fins are used extensively for swimming with up and down motions. The snout has a pointed mouth, fleshy lips, and canine teeth used in plucking small crustaceans and mollusks from the reef. Special bones in the gill area called pharyngeal bones help the wrasse crush the shells of their prey. The Ornate Wrasse is diurnal, feeding during the day, and sheltering in reef crevices or burying in sand patches at night. The Ornate Wrasse, like others within this family (Labridae) undergo sex changes as they develop (University of Hawai'i 2016).

Ornate Wrasse are broadcast spawners, with males and females simultaneously releasing eggs and sperm into the water column where the eggs are fertilized before floating to the surface until they hatch 20-30 hours later (Thresher 1984).

PIFSC-ESD (2020) data indicate that the 2019 island of O'ahu population of Ornate Wrasse at the 0–98-foot depth was approximately 2,137,281 individuals. The species is listed as 'Least Concern' by the IUCN, and most of the species' range falls within the protected Papahānaumokuākea Marine National Monument, where fishing is prohibited (Craig et al. 2010).

Cultural Significance

The Ornate Wrasse is also referred to as *lā'ō* (Titcomb 1972). A review of cultural-historical literature (see Appendix A) did not reveal any additional cultural information for the Ornate Wrasse.

4.4.4.6 Flame Wrasse (*Cirrhilabrus jordani*)

Ecology

The Flame Wrasse is endemic to the Hawaiian Islands and Johnston Atoll (Lobel 2003, Lieske and Myers 1994). Females are bright red on the dorsal part of the body fading to a light pink on the ventral side. The fins are opaque with some yellow features on the face. Females grow to about 3 inches before they begin

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

to transform into a male. As the male matures the dorsal remains bright red fading into a vibrant yellow orange.

The Flame Wrasse utilizes seaward reefs and forms groups above large drop-offs at a depth of 15 to 600 feet, where it feeds exclusively on zooplankton along the ocean floor (Lieske and Myers 1994). During breeding males and females form pairs for mating (Breder and Rosen 1966). Due to the habitat flame wrasse inhabit (heavy seaweed), aquarium collection of this species is limited, and often only a small proportion of the total population is collected since most individuals retreat into the seaweed where collection is not possible.

Flame Wrasse are broadcast spawners, with males and females simultaneously releasing eggs and sperm into the water column where the eggs are fertilized before floating to the surface until they hatch 20-30 hours later (Thresher 1984).

Flame Wrasse are a deep-water species, and thus the O'ahu Flame Wrasse populations were not estimated in 2019 (PIFSC-ESD 2020). A recent study by Kane and Tissot (2017) noted that the Flame Wrasse density at depths from 0-98 feet (0-30 meters, i.e., PIFSC-ESD survey area) was zero (<1 Flame Wrasse per 100 m²) on the island of Hawai'i (similar data are not available for O'ahu). Below 98 feet (30 meters) Kane and Tissot (2017) found:

- 2.58 Flame Wrasse per 100 m² between 98-132 feet (30-40 meters);
- 2.12 Flame Wrasse per 100 m² between 132-164 feet (40-50 meters); and,
- 0.27 Flame Wrasse per 100 m² below 164 feet (50 meters).

The IUCN lists this species as 'Least Concern' and states that the species is relatively common along drop off areas (Rocha 2010). In addition, most of its range falls within the protected Papahānaumokuākea Marine National Monument, where fishing is prohibited (Rocha 2010).

Cultural Significance

Hīnālea, occasionally shortened to *ālea*, is a name broadly applied to various species known commonly as wrasses and is applied to most of the smaller wrasses that have no known Hawaiian names (Hoover 2007). There are specific traditional fishing methods associated with wrasses. *Melomelo* involved using a carefully curated stick to attract the fish (Kahā'ulelio 2006). They were also caught in basket traps woven from plant-based fibers, including a diving basket known as *hīna'i ho'olu'ulu'u* which was made from the vines of the *'āwīkīwīkī* (*Canvalia galeata*). Standing nets known as *kūkulu 'upena* and 18-foot-long fishing poles called *ke kāmākoī* made of bamboo or *hau* (*Hibiscus tiliaceus*) were also used to catch *hīnālea* (Manu et al. 2006). The *ke kāmākoī* were used in the nearshore reefs where the fisher could cast from shore. Yet another traditional method of catching *hīnālea* involved poison, a net called *'upena holahola* was used with certain piscicidal plants (i.e., containing a substance poisonous to fish) that were crushed and placed around a fishing hole, where the toxins from the crushed plants would diffuse into the water and paralyze the trapped fish, causing the *hīnālea* to float to the surface into the *holahola* net (Manu et al. 2006).

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

The *hinālea* is considered a popular fish of the Hawaiian diet, and they are referenced in many *mo'olelo*, or stories. They were also considered important for ceremonies, including as offerings for gods responsible for conceiving a child, and were also noted in several accounts of gods and goddesses.

4.4.4.7 Fourlined Wrasse (*Pseudocheilinus tetrataenia*)

Ecology

The Fourlined Wrasse is found in the tropical waters of the north and south Pacific. This species has a green body with blue and purple fins and four horizontal stripes that run across the upper half of the body. Each stripe is made up of three smaller stripes: one black, one blue and one red stripe. The eye is red with two white lines on it.

This species is secretive and inhabits seaward reefs, among coral or rubble at depths of 20 to 144 feet. This species uses the small heads of live coral to hide from predators (Myers 1991) and is thought to mainly feed on demersal eggs, copepods, amphipods, alpheid shrimp, crabs, larval shrimp, and gastropods (Myers 1999). The Fourlined Wrasse forms distinct pairing during breeding (Breder and Rosen 1966).

Fourlined Wrasse are broadcast spawners, with males and females simultaneously releasing eggs and sperm into the water column where the eggs are fertilized before floating to the surface until they hatch 20-30 hours later (Thresher 1984).

PIFSC-ESD (2020) data indicate that the 2019 island of O'ahu population of Fourlined Wrasse at the 0-98 foot depth was approximately 134,617 individuals, but due to its secretive behavior, visual counts usually underestimate its numbers. The IUCN lists this species as 'Least Concern' (Sadovy 2010).

Cultural Significance

See Section 4.4.4.6 for a discussion of the cultural significance of *hinālea*, which includes the Fourline Wrasse.

4.4.4.8 Hawai'i Whitespotted Toby (Puffer) (*Canthigaster jactator*)

Ecology

The Hawaiian Whitespotted Toby is endemic to Hawai'i and Johnston Atoll (Lobel 2003). This species belongs to the pufferfish family (Tetraodontidae) and reaches lengths of 4 inches. The body is brown with white spots, the eye is green.

Hawaiian Whitespotted Toby are common in lagoon and seaward reefs at depth of 3 to 290 feet (Mundy 2005). This species has also been found to utilize man-made structures (Brock 1981) and has been shown to feed on sponges, algae, detritus, tunicates, polychaetas, bryozoans, sea urchins, brittle stars, crabs, peanut worms, shrimps, zoanths, fishes, amphipods, and foraminiferans (Randall 1985). It often is afflicted with parasitic worms (nematodes) and causing it to become inflated (Deardorff and Stanton 1983),

Breeding behavior has not been documented for the Hawaiian Whitespotted Toby; however, the Eastern Pacific Whitespotted Toby (*Canthigaster punctatissima*) has been found to be sexually dimorphic. It is likely

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

that the toby's breeding behavior is similar. Males and females guard their territories against others of the same sex. Male areas include the smaller territories of multiple females. Males mate with a female from their harem one at a time.

PIFSC-ESD (2020) data indicate that the 2019 island of O'ahu population of Hawaiian Whitespotted Toby at the 0–98-foot depth was approximately 2,513,096 individuals. The IUCN states that this species is common and locally abundant and lists the species as 'Least Concern' (Shao et al 2014a).

Cultural Significance

The Hawaiian Whitespotted Toby is one of three endemic pufferfish that inhabit Hawai'i's waters (Hoover 2007). The common name "Toby" originated in Australia. A review of cultural-historical literature (see Appendix A) did not reveal any specific Hawaiian names or cultural information related to the Hawaiian Whitespotted Toby; however, tobies are sometimes referred to generally as *makimaki* (Hoover 2007). Other names traditionally used for pufferfish include *'o'opu hue*, possibly an alteration of *ōpūhue* (calabash, gourd), and *kēkē* (potbelly).

4.4.4.9 Forcepsfish (*Forcipiger flavissimus*)

Ecology

The Forcepsfish has a long black snout, and the head is dark brown to black above and white below. The body is yellow with a black spot on the anal fin. Adults can grow up to 8 inches. This species is widespread throughout the Hawaiian Islands and the tropical waters of the Indo-Pacific area (University of Hawai'i 2016).

The Forcepsfish typically lives along exposed outer reefs containing abundant coral growth, caves, and ledges, and occasionally within lagoon reefs. They are usually found in pairs but may also be encountered as solitary animals or in small groups. It feeds on a variety of small animals including hydroids, fish eggs, and crustaceans, but prefers tube feet of echinoderms, pedicellaria of sea urchins, and polychaete tentacles (Myers 1991).

Forcepsfish are broadcast spawners. Many broadcast spawners migrate to the edge of the reef drop off to spawn at dusk or dawn (Thresher 1984). Males and females simultaneously release eggs and sperm into the water column where the eggs are fertilized before floating to the surface until they hatch 20-30 hours later (Thresher 1984).

PIFSC-ESD (2020) data indicate that the 2019 island of O'ahu population of Forcepsfish is at the 0–98-foot depth was approximately 345,009 individuals. The species is listed as 'Least Concern' by the IUCN (Myers and Pratchett 2010).

Cultural Significance

The Forcepsfish is also known as the *lauwiliwili nuku 'oi'oi*. A review of cultural-historical literature (see Appendix A) did not reveal any additional cultural information related to this species.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

4.4.4.10 Milletseed (Lemon) Butterflyfish (*Chaetodon miliaris*)

Ecology

The Milletseed Butterflyfish is endemic to Hawai'i and the most common species of butterflyfish in Hawai'i including Johnston Atoll (Lobel 2003). The species is named for the seed-sized black specks that are distributed in vertical rows on its lemon-yellow body. Other distinctive features are a black mask through the eye and a black spot near the tail. Adults reach lengths of 6.5 inches (University of Hawai'i 2016).

Habitat for this species includes coastal fringing reefs, lagoons, and outer reefs, with juveniles found on shallow inner reefs from April to June (Pyle and Craig 2010). The Milletseed Butterflyfish feeds primarily on zooplankton above the reef, but sometimes cleans other fishes and is also known to feed on nests of damselfish eggs if left unprotected.

Milletseed Butterflyfish are broadcast spawners. Many broadcast spawners migrate to the edge of the reef drop off to spawn at dusk or dawn (Thresher 1984). Males and females simultaneously release eggs and sperm into the water column where the eggs are fertilized before floating to the surface until they hatch 20-30 hours later (Thresher 1984).

PIFSC-ESD (2020) data indicate that the 2019 island of O'ahu population of Milletseed Butterfly fish at the 0–98-foot depth was approximately 1,452,891 individuals. However, much of the Milletseed Butterflyfish population occurs below the 98-foot depth surveyed by the PIFSC-ESD, and therefore the population is underestimated by the survey. Additionally, according to Pyle and Craig (2010), range-wide approximately two-thirds of the species range is protected by the Papahānaumokuākea Marine National Monument, the species is abundant throughout its range with a stable population trend, and the species is thus listed as “Least Concern” by the IUCN.

Cultural Significance

The name *kīkākapu* is used to describe a number of butterflyfish species and were considered sacred (Titcomb 1972). Fornander (1916) reported the name is used in many chants. Hoover (2008) reports that *kīkākapu* means “strongly prohibited”.

The Milletseed Butterflyfish is called *lau wiliwili* or *lauhau wiliwili*, meaning “*wiliwili* leaf,” because its shape is believed to resemble the endemic *wiliwili* tree (*Erythrina sandwicensis*).

4.4.4.11 Shortnose (Geoffroy's) Wrasse (*Macropharyngodon geoffroy*)

Ecology

The Shortnose Wrasse is endemic throughout the Hawaiian Islands and Johnston Atoll (Lobel 2003) and is found at depths between 20 and 100 feet. It has dark blue spots on a yellow to orange background. Research suggests that the Shortnose Wrasse is common throughout its range (Craig 2010). This species inhabits mixed sand, rubble patches, and coral reefs where it feeds on mollusks (Lieske and Myers 1994). Distinct pairs are formed during breeding (Breder and Rosen 1966).

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

Shortnose Wrasse are broadcast spawners, with males and females simultaneously releasing eggs and sperm into the water column where the eggs are fertilized before floating to the surface until they hatch 20-30 hours later (Thresher 1984).

PIFSC-ESD (2020) data indicate that the 2019 island of O’ahu population of Shortnose Wrasse at the 0–98-foot depth was approximately 481,899 individuals. The species is listed as ‘Least Concern’ by the IUCN, and approximately two-thirds of its range is within the boundaries of the protected Papahānaumokuākea Marine National Monument, where fishing is prohibited (Craig 2010).

Cultural Significance

See Section 4.4.4.6 for a discussion of the cultural significance of *hinālea*, which includes the Shortnose Wrasse.

4.4.4.12 Bicolor Anthias (*Pseudanthias bicolor*)

Ecology

The Bicolor Anthias is a small (5 inch) Indo-Pacific Ocean fish found from Maldives to the Hawaiian Islands and south to northeastern Australia, typically at water depths between 30–210 feet. The upper half is a yellow orange color while the lower half is a lavender pink. They typically inhabit lagoon patch reef slopes and can be found in deep coastal to outer reef slopes in current prone areas. Small groups are found above coral outcrops or near crevices or ledges (Mundy 2005).

Bicolor Anthias are broadcast spawners, with males and females simultaneously releasing eggs and sperm into the water column where the eggs are fertilized before floating to the surface until they hatch 20-30 hours later (Thresher 1984). In Pacific coral reef areas surveyed by NOAA, the highest density of this species was in the MHI, with 0.2 to 50.9 individuals per 2.5 acres (NOAA unpublished data as described in Heenan et al. 2014, as cited in Williams et al. 2016).

PIFSC-ESD (2020) data indicate that the 2019 island of O’ahu population of Bicolor Anthias at the 0–98-foot depth was approximately 69,760 individuals. The species is listed as ‘Least Concern’ by the IUCN (Williams et al. 2016).

Cultural Significance

A review of cultural-historical literature (see Appendix A) did not reveal any specific Hawaiian names or cultural information for the Bicolor Anthias.

4.4.4.13 Orangeband (Shoulder) Surgeonfish (*Acanthurus olivaceus*)

Ecology

The Orangeband Surgeonfish occurs in tropic waters of the Indo-west Pacific. The head and anterior half of the Orangeband Surgeonfish are distinctly paler than that of the dark grayish brown posterior. Juveniles are bright yellow. Orangeband Surgeonfish are commonly found in small groups near reefs at depths of 30 to 150 feet (Randall and Clements 2001) where they feed on detritus, diatoms, and algae (Myers 1991).

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

Orangeband Surgeonfish are broadcast spawners. Many broadcast spawners migrate to the edge of the reef drop off to spawn at dusk or dawn (Thresher 1984). Males and females simultaneously release eggs and sperm into the water column where the eggs are fertilized before floating to the surface until they hatch 20-30 hours later (Thresher 1984).

PIFSC-ESD (2020) data indicate that the 2019 island of O’ahu population of Orangeband Surgeonfish at the 0-98 foot depth was approximately 1,534,094 individuals. The species is listed as ‘Least Concern’ by the IUCN and is considered common in most of its range with a stable population trend (Russell et al. 2012).

Cultural Significance

The Orangeband Surgeonfish is commonly referred to as *na’ena’e* (“quick, alert”) (Pukui and Elbert 1986). The name *na’ena’e* is also applied to a native daisy known for its small yellow, orange, purple, or white flower (Pukui and Elbert 1986). A review of cultural-historical literature (see Appendix A) did not reveal any additional cultural information for the Orangeband Surgeonfish.

4.4.4.14 Moorish Idol (*Zanclus cornutus*)

Ecology

The Moorish Idol is a small (8 inch) fish that are vertically flattened, with black, yellow, and white vertical stripes, and a very long white sickle-shaped extension off the dorsal fin. It has a protruding, tubular snout with a yellow saddle across the top, and long, bristle-like teeth.

It has a long pelagic larval stage, which is the dispersal mechanism used in the widely-found species. They are found throughout the tropical pacific, from the coast of East Africa and the Indian Ocean to Mexico and the Galapagos Island. It inhabits mostly reefs in shallow waters where it feed on corals, sponges, and other small invertebrates. They mate for life, found individually, in pairs, or sometimes groups of up to 100, especially as juveniles (Randall 2005).

PIFSC-ESD (2020) data indicate that the 2019 island of O’ahu population of Moorish Idol at the 0–98-foot depth was approximately 251,451 individuals. The actual population may be larger, as the species is found at depths up to 590 feet (Carpenter et al. 2016). This species is listed as ‘Least Concern’ by the IUCN (Carpenter et al. 2016).

Cultural Significance

The Moorish Idol is known in Hawai’i as *kihikihi*, which translates as “corners, curves, angular” (Pukui and Elbert 1986). Titcomb (1972) also noted that other varieties of *kihikihi* were known by the terms “*kihikihi launui* (big-leafed), or *mane’one’o* (irritating), *k. alo-’ula* (red breast), silvery, *k. pohaka* (big spot), and *k. halena* (yellowish)”.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

4.4.4.15 Multiband (Pebbled) Butterflyfish (*Chaetodon multinctus*)

Ecology

The Multiband Butterflyfish is endemic to the Hawaiian Islands and Johnston Atoll (Lobel 2003). The body is white with five or six brown vertical bands. A dark vertical bar runs along the eye and a black band along the tail fin. The distinguishing feature is an overall covering of small spots which create a pattern of horizontal and vertical lines along the body.

The Multiband Butterflyfish inhabits heavy coral areas of lagoon and seaward reefs at depths of 15 to 100 feet. This species mainly feeds on the polyps of small corals but also supplement their diet with worms, shrimps, hydroids, and algae fragments. This species is often seen in monogamous pairs and defending an established territory (Breder and Rosen 1966).

Multiband Butterflyfish are broadcast spawners. Many broadcast spawners migrate to the edge of the reef drop off to spawn at dusk or dawn (Thresher 1984). Males and females simultaneously release eggs and sperm into the water column where the eggs are fertilized before floating to the surface until they hatch 20-30 hours later (Thresher 1984).

PIFSC-ESD (2020) data indicate that the 2019 island of O'ahu population of Multiband Butterflyfish at the 0-98 foot depth was approximately 415,710 individuals. The species is listed as 'Least Concern' by the IUCN, and two-thirds of its range is enclosed by the protected Papahānaumokuākea Marine National Monument, where fishing is prohibited (Pyle et al. 2010a)

Cultural Significance

The name *kikākapu* is used to describe a number of butterflyfish species and were considered sacred (Titcomb 1972). Fornander (1916) reported the name is used in many chants. Hoover (2008) reports that *kikākapu* means "strongly prohibited". A review of cultural-historical literature (see Appendix A) did not reveal any additional cultural information for the Multiband Butterflyfish.

4.4.4.16 Psychedelic Wrasse (Redtail Wrasse) (*Anampses chrysocephalus*)

Ecology

The Psychedelic Wrasse is endemic to the Hawaiian Islands and is found among seaweed coral reefs at depths from 40 to 450 feet (Lieske and Myers 1994). This species is dark brown with white spots and a red tail. However, like others in the wrasse family, as the females mature, they undergo a color and sexual transition to the "terminal phase" male. These males have a bright orange head covered in blue spots and radiating lines. Psychedelic Wrasse terminal phase males are usually only found in depths greater than 50 feet (DLNR 2015). The main prey for the Psychedelic Wrasse are macro-invertebrates found among the rocks and corals it inhabits. Females usually form small groups with a single male (Lieske and Myers 1994).

Psychedelic Wrasse are broadcast spawners, with males and females simultaneously releasing eggs and sperm into the water column where the eggs are fertilized before floating to the surface until they hatch 20-30 hours later (Thresher 1984).

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

PIFSC-ESD (2020) data indicate 69,693 individuals in the 2019 population estimate. However, the Psychedelic Wrasse occupies habitat below the 98-foot depth surveyed by the PIFSC-ESD study. As such, this is likely a low estimate, because much of the population is not observable by the methods of the study. Support for this conclusion is provided by Kane and Tissot (2017) who report that the Psychedelic Wrasse density at depths from 0-98 feet (0-30 meters, i.e., PIFSC-ESD survey area) was 0.16 psychedelic wrasse per 100 m² on the island of Hawai'i (similar data are not available for O'ahu). Below 98 feet (30 meters) they found:

- 0.16 Psychedelic Wrasse per 100 m² between 98-132 feet (30-40 meters);
- 0.15 Psychedelic Wrasse per 100 m² between 132-164 feet (40-50 meters); and,
- 0.67 Psychedelic Wrasse per 100 m² below 164 feet (50 meters).

These data clearly illustrate that the vast majority of the Psychedelic Wrasse population occurs at depths below those for which accurate population estimates are available; therefore, leading to an underestimation of population size using the PIFSC-ESD surveys. The density of Psychedelic Wrasse is over 4 times greater at depths below 164 feet (50 meters) than within the 0-98 feet (0-30 meter) range surveyed by PIFSC-ESD, and they are equally abundant at depths from 98 to 164 feet (30-50 meters). Therefore, in all likelihood, the actual population of Psychedelic Wrasse on O'ahu is substantially greater than that reported by the PIFSC-ESD data.

The Psychedelic Wrasse is a DLNR SGCN (Section 4.4.2) but is considered a species of 'Least Concern' by the IUCN (Pollard et al. 2010). This is partially because more than two-thirds of its range is enclosed by the protected Papahānaumokuākea Marine National Monument, where fishing is prohibited (Pollard et al. 2010).

Cultural Significance

See Section 4.4.4.6 for a discussion of the cultural significance of *hinālea*, which includes the Psychedelic Wrasse.

4.4.4.17 Eightline Wrasse (*Pseudocheilinus octotaenia*)

Ecology

The Eightline Wrasse is widespread from east Africa to the Hawaiian Islands. This species has variable color patterns from yellowish/orange to a pink/reddish body. The distinguishing feature of this species are the eight horizontal stripes, ranging from orange to a maroon red. They have a pointed head and mouth which enable them to feed on coral reef invertebrates such as, mollusks, sea urchins, fish eggs, and crab larvae (Myers 1991, 1999).

The Eightline Wrasse inhabits corals and seaward reefs at depths of 6 to 164 feet (Myers 1991) and forms distinct mating pairs (Breder and Rosen 1966). This species is diurnal, feeding during the day and resting at night.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

Eightline Wrasse are broadcast spawners, with males and females simultaneously releasing eggs and sperm into the water column where the eggs are fertilized before floating to the surface until they hatch 20-30 hours later (Thresher 1984).

PIFSC-ESD (2020) data indicate that the 2019 island of O’ahu population of Eightline Wrasse at the 0–98-foot depth was approximately 59,945 individuals. This species is listed as ‘Least Concern’ by the IUCN (Sadovy and Rocha 2010).

Cultural Significance

See Section 4.4.4.6 for a discussion of the cultural significance of *hinālea*, which includes the Eightline Wrasse.

4.4.4.18 Crowned (Saddleback) Puffer (*Canthigaster coronata*)

Ecology

The Crowned Puffer is a small marine fish approximately 3–5 inches in length. It is light blue ventrally, and the darker dorsal portion is divided by light blue stripes. The head and body have many small pale spots, faint or absent on paler portions of the body, but very evident within the dark saddle like bars on the dorsal portion of the body (University of Hawai’i 2016).

It is endemic to Hawai’i including the Midway Islands and Johnston Atoll, inhabiting coral reefs about 15 to 450 feet deep, but mainly in depths below 70 feet. It is mostly found on sand or sand and rubble bottom or algal flats (University of Hawai’i 2016).

Crowned Puffers are broadcast spawners, with males and females simultaneously releasing eggs and sperm into the water column where the eggs are fertilized before floating to the surface until they hatch 20-30 hours later (Thresher 1984).

PIFSC-ESD (2020) data indicate 319,076 individuals in the 2019 population estimate. However, this is a low estimate because most of the Crowned Puffer population occurs below the 98-foot depth surveyed by the PIFSC-ESD and is not observable by the methods of the survey. It is found at depths of up to 541 feet and is considered to be common and locally abundant (Shao et al. 2014b). The species is listed as ‘Least Concern’ by the IUCN (Shao et al. 2014).

Cultural Significance

The Crowned Puffer is commonly referred to as *pu’u ‘ōla’i*, and Hoover (2007) suggests “may have reminded the old Hawaiians of lava flows for the Hawaiian name [*pu’u ‘ōla’i*] means “cinder cone””. A review of cultural-historical literature (see Appendix A) did not reveal any additional cultural information for the Crowned Puffer.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

4.4.4.19 Saddle Wrasse (*Thalassoma duperrey*)

Ecology

The Saddle Wrasse is a common and endemic reef fish of Hawai'i and Johnston Atoll (Lobel 2003). It is found at depths ranging from 16 to 98 feet. This species has a blue head, green body with a prominent red saddle and purple highlights around the edges of the fins (University of Hawai'i 2016).

This species is commonly observed alone, in pairs, or in small groups close to the reef where they forage for small crustaceans, mollusks, worms, urchins, and brittlestars. Canine teeth are used to pick these invertebrates from the reef. Most individuals begin life as females, when older they show the typical blue, red, and green pattern. Females that change to males, which is common in the wrasse family (Labridae) and have a white bar behind the red saddle. These sex-changed males are called "terminal phase" males and become dominant territory holders that maintain a harem of females (University of Hawai'i 2016).

Saddle Wrasse are broadcast spawners, with males and females simultaneously releasing eggs and sperm into the water column where the eggs are fertilized before floating to the surface until they hatch 20-30 hours later (Thresher 1984).

PIFSC-ESD (2020) data indicate that the 2019 island of O'ahu population of Saddle Wrasse at the 0–98-foot depth was approximately 17,655,664 individuals. This species is considered abundant throughout the Hawaiian Archipelago and is listed as 'Least Concern' by the IUCN (Shea et al. 2010).

Cultural Significance

The Saddle Wrasse is also known as *hinālea lauwili*, which is believed to have been named in reference to the *wiliwili* tree which has bright orange flowers. The species is often mentioned in *mo'olelo* (stories) and is referenced in traditional fishing practices as well. The fish was historically eaten, though the hard scales on the fish meant that it was usually skinned, and it was often eaten raw. See also Section 4.4.4.6 for a discussion of the cultural significance of *hinālea*, which include the Saddle Wrasse.

4.4.4.20 Fisher's Angelfish (*Centropyge fisheri*)

Ecology

The Fisher's Angelfish is mostly orange with a thin blue outline highlighting the belly and anal fin, the caudal fin is pale yellow. Adults attain a length of only 2 inches. This angelfish is found throughout Hawai'i and Johnston Atoll (Lobel 2003). Small groups have been observed feeding on algae and small shrimp associated with coral along outer reef slopes at depths between 10 and 200 feet (Pyle 2001). This species is hermaphroditic and changes sex as it matures.

Fisher's Angelfish are broadcast spawners, with males and females simultaneously releasing eggs and sperm into the water column where the eggs are fertilized before floating to the surface until they hatch 20-30 hours later (Thresher 1984).

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

PIFSC-ESD (2020) data indicate 117,920 individuals in the 2019 population estimate. However, this is a low estimate because much of the population occurs below the 98-foot depth surveyed by the PIFSC-ESD and is not observable by the methods of the survey. Support for this conclusion is provided by Kane and Tissot (2017) who report that the Fisher's Angelfish density at depths from 0-98 feet (0-30 meters, i.e., PIFSC-ESD survey area) was 1.33 Fisher's Angelfish per 100 m² on the island of Hawai'i (similar data are not available for O'ahu). Below 98 feet (30 meters) they found:

- 1.33 Fisher's Angelfish per 100 m² between 98-132 feet (30-40 meters);
- 0.79 Fisher's Angelfish per 100 m² between 132-164 feet (40-50 meters); and,
- 0.40 Fisher's Angelfish per 100 m² below 164 feet (50 meters).

These data clearly illustrate that the vast majority of the Fisher's Angelfish population occurs at depths below those for which accurate population estimates are available; therefore, leading to an underestimate of population size. Therefore, in all likelihood, the actual population of Fisher's Angelfish on O'ahu is substantially greater than that reported by the PIFSC-ESD data.

The Fisher's Angelfish is a DLNR SGCN (Section 4.4.2) but is considered a species of 'Least Concern' by the IUCN (Pyle and Myers 2010b).

Cultural Significance

A review of cultural-historical literature (see Appendix A) did not reveal any specific Hawaiian names or cultural information for the Fisher's Angelfish.

4.4.5 Additional Fish Species on the Proposed White List

In addition to the 20 species discussed in Section 4.4.4, this FEIS also analyzed the 13 species shown below in Table 4-7 which would be included in the proposed White List under the Preferred Alternative.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

Table 4-7. Additional collection data on 13 fish species collected under Aquarium Permits on the island of O’ahu from 2000-2017 (DAR 2018a).

Common Name	Scientific Name	All fishers			20 fishers		
		Number Collected	Percentage of Total Collected ¹	Average # Collected per Year	Number Collected	Percentage of Total Collected	Average # Collected per Year (20 fishers)
Bandit Angelfish ²	<i>Apolemichthys arcuatus</i>	4,866	0.38%	286.2	3,983	0.55%	209.6
Brown Surgeonfish (Lavender, Forktail Tang)	<i>Acanthurus nigrofuscus</i>	8,173	0.63%	454.1	4,503	0.62%	237
Crosshatch (Redtail) Trigger	<i>Xanthichthys mento</i>	6,222	0.48%	388.9	5,159	0.71%	271.5
Dragon Wrasse (Rockmover)	<i>Novaculichthys taeniourus</i>	2,781	0.21%	154.5	1,186	0.16%	62.4
Gilded Triggerfish (Bluethroat Trigger)	<i>Xanthichthys auromarginatus</i>	8,937	0.69%	496.5	5,777	0.80%	304.1
Golden Dwarf Moray (Dwarf Moray)	<i>Gymnothorax melatremus</i>	1,122	0.09%	66	1,188	0.16%	62.5
Heniochus Butterfly (Pennantfish)	<i>Heniochus diphreutes</i>	11,351	0.88%	630.6	7,534	1.04%	396.5
Raccoon Butterfly	<i>Chaetodon lunula</i>	5,573	0.43%	309.6	259	0.04%	13.6

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

Common Name	Scientific Name	All fishers			20 fishers		
		Number Collected	Percentage of Total Collected ¹	Average # Collected per Year	Number Collected	Percentage of Total Collected	Average # Collected per Year (20 fishers)
Spotted Boxfish	<i>Ostracion meleagris</i>	10,361	0.80%	575.6	2,785	0.38%	146.6
Threadfin Butterfly	<i>Chaetodon auriga</i>	4,297	0.33%	238.7	244	0.03%	12.8
Whitemouth Moray	<i>Gymnothorax meleagris</i>	770	0.06%	48.1	505	0.07%	26.6
Yellowtail Coris (Clown Wrasse)	<i>Coris gaimard</i>	12,106	0.93%	672.5	5,773	0.80%	307.5
Zebra Moray	<i>Gymnothorax zebra</i>	1,984	0.15%	110.2	1,243	0.17%	65.4
Total		78,543	6.06%	4,431.5	40,209	5.53%	2,116.3

¹ Percentage calculated based on total individuals reported collected on O'ahu and do not include any non-disclosure data.
² Hawai'i SGCN

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

4.4.5.1 Bandit Angelfish (*Apolemichthys arcuatus*)

The Bandit Angelfish is regulated by the DAR (HAR §13-77; Section 1.2.3) and ranks as the 47th most collected fish on O'ahu between 2000 and 2017, making up 0.38% (4,866 individuals) of the total fish collected, averaging 209 collected each year.

Ecology

The Bandit Angelfish is mostly pale with a broad black bar bordered by a narrow white band running across the upper side from the front of the eye to soft dorsal fin. A similar broad black band with white border runs submarginal on the caudal and anal fins.

It is endemic to the Hawaiian archipelago and Johnston Atoll. It is generally associated with reefs at a depth of 30 to 150 feet, seldom seen at depths less than 30 feet. Juveniles may occur more frequently in deeper habitats. They inhabit rocky reefs, in ledges and caves (Endoh 2007, as cited in Pyle et al. 2010b).

Bandit Angelfish are broadcast spawners, with males and females simultaneously releasing eggs and sperm into the water column where the eggs are fertilized before floating to the surface until they hatch 20-30 hours later (Thresher 1984).

Due to the deep-water habitats of the Bandit Angelfish, a reliable population estimate could not be derived for the species. Kane and Tissot (2017) also reported the deep-water habits of the Bandit Angelfish, reporting that density of the fish at depths from 0-98 feet (0-30 meters, i.e., PIFSC-ESD survey area) was 0.03 Bandit Angelfish per 100 m² on the island of Hawai'i (similar data are not available for O'ahu). Below 98 feet (30 meters) they found:

- 0.00 Bandit Angelfish per 100 m² between 98-132 feet (30-40 meters);
- 0.12 Bandit Angelfish per 100 m² between 132-164 feet (40-50 meters); and,
- 0.10 Bandit Angelfish per 100 m² below 164 feet (50 meters).

These data clearly illustrate that the vast majority of the Bandit Angelfish population occurs at depths below the PIFSC-ESD survey depth. The IUCN reports that the species is abundant, particularly in the northwestern Hawaiian Islands and on deep reefs of the MHI, but that the species is infrequently seen (Pyle et al. 2010b). While anecdotal reports suggest that the populations at scuba diving depths on O'ahu may have declined as of 2009, the overall global population is considered stable (Pyle et al. 2010b), and this anecdotal decline was noted prior to the implementation of current regulations (see Section 1.2.3), and was limited to scuba diving depths, which is generally above where this species is found, as discussed above.

The Bandit Angelfish is a DLNR SGCN (Section 4.4.2) but is considered a species of 'Least Concern' by the IUCN (Pyle et al. 2010b).

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

Cultural Significance

A review of cultural-historical literature did not reveal any specific Hawaiian names, or any specific cultural information related to this species. This may be due to the species deep-water habits, where they may likely never have been observed historically (Lilley 2020).

4.4.5.2 Brown Surgeonfish (*Acanthurus nigrofuscus*) [Lavender, Forktail Tang]

Ecology

This species is common throughout the Indo-Pacific oceans and is one of the most abundant surgeon fishes (Randall 2002). It is a small but aggressive fish with bluish gray vertical stripes along the body. The pectoral fins are pale with the upper edge narrow and black; pelvic fins are brown. Lips blackish brown, and the dorsal fin base has a prominent black spot larger than 1/2 the eye diameter; a smaller spot is present on base of the anal fin.

The Brown Surgeonfish is often found on hard substrates of lagoons and seaward reefs at depths of 6 to 82 feet (Domeier and Colin 1997) where it feeds exclusively on filamentous algae. Adults are usually observed in small groups but can also form large schools in open water. Juveniles are often associated with mixed species aggregations (Kuitert and Tonzuka 2001) and forms large spawning groups of up to several thousand individuals (Domeier and Colin 1997). Phylogeographic analyses reveal that the Hawaiian population is genetically connected to other locations in the Central Pacific, comprising a very large management unit in terms of both geography and numbers of individuals (Eble et al. 2011).

Brown Surgeonfish are broadcast spawners. Many broadcast spawners migrate to the edge of the reef drop off to spawn at dusk or dawn (Thresher 1984). Males and females simultaneously release eggs and sperm into the water column where the eggs are fertilized before floating to the surface until they hatch 20-30 hours later (Thresher 1984).

PIFSC-ESD (2020) data indicate that the 2019 island of O'ahu population of Brown Surgeonfish at the 0-98 foot depth in hardbottom habitats was approximately 10,523,860 individuals.

Cultural Significance

The Brown Surgeonfish is also known as the *mā'i'i*. The name *mā'i'i* is also applied to a taro variety (*Colocasia* spp.) and has sometimes been used to refer to other species of surgeonfish (Pukui and Elbert 1986). Traditionally, the *mā'i'i* was considered a good eating fish that could be eaten both raw and cooked but was best when broiled (Titcomb 1972).

4.4.5.3 Crosshatch (Redtail) Trigger (*Xanthichthys mento*)

Ecology

This species is found throughout the sub-tropical Pacific (including Hawai'i, Easter Island, the Galapagos, the Revillagigedo Islands, Pitcairn, and Japan's Ogasawara Islands)(Hoover et al. 2008). They grow up to 12 inches in length and prefer deep water, often in remote locations. Males have blue grooves on the cheek

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

and a tail rimmed in red, whereas females have yellow instead of red on the tail and are grayish blue crosshatched in black (Hoover et al. 2008). The species is considered rare at sport diving depths off the main Hawaiian Islands but are not uncommon in the northwestern chain (Hoover et al. 2008).

Triggerfish females prepare the nest and guard the eggs, with a male triggerfish maintaining and guarding a harem of females within which each female holds a small territory (Hoover et al. 2008). Triggerfish eggs are generally laid and fertilized around dawn and hatch the following night (Hoover et al. 2008).

As stated above, this species is known to prefer deep water and is rarely encountered at sport diving depths; therefore, a reliable population estimate could not be derived for the species. Froese and Pauly (2020) state that the IUCN lists the species as least concern, and that the species is known to lay over 32,000 eggs, making it highly resilient to fishing pressure.

Cultural Significance

Hoover et al. (2008) noted that triggerfish are called humuhumu in Hawaiian language, which means “to stitch pieces together”. The species was historically eaten, using a variety of methods, and with varying reports on its tastiness or popularity. If *humuhumu* were caught in large numbers, then the remains, particularly the head, would be tossed into the fire to help keep the fire burning because of its oils.

Titcomb (1972) documents a gathering method for these fish that involved lowering a basket with cooked pumpkins or sweet potatoes as bait onto a school of fish. While the fish attacked the bait in a frenzy the basket would be hoisted up and the fish caught.

4.4.5.4 Dragon Wrasse (*Novaculichthys taeniourus*)

Ecology

The species' name means “ribbonlike” due to the juvenile form, which are among the most unusual fish on the reef, having filamentous fin extensions and a peculiar swaying and twisting motion which helps them resemble drifting seaweed (Hoover 2008). Juveniles are brown with white blotches, or occasionally green. As the fish grows, they lose the fin filaments and become dark brown with white marks on each scale and a white bar through the tail, sometimes with a pinkish belly. They grow to 12 inches in size.

Larger adults spend much of their time nosing about the ocean floor, often moving or overturning rocks in search of invertebrate prey, resulting in also being known as the “Rockmover Wrasse”. They are found throughout the Indo-Pacific and Eastern Pacific (Hoover 2008).

PIFSC-ESD (2020) data indicate that the 2019 island of O’ahu population of Dragon Wrasse at the 0–98-foot depth in hardbottom habitats was approximately 54,784 individuals.

Cultural Significance

A review of literature did not reveal any specific Hawaiian names, or any specific cultural information related to this species.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

4.4.5.5 Gilded Triggerfish (*Xanthichthys auromarginatus*) [Blue-throated]

Ecology

The Gilded Triggerfish is found throughout the Indian and Pacific oceans from east Africa to the Hawaiian Islands. The female Gilded Triggerfish lacks the blue patch on the throat and yellow tail of the male. Both sexes have a blue ring around the eye and a lavender/gray blue body with gray to white spots that make a linear pattern. Adults can grow up to 12 inches.

This species is found along drop-offs and ledges at water depths of 75 to 480 feet. This species prefers current-swept areas with abundant invertebrate growth. Small groups have been observed at 10-20 feet above the bottom feeding on zooplankton, specifically copepods (Breder and Rosen 1966).

The Gilded Triggerfish produce demersal eggs that may or may not be tended by a parent, usually the female. Unlike most other families of reef fishes, the balistids (i.e., triggerfish) exhibit extensive maternal care of eggs. Eggs are typically deposited in shallow pits excavated by the parents as an adhesive egg mass containing bits of sand and rubble. Triggerfish eggs hatch in as little as 12 hours and no more than 24 hours (WPRFMC 2005).

PIFSC-ESD (2020) data indicate that the 2019 island of O'ahu population of Gilded Triggerfish at the 0–98-foot depth in hardbottom habitats was approximately 162,831 individuals.

Cultural Significance

The Gilded Triggerfish is a species of *humuhumu*. See Section 4.4.5.3 for a discussion of the cultural significance.

4.4.5.6 Golden Dwarf Moray (*Gymnothorax melatremus*)

Ecology

Golden Dwarf Moray grow to only 12 inches in size and are yellow to yellow-brown with a dark gill opening (Hoover 2008). They are fairly common in Hawai'i but secretive, and therefore are infrequently seen (Hoover 2008). The Golden Dwarf Moray ranges throughout the Indo-Pacific as far east as Easter Island, and individuals collected from Hawai'i consistently have more vertebrae than those from other locations (Hoover 2008).

PIFSC-ESD (2020) data indicate that the 2019 island of O'ahu population of Golden Dwarf Moray at the 0–98-foot depth in hardbottom habitats was approximately 4,761 individuals. The species is listed as “Least Concern” by the IUCN (Smith et al. 2019a).

Cultural Significance

In Hawaiian, *puhi*, was used to refer to all conger eels, moray eels and snake eels (Hoover 2008). Some eels were relished for food, while others were revered as 'aumākua, the physical embodiment of certain

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

family gods. Hoover (2008) states that “fierce warriors were sometimes compared to “sharp-toothed eels”, and when trouble was brewing thoughts were said to “wiggle like an eel””.

4.4.5.7 Heniocus Butterfly (*Heniochus diphreutes*)[Pennant Butterflyfish; Longfin Bannerfish; Pennantfish]

Ecology

The Heniocus Butterflyfish is boldly patterned, white with two black bars, yellow dorsal and tail fins, and a long white dorsal penant (Hoover 2008). Rare individuals may sport a double pennant. The species schools, generally along current-swept drop-offs at depths of 40 feet or more, and they feed on plankton.

Juveniles typically stay near the bottom, gathering around isolated outcroppings, while subadults often shelter within Antler Coral (*Pocillopora eydouxi*). The species is believed to spawn in groups at dusk. They are found throughout the Indo-Pacific and grow to about 8 inches (Hoover 2008) and are similar in appearance to the Moorish Idol (see Section 4.4.1.14) but are not related.

PIFSC-ESD (2020) data indicate that the 2019 island of O’ahu population of Heniocus Butterfly at the 0–98-foot depth in hardbottom habitats was approximately 301,466 individuals.

Cultural Significance

A review of literature did not reveal any specific Hawaiian names, or any specific cultural information related to this species.

4.4.5.8 Raccoon Butterfly (*Chaetodon lunula*)

Ecology

Growing up to 8 inches in length and named after the Common Raccoon (*Procyon lotor*), the Raccoon Butterflyfish has masked eyes and a white curved bar, with an orange-yellow body with diagonal brown stripes that darkens to brownish on the upper sides. The scientific name means “crescent”. A dark broad bar bordered in yellow runs diagonally behind the white curved bar, and the base of the tail includes a dark spot. Juveniles live in tide pools and are brighter yellow than adults with a large false eyespot above the base of the tail. During the day, these fish often rest in large semi-stationary aggregations.

This species will sometimes patrol the reef in schools, but they can also be found individually or in pairs.

PIFSC-ESD (2020) data indicate that the 2019 island of O’ahu population of Raccoon Butterfly at the 0–98-foot depth in hardbottom habitats was approximately 201,288 individuals.

Cultural Significance

The name *kīkākapu* is used to describe a number of butterflyfish species and were considered sacred (Titcomb 1972). Fornander (1916) reported the name is used in many chants. Hoover (2008) reports that *kīkākapu* means “strongly prohibited”.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

4.4.5.9 Spotted Boxfish (*Ostracion meleagris*)

Ecology

The Spotted Boxfish is Hawai'i's most common boxfish. Juvenile and female Spotted Boxfish are brown to green with white spots while the males have orange bands and spots on the side of the body. They are found throughout the Hawaiian Islands and inhabit clear lagoons and seaward reefs from 3 to 100 feet. Juveniles are often observed among rocky boulders (Myers 1991).

Spotted Boxfish live in small harem groups, usually one male to several females. They forage alone within their home ranges for sponges, worms, mollusks, copepods, and algae. Males defend territories against other males (Myers 1991).

Spotted Boxfish are broadcast spawners, with males and females simultaneously releasing eggs and sperm into the water column where the eggs are fertilized before floating to the surface until they hatch 20-30 hours later (Thresher 1984).

PIFSC-ESD (2020) data indicate that the 2019 island of O'ahu population of Spotted Boxfish at the 0–98-foot depth in hardbottom habitats was approximately 104,861 individuals.

Cultural Significance

The Spotted Boxfish, commonly known as *pahu*, meaning “box” or moa (a Proto Polynesian word; Pakui and Elbert 1986) were traditionally *kapu* (forbidden) for women to eat (Kent 1986). Titcomb (1972) adds that there was little flesh on this fish and that they were not eaten.

4.4.5.10 Threadfin Butterfly (*Chaetodon auriga*)

Ecology

This Indo-Pacific species grows to 8 inches and has a whiteish body that darkens to gold in back and is marked with sets of fine right-angled diagonal lines. The species name means “charioteer”. One of the soft dorsal spines is elongated into a threadlike filament, with a black spot below. Juveniles lack this filament but have a larger black spot. The species is omnivorous, and one of the few butterflyfish which forage over sand. They primarily eat sessile (attached) and sand-dwelling invertebrates, and they defend large territories against members of their own species. They are considered common, though not abundant (Hoover 2008).

PIFSC-ESD (2020) data indicate that the 2019 island of O'ahu population of Threadfin Butterfly at the 0–98-foot depth in hardbottom habitats was approximately 31,081 individuals.

Cultural Significance

The name *kikākapu* is used to describe a number of butterflyfish species and were considered sacred (Titcomb 1972). Fornander (1916) reported the name is used in many chants. Hoover (2008) reports that *kikākapu* means “strongly prohibited”.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

4.4.5.11 Whitemouth Moray (*Gymnothorax meleagris*)

Ecology

One of the most common eels seen in Hawai'i, the Whitemouth Moray has a bright white inner mouth, a stocky head, and a light or dark brown body with white dots. The tail is tipped white, and occasionally individuals may be light with dark reticulations or completely dark brown (Hoover 2008). The name means “guineafowl” or “spotted”.

The eel is easily identified as it often sits with its mouth wide open, either in a threat display or to attract prey. The Whitemouth Moray feeds on fish and crustaceans, foraging in the open during the day (often early morning) and poking its snout briefly into crevices and holes. The Whitemouth Moray is one of the few morays in Hawai'i that hunts during the day, and it is often accompanied by other predators, including jacks, goatfishes, and groupers, which nab prey animals flushed by the moray. This “associative hunting” or “cooperative hunting” is sometimes seen when the eel enters a cavity, and the other fish will cover the exits to catch any escaping prey. The Whitemouth Moray is found in the Indo-Pacific and grows up to almost 4 feet in length.

PIFSC-ESD (2020) data indicate that the 2019 island of O'ahu population of Whitemouth Moray at the 0–98-foot depth in hardbottom habitats was approximately 58,821 individuals. The species is listed as “Least Concern” by the IUCN (Smith et al. 2019b).

Cultural Significance

In Hawaiian, *puhi*, was used to refer to all conger eels, moray eels and snake eels (Hoover 2008). Some eels were relished for food, while others were revered as ‘aumākua, the physical embodiment of certain family gods. Hoover (2008) states that “fierce warriors were sometimes compared to “sharp-toothed eels”, and when trouble was brewing thoughts were said to “wiggle like an eel””.

The Whitemouth Moray is known as *puhi 'ōni'o* (Hoover 2008).

4.4.5.12 Yellowtail Coris (*Coris gaimard*)

Ecology

Juvenile Yellowtail Coris are bright red with white spots, as individuals mature into females they fade to orange with blue spots and a bright yellow tail. Like other wrasses (Family Labridae) adults may undergo a sex change from female to male. Males are distinguished by a green bar on the side of the body and a dark band on the upper and lower fins and numerous blue spots (University of Hawai'i 2016).

The Yellowtail Coris is a solitary species that is found in mixed coral, sand and rubble of outer reefs, lagoons, and seaward reefs. They feed primarily on mollusks, crabs, and tunicates (Myers 1991). Prominent canine teeth help this fish pick small crustaceans and mollusks from the reef. Active during the day, they take shelter in reef crevices or bury in sand at night (University of Hawai'i 2016).

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

Distribution ranges are from Western Australia, Cocos – Keelings Islands, Christmas Island in the eastern Indian Ocean, Southern Japan to New South Wales, Lord Howe Island and east to Hawaiian Islands (Randall 2007). Phylogeographic analyses show that the Hawaiian population is genetically distinct from elsewhere in the Pacific (Ahti et al. 2016).

Yellowtail Coris are broadcast spawners, with males and females simultaneously releasing eggs and sperm into the water column where the eggs are fertilized before floating to the surface until they hatch 20-30 hours later (Thresher 1984).

PIFSC-ESD (2020) data indicate that the 2019 island of O’ahu population of Yellowtail Coris at the 0–98-foot depth in hardbottom habitats was approximately 397,004 individuals.

Cultural Significance

The Yellowtail Coris is also known as the *hinālea ‘akilolo*, which were noted for their medicinal value. The word *‘akilolo* means “brain biting,” (Pukui and Elbert 1986), and this species was used by *kahuna* (priests) as a *pani*, or closing medicine, for someone suffering from a head sickness or disease. This variety was also a highly favored delicacy for eating because of its sweet taste. It was traditionally “eaten with salt, dried, broiled over coals or wrapped in *tī* leaves and then baked or broiled” (Titcomb 1972). See also Section 4.4.4.6 for a discussion of the cultural significance of *hinālea*, which include Yellowtail Coris.

4.4.5.13 Zebra Moray (*Gymnothorax zebra*)

Ecology

The Zebra Moray is chocolate brown, encircled by over 100 yellow-white stripes, and can grow up to 5 feet but is often smaller (Hoover 2008). This species sometimes forages by day, and have blunt, pebble-like teeth and feed mainly on crabs, which they crush and swallow whole. This is one of the few species of morays known to change sex, female first and then a male (Hoover 2008).

PIFSC-ESD (2020) data indicate that the 2019 island of O’ahu population of Zebra Moray at the 0–98-foot depth in hardbottom habitats was approximately 11,501 individuals. The Zebra Moray is listed as “Least Concern” by the IUCN (Smith et al. 2019c).

Cultural Significance

In Hawaiian, *puhi*, was used to refer to all conger eels, moray eels and snake eels (Hoover 2008). Some eels were relished for food, while others were revered as *‘aumākua*, the physical embodiment of certain family gods. Hoover (2008) states that “fierce warriors were sometimes compared to “sharp-toothed eels”, and when trouble was brewing thoughts were said to “wiggle like an eel””.

4.4.6 Other Regulated Species

The Achilles Tang and Hawaiian Cleaner Wrasse are regulated by the DAR in terms of bag limits, size limits, or both (HAR §13-77; Section 1.2.3), but are not collected to the level of the top 20 collected fish species and are not on the proposed White List. Of the 1,295,700 individual fish collected from O’ahu under

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

Aquarium Permits since 2000, the Hawaiian Cleaner Wrasse ranks as the 26th most collected fish making up 0.87% (11,243 individuals) of the total fish collected, averaging 625 collected each year. The Achilles Tang ranks as the 33rd most collected fish making up 0.62% (8,092 individuals) of the total fish collected, averaging 450 collected each year.

The following sections provide a brief overview of the ecology of the other regulated fish species collected from O'ahu since 2000.

4.4.6.1 Achilles Tang (*Acanthurus achilles*)

Ecology

A member of the surgeonfish family, the Achilles Tang grows to 10 inches, is laterally compressed, and has a small mouth and eyes set high on the head. Adults are recognized by the bright orange patch at the base of the tail, where modified scales can be exposed when the fish flexes its tail. These modified scales or spines are used for defense from predators and competition for feeding areas (University of Hawai'i 2016).

The Achilles Tang is present throughout Hawai'i and found near exposed coral reefs and rocky shores. Flexible comb-like teeth are used to pick algae and seaweed that grow along the reefs. They spend a large amount of time foraging and aggressively protecting prime feeding territories (University of Hawai'i 2016). Juvenile typically range from 20 – 45 feet in depth, while the adults are found in the very shallow surge zone to 20 feet.

Spawning occurs in groups where females deposit eggs in open water, the males swim by, release sperm, and fertilize the eggs. Initially, larvae develop among plankton and then move to reefs for protection where juveniles develop to adults (University of Hawai'i 2016).

Achilles Tang are broadcast spawners. Many broadcast spawners migrate to the edge of the reef drop off to spawn at dusk or dawn (Thresher 1984). Males and females simultaneously release eggs and sperm into the water column where the eggs are fertilized before floating to the surface until they hatch 20-30 hours later (Thresher 1984).

PIFSC-ESD (2020) data indicate that the 2019 island of O'ahu population of Achilles Tang at the 0–98-foot depth was approximately 73,299 individuals. This species is listed as 'Least Concern' by the IUCN (Choat et al. 2012).

Cultural Significance

The Achilles Tang is commonly referred to in Hawai'i as *pāku'iku'i*. The spelling and pronunciation of the Hawaiian names, which include *pākukui*, *pākuikui*, and *pāku'iku'i*, vary. They were considered "good eating" (Pukui and Elbert 1986) and were also noted to be correlated with the *kukui* tree (*Aleurites moluccana*) that grows on land.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

4.4.6.2 Hawaiian Cleaner Wrasse (*Labroides phthirophagus*)

Ecology

This brilliantly-colored wrasse is recognized by its habit of “cleaning” host fishes. The male and female phases of the Cleaner Wrasse appear identical in color, but dominant, terminal (sex-changed) males patrol a territory that may include several smaller females and their cleaning stations. If the male dies, it is believed that the dominant female changes sex and takes over the territory (Waikiki Aquarium 2018). Reproduction is year-round, and spawning occurs in pairs (Waikiki Aquarium 2018, Tinker 1978). Juveniles have a different color pattern than the adults, black with a broad blue stripe on the dorsal surface. Unlike nearly all small wrasses, this species does not bury in the sand at night. While inactive on the bottom at night, it accumulates a cocoon of mucus, similar to that observed in many parrotfishes (Waikiki Aquarium 2018, Tinker 1978). The Hawaiian Cleaner Wrasse is endemic, found only in the Hawaiian Islands, though related species occur throughout Indo-Pacific reefs (Waikiki Aquarium 2018, Tinker 1978).

Individuals establish “cleaning stations” at specific locations on the reef where a variety of “client” or host fishes assemble and await the Hawaiian Cleaner Wrasse’s services. The Hawaiian Cleaner Wrasse’s special mouth design enables it to remove crustacean ectoparasites from the host fishes, and in the process of cleaning, they also feed on mucus and some scales (Waikiki Aquarium 2018).

Hawaiian Cleaner Wrasse are broadcast spawners, with males and females simultaneously releasing eggs and sperm into the water column where the eggs are fertilized before floating to the surface until they hatch 20-30 hours later (Thresher 1984).

PIFSC-ESD (2020) indicate that the 2019 island of O’ahu population of Hawaiian Cleaner Wrasse at the 0–98-foot depth was approximately 266,970. The species is listed as ‘Least Concern’ by the IUCN (Allen et al. 2010). It is considered to be relatively common, and an estimated 80% of the species range is within the protected Papahānaumokuākea Marine National Monument, where fishing is prohibited (Allen et al. 2010).

Cultural Significance

While many wrasse species are referred to as *hīnālea*, a review of cultural-historical literature did not reveal any specific Hawaiian names, or any specific cultural information related to this species.

4.4.7 Invertebrate Species

Approximately 4,100 species of marine invertebrates are known from the state of Hawai’i. A small portion (1.6%) of these marine invertebrate species are reported under Aquarium Permits, generally those species that are colorful or aesthetically pleasing. Between 2000 and 2017, approximately 66 invertebrate species were collected under Aquarium Permits in O’ahu waters; however, some of these included those species reported as a general group (e.g., hermits, stars, crabs) (DAR 2018a). Only 44 species were reported by enough permits (>2 permits reporting from each area of collection during each year of collection) to determine total number of individuals collected. Collection areas with less than three permits reporting fall under the DAR non-disclosure agreement, in which totals are not released publicly (Section 5.1). A total of 2,971,008 individual marine invertebrates have been reported as collected under Aquarium Permits since

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

2000 (Table 4-8). However, it is important to note that marine invertebrate collection does not require an Aquarium Permit, but does require a CML. Therefore, while some fishers may elect to report their invertebrate collection on their Aquarium Fish Catch Report, some collection of invertebrates may be reported on the more general, and less detailed, CML catch report. It should also be noted that changes to the CML which occurred in 2021 would now prohibit the collection of invertebrates for commercial aquarium purposes without a HEPA review.

Table 4-8. Total number of invertebrates collected under Aquarium Permits from 2000-2017 on the island of O’ahu (DAR 2018a).

Fiscal Year ¹	Number Individuals Kept (all fishers)	Number Individuals Kept (20 fishers)	Percent Contribution of 20 fishers
2000	33,302	6,549	19.7%
2001	78,291	10,516	13.4%
2002	70,208	8,740	12.4%
2003	30,910	12,643	40.9%
2004	253,628	8,862	3.5%
2005	297,291	8,287	2.8%
2006	346,172	6,495	1.9%
2007	419,804	2,656	0.6%
2008	144,618	2,545	1.8%
2009	113,102	2,439	2.2%
2010	119,756	3,579	3.0%
2011	120,323	3,667	3.0%
2012	153,696	3,928	2.6%
2013	149,011	4,982	3.3%
2014	167,923	2,384	1.4%
2015	159,440	1,410	0.9%
2016	160,830	2,051	1.3%
2017	152,703	1,290	0.8%
2018 ²	76,753	685	0.9%
Average (2000-2017)	165,056	5,168	3.1%
Total (2000-2017)	2,971,008	93,023	3.1%

¹Fiscal year runs from July 1 through June 30

² Data from 2018 were provided for the calendar year for all fishers, and for the fiscal year for the 20 fishers. However, both datasets contain 12 calendar months, and are considered comparable for analysis.

Of the invertebrates collected on O’ahu and reported under Aquarium Permits, 89.7% (2,664,728 individuals) reported represent just three species; hermit crabs (species not specified), Feather Duster Worms (*Sabellastarte spectabilis*), and Zebra Hermit Crabs (*Calcinus laevimanus*; Table 4-9). An additional 41 species account for the other 10.3% of invertebrates reported collected (excluding non-disclosed data) (DAR 2018a). This EIS evaluates the top three species/species groups, as well as two additional species which would be on the proposed White List – the Halloween Hermit Crab (*Calcinus elegans*) and the Cleaner Shrimp (*Lysmata amboinensis*).

Table 4-9. Top three marine invertebrate species collected under Aquarium Permits on the island of O’ahu from 2000-2017 as well as the Halloween Hermit Crab and the Cleaner Shrimp which would be on the proposed White List (DAR 2018a). Species on the proposed White List are noted with an asterisk (*).

Common Name	Scientific Name	All fishers		20 fishers	
		Number Collected	Percentage of Total Invertebrates Collected ¹ (2,971,008)	Number Collected	Percentage of Total Invertebrates Collected (93,023)
Hermit Crab	Various	1,505,06	50.7%	4,230	4.5%
Zebra Hermit Crab*	<i>Calcinus laevimanus</i>	694,565	23.4%	1,653	1.8%
Feather Duster Worm*	<i>Sabellastarte spectabilis</i>	465,102	15.7%	54,649	58.7%
Halloween Hermit Crab*	<i>Calcinus elegans</i>	46,700	1.6%	235	0.3%
Cleaner Shrimp*	<i>Lysmata amboinensis</i>	25,240	0.8%	17,089	18.4%

¹Percentage calculated based on total number of invertebrate individuals collected (2,971,008) on O’ahu and does not include any non-disclosure totals.

The following sections provide a brief overview of the ecology of each of the top three aquarium invertebrate species collected as well as the Halloween Hermit Crab and the Cleaner Shrimp which would be on the proposed White List.

4.4.7.1 Hermit Crab (various species)

Hermit crabs are known in Hawai’i as *unauna*. Because specific species of hermit crabs are not reported on Aquarium Permit reporting forms, it is not possible to know which species are collected, with the exception of Zebra Hermit Crabs (Section 4.4.7.2). However, hermit crabs are one of the most common types of tide pool animals. They rely on empty snail shells for protection. Most species will scavenge the reefs consuming fish, other invertebrates, or algae. Some will display a variety of coloration and elaborate eye colors. Approximately 23 species of hermit crabs are known from Hawai’i shorelines.

No population estimates are available for hermit crabs.

4.4.7.2 Zebra Hermit Crab (*Calcinus laevimanus*)

This species of hermit crab is found in a large area of the Indo-Pacific, extending from Africa to Australia and Japan to Hawai’i. The common name comes from the coloration, black and white pincers, and white bands on dark legs. They also have orange and sky-blue eyestalks. They prefer to inhabit gastropod shells

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

in intertidal flats, reef flats, and rock platforms, and may also be found in mangrove areas on sand mud bottoms and on rocky shores (Rahayu 2000).

No population estimates are available for Zebra Hermit Crabs.

4.4.7.3 Halloween Hermit Crab (*Calcinus elegans*)

This species of hermit crab is widely distributed in the Indo-West Pacific, extending from the east coast of Africa to Australia and Japan to Hawai'i. Species coloration generally consist of bright blue eye stalks, olive brown claws with numerous irregular white protuberances, and bright blue bands on dark legs; however, in Hawai'i this species often has orange bands (Asakura 2002). They prefer shallow tidal regions (OBIS 2021).

No population estimates are available for Halloween Hermit Crabs.

4.4.7.4 Cleaner Shrimp (*Lyasmata amboinensis*)

This species of shrimp is widely distributed throughout the Indo-Pacific Ocean and Red Sea. The common name comes from their diet, which largely consists of parasites and dead tissue that they remove from various fish species. They are brightly colored shrimp with a white band running down the middle of the back and red bands on either side. They live in and around coral reef caves or rock ledges at 4 to 40 meters in depth. They can grow to 5 to 6 centimeters in length and are typically found in pairs (Aquarium of the Pacific 2021).

No population estimates are available for Cleaner Shrimp.

4.4.7.5 Feather Duster Worm (*Sabellastarte spectabilis*)

Feather Duster Worms are native to the Indian Ocean and Red Sea but are a widely introduced species inhabiting the Gulf of Mexico and Hawai'i, appearing sometime after World War II. The Feather Duster Worm is known in Hawai'i as *kio po'apo'ai* (DAR 1998). It is approximately 3.1 inches in length, and 0.5 inch in width. It is buff in color with purple specks, living in a tough leathery tube covered with fine mud. Branched tentacles project from the tube and form a plum. This species can reproduce either asexually through fragmentation or sexually (Bailey-Brock 1976). They are found in holes and cracks among algae on reefs and rocky shores. It may sometimes be found growing in crevices of corals, under boulders in still water, tidal pools, or in channels exposed to heavy surf (Bailey-Brock 1976).

No population estimates are available for Feather Duster Worms; however they are considered abundant on O'ahu's south shore reefs, within Pearl Harbor, and at Kaneohe Bay at shallow depths (Hawaii Biological Survey 2001).

4.4.8 Threatened and Endangered Wildlife Species

A total of 8 federal and 10 state-listed threatened or endangered marine species, consisting of 1 seal, 4 whales, and 5 sea turtles, occur in Hawai'i (Table 4-10). Federal endangered species are those species that the US Fish and Wildlife Service define as being in danger of becoming extinct, while threatened species are those likely to become endangered in the foreseeable future. State endangered species are

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

those defined by the DLNR as in danger of becoming extinct at a state level, while threatened species are those likely to become endangered in the foreseeable future at the state level. No species collected by aquarium fishers occur on the state of federal list of threatened and endangered species.

Table 4-10. Threatened and endangered marine species of Hawai'i.

Common Name	Scientific Name	State Status	Federal Status
Mammals			
Hawaiian Monk Seal	<i>Neomonachus schauinslandi</i>	E	E
Fin Whale	<i>Balaenoptera physalus</i>	E	NA
Humpback Whale	<i>Megaptera novaeangliae</i>	E	E
Sperm Whale	<i>Physeter catodon</i>	E	E
False Killer Whale	<i>Pseudorca crassidens</i>	E	NA
Reptiles			
Pacific Leatherback Sea Turtle	<i>Dermochelys coriacea schlegelii</i>	E	E
Pacific Hawksbill Sea Turtle	<i>Eretmochelys imbricata bisssa</i>	E	E
Loggerhead Sea Turtle	<i>Caretta</i>	T	T
Green Sea Turtle	<i>Chelonia mydas</i>	T	T
Olive Ridley Sea Turtle	<i>Lepidochelys olivacea</i>	T	T

4.4.9 Reef Habitat

Stretching for more than 1,200 miles in the Central Pacific, Hawaiian coral reefs account for about 85% of all coral reefs in the United States. More than 500 species of algae also live in Hawai'i's coral reefs providing food for fish and oxygen for all marine life. The oceans' algae provide more oxygen than all land plants worldwide combined. There are 78 species of endemic marine algae, 24 species of endemic freshwater algae, and two aquatic plants included on Hawai'i's list of SGCN (DLNR 2015).

Hawai'i's reefs are unique among the world's reef ecosystems. Compared to coral reefs in the Indo-Pacific or Caribbean, Hawaiian reefs are relatively young. Hawai'i reefs are therefore dominated by hard corals (as opposed to sponges, tunicates, and soft corals) and are inhabited by distinctive reef fish and other marine life. Hawai'i hosts about 40 species of hard, reef building corals (MRC 2017). Due to Hawai'i's extreme isolation, an estimated 25% of the coral reef species are found nowhere else.

Stony corals are defined by Hawai'i Administrative Rule 13-95 as any species belonging to the Order Scleractinia (marine corals which generate a hard skeleton). All reef corals, including mushroom corals, belong to this order (DAR 2014b). The animals which form stony corals belong to the same major group as jellyfish and anemones. Most of them are colonial, and all secrete a hard skeleton made of calcium carbonate. The animals themselves, called polyps, form the outer living layer of a coral colony. Each polyp sits in a cup-like depression called a calyx. Some Hawaiian stony corals grow very slowly and can take hundreds of years to recover from damage. To differentiate from many west Pacific corals which can grow very rapidly, and from *Pocillopora* which rapidly recolonizes dead reefs and grows rather quickly (DAR 2014b).

The characteristic color of many living corals is due to the presence of single-celled algae, called zooxanthellae, which live inside the coral polyp. The coral and algae have a symbiotic relationship. Most

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

stony corals produce colonial forms that are attached to the substrate, but a few are solitary and unattached (DAR 2014b).

Coral reefs surround the island of O'ahu, although active live coral growth is limited to the leeward sides of the island or in sheltered areas on the windward coasts. In 2014 and 2015, coral reefs in the main Hawaiian Islands suffered up to 90% bleaching and 50% mortality rates in some areas due to widespread prolonged warming events during each year (Rodgers et al 2017). These areas affected included portions of O'ahu.

4.4.9.1 Corals Common to Hawai'i (DAR 2014b)

Rose or Cauliflower Coral (*Pocillopora meandrina*)

The most common *Pocillopora* in Hawai'i, this coral prefers wave-agitated environments, and is found at depths to about 150 feet. Commonly called "rose coral" or "cauliflower coral," the colonies form cauliflower-shaped heads about 10 to 20 inches in diameter. Branches are heavy and leaf-like and fork bluntly near the ends. All branches have wart-like projections called verrucae that are covered with calices. Color of living colonies ranges from brown to pink.

Lace Coral (*Pocillopora damicornis*)

This delicate and fragile coral forms small bushy clumps up to about 6 inches in diameter. Colonies consist of fine branches covered with calices. These branches range from long and slender in calm waters to more robust forms in areas of wave action. Sometimes the skeleton will create pocket formations around a crab that lives among the branches. Usually found in protected areas and inner portions of large reef flats, this species appears to strongly depend on sunlight, as it is rarely found below about 30 feet. Colonies range in color from light brown in shallow waters to dark brown in deeper waters.

Antler Coral (*Pocillopora eydouxi*)

Colonies consist of thick pipe-like branches that resemble moose antlers. This species also possesses verrucae and is usually found in depths of 35 to 150 feet. Live colonies are brown in color and usually darker than other Pocilloporid corals.

Lobe Coral (*Porites lobata*)

This coral produces many encrusting or massive forms on the reef from the intertidal zone to depths of over 180 feet. Long narrow cracks found on the coral heads are produced by a type of alpheid shrimp. Calices have a snowflake-like appearance and are shallow and flush to the surface. Living colonies range in color from yellowish-green to brown and sometimes blue.

Finger Coral (*Porites compressa*)

Distinguishing features are the finger-like branching and shallow snowflake-shaped calices. This species is most common in wave-protected areas like bays or deeper reef slopes to depths of about 150 feet. It has many growth forms, but all of them show some sort of fingerlike branching. Color of live colonies ranges from light brown to light yellowish-green.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

Rice Coral (*Montipora capitata*)

The most obvious characteristic of this coral is the nipple-like projections (papillae) that cover the surface. These papillae are smooth with no calices on them. Calices are found on the upper surface of the coral between the papillae. The image of the calices and papillae create a "rice & pepper" appearance. This species is found at depths up to about 150 feet. It has a number of growth forms ranging from plate-like to branchlike and encrusting types. Color of living colonies is usually brown. If the colony is growing in a plate form, the edges may be white.

Mushroom or Razor Coral (*Fungia scutaria*)

This solitary (single polyp), free-living (unattached) coral is most commonly found on reef flats, frequently between cracks and crevices. It has also been found at depths of over 75 feet. Its disk-like, elliptical shape resembles a mushroom cap and ranges from 1.5 to 7 inches in diameter. Some adults may form a high arch in the middle. Immature forms are attached to the substrate or an adult mushroom coral by a stalk. It grows into a disk and, when large enough, breaks off the stalk and becomes free-living. The color of live specimens ranges from pale brown in bright sunlight to dark brown in shady areas or deeper water.

Cup or Tube Coral (*Tubastraea coccinea*)

This is a common non-reef building coral found in shallow Hawaiian waters. This species forms large calices and occurs in clumps that are 2 to 4 inches in diameter. Living tissue is usually bright orange in color but may also appear pink or even black. The bright coloration is not produced by zooxanthellae. This coral is usually found on steep ledges, in caves and in shady tidepools.

4.4.10 Invasive Species

From *A Guidebook of Introduced Marine Species in Hawai'i* (DeFelice et al. 2001):

Through the Hawai'i Biological Survey at Bishop Museum, a count of the total number of species in the Hawai'i Archipelago has been compiled. In 1999, there were 23,150 known species of terrestrial and aquatic algae, plants, and animals, including 5,047 nonindigenous species (~ 20%). The total number of marine and brackish water alien species in the Hawaiian Islands was 343, including 287 invertebrates, 24 algae, 20 fish, and 12 flowering plants.

The 287 alien marine invertebrate species make up about 7% of the known marine and brackish water invertebrate fauna in the Hawaiian Islands (4,099 species). Arthropods have been the most successful marine invaders, with 71 suspected alien crustacean species, while 53 alien mollusks have made it to Hawai'i. Limited information exists for these invasive species.

The greatest number of introduced marine invertebrates have arrived to Hawai'i through hull fouling, but many have also arrived with solid ballast and in ballast water. DeFelice et al. (2001) considered 201 species (70%) to be introduced, and 86 species (30%) cryptogenic (not demonstratively native or introduced). Two hundred forty-eight (87%) have become established, 15 (5%) arrived but failed to become established, 6 (2%) were intercepted, and the population status of 18 species (6%) is unknown.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Affected Environment

The nonindigenous invertebrate species in the Hawaiian Islands are primarily of Indo-Pacific/Philippines Islands region origin. A surprising number of species from the tropical western Atlantic/Caribbean region have invaded Hawai'i as well.

Invasive algae pose the largest threat to Hawai'i's reef ecosystem. The five most common algae species posing the largest threat include Smothering Seaweed (*Kappaphycus* and *Euchema* spp.), Gorilla Ogo (*Gracilaria salicornia*), Leather Mudweed (*Avrainvillea amadelpha*), Hook Weed (*Hypnea musciformis*), and Prickly Seaweed (*Acanthophora spicifera*). Marine debris arriving from other countries and regions and ballast water/biofouling are the primary threat for invasion in the Hawaiian Islands.

Invasive fish species of concern in Hawai'i include the Bluestripe Snapper (= Taape; *Lutjanus kasmira*) and Peacock Grouper (= Roi, bluespot peacock grouper; *Cephalopholis argus*). The Blacktail Snapper (*Lutjanus fulvus*) is less common and restricted to the main Hawaiian Islands. All three species were introduced from 1956-1961, mostly as game fish (Russell et al. 2016a, Russell et al. 2016b, Choat et al. 2018). The introduction of the Bluestripe Snapper into Hawai'i included at least one non-native parasite that has spread to local fishes (Gaither et al. 2013).

The Peacock Grouper prefers exposed reef front habitats with a water depth of 3 to 30 feet, while juveniles utilize thick pockets of coral (Myers 1999). Individuals use a variety of hunting techniques to capture prey. They may hover and wait, stalk prey, and follow larger predators such as eels and attack missed prey (Hoover 2008). Dierking et al. (2009) found reef fishes were the principal diet component (97.7% by % Index of Relative Importance [IRI]) of Peacock Grouper. Crustaceans were the only other higher taxonomic group in the diet but were of minor importance (2.3% by %IRI) (Dierking et al. 2009).

The Peacock Grouper is a known carrier of Ciguatera (a foodborne illness), which is well known by the local fishermen and therefore its use as a food fish is intentionally very limited (BIAAF, pers. comm.). It has become a dominant predator species in the Main Hawaiian Islands and is known to have negative ecological impacts on other endemic and culturally valued species (Dierking 2007). In recent years, efforts to minimize populations of this species have led to statewide events often dubbed "roi round-ups," where local spear fishers are encouraged to catch and remove as many roi from the reefs as possible. However, a recently completed 5.5-year study found that removal of the Peacock Grouper did not translate into sustained increases in prey, nor to increases in total fish biomass (Giddens et al. 2017).

The Bluestripe Snapper and Peacock Grouper are well established in Hawai'i. The Blacktail Snapper occurs at low densities only in the lower Hawaiian Islands (Randall 1987, Gaither et al. 2010 as cited in Russell et al. 2016b). From 2008 through 2014, regional estimates of the density of Blacktail Snapper ranged from 1.8 to 14.1 individuals per 2.5 acres over hard bottoms to 98.5 feet depth in Pacific coral reef areas surveyed by NOAA (NOAA unpublished data as described in Heenan et al. 2014 as cited in Russell et al. 2016b). The highest recorded density was in the MHI region (0.3 to 45.1 individuals per 2.5 acres) as compared to the lowest in the Southern Mariana Islands region (0 to 4.3 individuals; Russell et al. 2016b).

5.0 ENVIRONMENTAL CONSEQUENCES

This section discusses the impacts of implementing the six alternatives on resources retained for further analysis. Aspects of the environment that may be affected by the alternatives is discussed to the level of detail commensurate with the potential effect. Those aspects of the environment that would not be affected are discussed briefly. The content, intensity, and likelihood of the impact were taken into consideration in the making of these ratings. **The environmental consequences have been updated since publication of the DEIS. Changes include new 2019 population estimates (PIFSC-ESD 2020), as well as the addition of the new Creation of a White List and Limited Collection Alternative and a new No Action Alternative reflecting the changes in CML-issuance which have occurred since publication of the DEIS. Additional details have also been added to some analyses in response to public comments.**

Direct, indirect, and cumulative impacts are evaluated for each resource. The temporal scope of the impacts analysis is five years. The HEPA does not specifically define direct and indirect impacts. As such, for the purposes of this FEIS, the National Environmental Policy Act (NEPA) definitions are used. The NEPA defines direct effects as those effects that are caused by the action and occur at the same time and place (40 Code of Federal Regulations [CFR] § 1508.8(a)). Indirect effects include effects later in time or farther removed in distance but are still reasonably foreseeable (40 CFR § 1508.8(b)). Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems (40 CFR § 1508.8).

The HEPA does not specifically define mitigation. As such, for the purposes of this FEIS, the NEPA definition is used. According to the CEQ regulations (40 CFR 15008.20), mitigation means:

- Avoiding impact altogether
- Minimizing impact
- Limiting the degree or magnitude of action
- Rectifying impact
- Repairing, rehabilitating, restoring
- Reducing or eliminating impact over time
- Preservation and maintenance activities
- Compensating for the impact
- Replacing or providing substitutes

However, the HEPA Guide (OEQC 2014) indicates that an EIS needs to consider all mitigation measures to avoid, minimize, rectify, or reduce adverse impacts.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

The HEPA defines cumulative impacts as the impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (HAR Section 11-200-2).

Cumulative impacts were analyzed according to a tiered approach, which allows for a resource-specific analysis of regional and local actions and narrows the focus to those effects with direct influence on the proposed action and agency decision-making. Following this approach, the cumulative impacts analysis focused on potential impacts to socioeconomics, cultural resources, and biological resources, including fish species, invertebrates, and reef habitat, as these are the resources with the potential for on-going impacts due to commercial aquarium fish collection. The spatial analysis area for cumulative effects is the nearshore waters of the island of O’ahu from the shoreline out to 3 nautical miles.

5.1 HRS §189-3 AND DATA ANALYSIS

HRS §189-3 states:

(a) Upon the demand of the department, every commercial marine licensee shall furnish to the department a report or reports with respect to the marine life taken and any other information the department may require for the purposes of this section.

(b), “Any information submitted to the department by any person in compliance with any requirement under this section shall be confidential and shall not be disclosed, except when required under court order or pursuant to subpoena issued by the department of the attorney general, or with the prior written consent of the person submitting the information, or under cooperative agreements with government agencies of the United States for exchange and use of the information specifically to manage marine life. The department, by rule, may establish procedures necessary to preserve the confidentiality, except that the department may release or make public any of the information in the aggregate or summary form which does not directly or indirectly disclose the identity of any person who submits information.”

The DAR complies with this statute by keeping confidential any catch data when less than three collectors report from an individual collection zone (Figure 1). Collection zones depicted in Figure 1 correspond to areas defined by the monthly report fishers are required to provide to DAR. Confidential data are identified as n.d. (not disclosed) in the tables in Section 5.0. The impact of this statute on data analysis is minimal but can cause confusion when numbers in the text or in the tables do not exactly match up, or do not match previously published reports for which the n.d. data were available (i.e., DAR reports). Although it is possible for 1-2 aquarium fishers to collect large numbers of fish and skew the data, this concern was minimized by the manner in which data were analyzed. Data provided by the DAR for this FEIS were evaluated using many parameters, thereby minimizing bias due to confidentiality. The data were also viewed in aggregate and over extended time periods (i.e., 2000-2017) to further minimize confidentiality issues. Additionally, the 20 fishers included in the Limited Permit Issuance Alternative waived their right to confidentiality, so all data from 2000 through 2017, as well as from 2018, for these 20 fishers were released for analysis in this EIS. These historic data are presented for the 20 fishers combined as needed for the analysis of the Limited

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

Permit Issuance Alternative but are not provided separately for the 15 fishers as their impacts would be limited by the individual catch quotas.

5.2 SOCIOECONOMIC RESOURCES

The No Action Alternative would not involve any aquarium collection. Socioeconomic impacts are calculated based on historic trends for the CML-only Alternative, Pre-Aquarium Collection Ban Alternative, Expanded Waikiki MLCD and Flame Wrasse Conservation Alternative, and the Limited Permit Issuance Alternative. Biological impacts are calculated based on the individual catch quotas (Section 3.6.1) for the Establishment of a White List and Limited Collection Alternative. Therefore, historic trend data are provided for the entire fishery and for the 20 fishers who would be issued permits under the Limited Permit Issuance Alternative but are not applicable for the 15 fishers who would be issued permits under the Preferred Alternative. Table 5-1 summarizes how impacts are calculated by alternative.

Table 5-1. Summary of socioeconomic impact analysis by alternative.

Alternative	Impact
No Action	None (no collection)
CML-Only	Follow 2018-2019 collection trends
Pre-Aquarium Collection Ban	Follow historic (2000-2017) trends
Expanded Waikiki MLCD and Flame Wrasse Conservation	Follow historic (2000-2017) trends, with a small decrease due to decreased catch of Flame Wrasse
Limited Permit Issuance	Follow historic (2000-2017) trends of the 20 fishers who would be issued permits
Establishment of a White List and Limited Collection (Preferred) Alternative	Based on individual catch quotas, issuance of 15 permits, and historic price per fish/invertebrate for the 35 species on the proposed White List

5.2.1 Direct Effects

From 2000 to 2017, the aquarium fishery on O’ahu added an average of \$540,542 (inflation-adjusted 2019 dollars) annually to the state of Hawai’i’s economy, while the overall aquarium fishery within the state of Hawai’i added an average of \$2,172,028 (inflation-adjusted 2019 dollars) to the economy (DAR 2018a, Table 5-2). Total ex-vessel value (i.e., price received by a fisher for the catch) for O’ahu ranged from a low of \$211,246 in 2003 to a high of \$778,491 in 2012 (inflation-adjusted 2019 dollars), with an average value over the 18-year period of \$540,542. During the period from 2000 through 2017, the 20 fishers made up from 31.9% to 71.5% of the total economic value of the O’ahu commercial aquarium fishery.

As described in Section 4.1.1, on average, 16.7% of this value is attributable to invertebrate species and 79.4% is attributable to fishes, with the remaining percentages attributable to non-disclosure data, unknown species, and miscellaneous species. Assuming that the average percentages can be applied to the average inflation-adjusted total ex-vessel value of \$506,251, approximately \$401,963 can be attributed to fish collection, and \$84,544 can be attributed to invertebrate collection, on average. It should be noted that the

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

dollar value of these fisheries represents only the ex-vessel value and does not include the value which would be generated by additional dealer, retail sales, and shipping costs. The actual economic value of the catch is thus substantially greater than the ex-vessel value and is discussed in further detail in the indirect impacts section below.

Table 5-2. Minimum, maximum and average market values of the commercial aquarium fishery from 2000 through 2017 (inflation-adjusted 2019 values). See Table 4-1 and Table 4-2 for additional data by year. These data are applicable to the analysis of the Pre-Aquarium Collection Ban, Expanded Waikiki NLCD and Flame Wrasse Conservation, and Limited Permit Issuance alternatives.

		Minimum	Maximum	Average
O'ahu	All Fishers	\$211,246	\$778,491	\$540,542
	20 Fishers	\$100,951	\$486,891	\$286,174
State of Hawai'i	All Fishers	\$1,333,497	\$2,708,609	\$2,172,028

Based on data provided by the DAR (2018a), the market value of the O'ahu commercial aquarium fishery has increased by 212%, growing from a value of \$242,856 in 2000 to a value of \$513,723 in 2017 (Table 4-2), representing a 4.5% annual growth rate⁷.

All commercial aquarium collectors must obtain the state Aquarium Permit and the CML, which allows them to offer the collected fish for sale. The Aquarium Fish Catch Report requirement is triggered by the CML. Some collectors participate in a dive team. To avoid duplicate fish catch reporting, only a principal diver is required to report the catch and effort for the dive team (DAR, pers. comm., 2018). This process ensures that reported catch data are not duplicated in the State's system. However, this reporting mechanism can lead to confusion by outside observers, as the total number of permit holders is higher than the number of permit holders reporting data (Table 4-1), giving the appearance of under reporting. Aquarium fish dealers also report sales, which can then be cross-referenced with the catch reports to check for underreporting. Analysis by the DAR (2019a) has shown that actual underreporting of catch is small, with a 3.5% difference between the number of animals reported caught and sold in 2010 and a 0.4% difference in 2014, which likely represent live releases and mortality. For the period of 2000 to 2017, the total number of permit holders in O'ahu ranged from 66 to 126 (average = 85), while the number of permit holders reporting ranged from 28 to 52 (average = 40). In 2017, it is estimated that up to 126 individuals were directly employed in the commercial aquarium fishery in O'ahu (up to 226 employed in the state of Hawai'i).

5.2.1.1 No Action Alternative

Under the No Action Alternative, commercial collection of aquarium fish would not occur on O'ahu, representing a loss of approximately 126 jobs and \$540,542 annually from the state of Hawai'i's economy

⁷ Annual Percent Growth = $\left[\frac{2017 \text{ value}^{1/17}}{2000 \text{ Value}} - 1 \right] * 100$

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

compared to the Pre-Aquarium Collection Ban Alternative, which is less than 0.01% of the \$8.6 billion ocean economy in Hawai'i, and even less of Hawai'i's economy overall.

5.2.1.2 CML-only Alternative

Under the CML-only Alternative, an unlimited number of CMLs for commercial aquarium collection would be issued, but no Aquarium Permits would be issued. Therefore, collection of aquarium fish using fine mesh nets would not occur, though collection of fish and invertebrates using methods not requiring an Aquarium Permit would occur. Commercial aquarium fishers may no longer find it feasible to target aquarium fish and may begin to participate in other fisheries, but this is not possible to quantify at this time.

Under the CML-only Alternative, some aquarium collection may continue using legal gear or methods other than fine mesh nets. After the ban on Aquarium Permits went into effect in October 2017, based on data disclosed by the DAR, O'ahu reported sales of \$387,852 during the 2018 calendar year (inflation-adjusted 2019 values, Table 4-2; DAR 2019b). Therefore, under the CML-only Alternative, it is estimated that the commercial aquarium fishery would add approximately \$387,852 to the state of Hawai'i's economy in the first year of the 5-year analysis period based on 2018 data (DAR 2019b). Assuming a 4.5% annual growth rate, this would total approximately \$2.1 million over the 5-year analysis period (average of \$424,365 per year) and an unknown number of jobs (assumed to be <126) under the CML-only Alternative. This would represent a loss on O'ahu of approximately \$835,323 over the 5-year analysis period compared to the Pre-Aquarium Collection Ban Alternative (average of \$167,065 per year), which represents an annual loss of less than 0.01% of the \$8.6 billion ocean economy in Hawai'i, and an even lesser percentage of the overall Hawai'i economy.

5.2.1.3 Pre-Aquarium Collection Ban Alternative

Under the Pre-Aquarium Collection Ban Alternative, an unlimited number of Aquarium Permits and CMLs would be issued for the use of fine-mesh nets on O'ahu, and it is assumed for this analysis that collection, including the value and sales of fish, would follow historic collection rates (see Table 4-2). Based on historic data collected prior to the October 2017 ban on commercial aquarium collection, under the Pre-Aquarium Collection Ban Alternative the commercial aquarium fishery is estimated to create approximately 126 jobs and add an average of \$540,542 (inflation-adjusted 2019 dollars) to the state of Hawai'i's economy during the first year of the 5-year analysis period. Assuming an annual growth rate of 4.5%, this would total over \$2.9 million over the 5-year analysis period (average of \$591,430 per year). This represents less than 0.01% of the \$8.6 billion ocean economy in Hawai'i, and even less of Hawai'i's economy overall.

5.2.1.4 Expanded Waikiki MLCD and Flame Wrasse Conservation Alternative

The Expanded Waikiki MLCD and Flame Wrasse Conservation Alternative would include issuance of an unlimited number of Aquarium Permits and CMLs for O'ahu, a 740-acre (299.5-hectare) expansion of the Waikiki MLCD (Figure 2), and creation of a daily bag limit of 10 Flame Wrasse per day for the O'ahu commercial aquarium fishery. Within the expanded Waikiki MLCD, no commercial aquarium fish collection would occur; however, no restrictions would be placed upon other fisheries.

The expanded areas of the Waikiki MLCD fall within O'ahu collection zone 400. However, the data available for this FEIS cannot be used to quantify the number of fish collected or the species collected from this area.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

It is expected that any socioeconomic impacts would be tempered either by market forces (limited supply = increase value) or through redirection of effort and resources by commercial aquarium fishers to other areas of O'ahu open to commercial aquarium collection.

The 10 individual Flame Wrasse bag limit is an estimated 60% reduction in the number of Flame Wrasse taken by the commercial aquarium fishery. Since 2012, a total of 15,743 Flame Wrasse have been collected on O'ahu during 625 trips⁸. This results in an average of 25.2 Flame Wrasse per trip. The 10 individual Flame Wrasse bag limit is an estimated 60% reduction in the number of Flame Wrasse taken by the commercial aquarium fishery on O'ahu. Estimated value of the Flame Wrasse on O'ahu since 2012 has averaged \$48,169 per year. The worst-case scenario under this Alternative would be that the income from Flame Wrasse will be cut by approximately 60% (\$28,901). This represents approximately 5.3% of the \$540,542 O'ahu commercial aquarium fishery, or 1.3% of the annual economic impact of the \$2,172,028 (average, inflation-adjusted value) aquarium fishery in the State of Hawaii. This impact may be buffered however, as the cost per fish may increase as the supply of Flame Wrasse decreases, negating any socioeconomic impact to the fishers. If this were to be case, the socioeconomic impact of the bag limit would be seen on the consumer side (i.e., those purchasing aquarium fish, who would have to pay a higher premium due to decreased supply).

However, assuming the impact is 5.3% of the O'ahu commercial aquarium fishery value, the Expanded Waikiki MLCD and Flame Wrasse Conservation Alternative would add approximately \$511,641 in the first year of analysis, and assuming an annual growth rate of approximately 4.5%, a total of approximately \$2.8 million would be added over the 5-year analysis period (average of \$559,808 per year). This represents less than 0.01% of the \$8.6 billion ocean economy in Hawai'i, and even less of Hawai'i's economy overall.

5.2.1.5 Limited Permit Issuance Alternative

Under the Limited Permit Issuance Alternative, Aquarium Permits and CMLs would be issued to 20 fishers for the use of fine-mesh nets on O'ahu. Other commercial aquarium fishers would not be permitted to use fine mesh nets, though collection of aquarium fish would still be permitted using other legal means. This would create a minimum of 20 jobs for the 20 fishers who would have permits.

The 20 fishers averaged \$286,174 per year on O'ahu between 2000 and 2017, up to a maximum of \$486,891 (based on the maximum from 2015) (inflation-adjusted 2019 dollars; see Table 4-2). Assuming that the first year of the 5-year analysis period would have a market value for the 20 fishers of \$286,174 to \$486,891 and applying a 4.5% annual growth rate, the Limited Permit Issuance Alternative would add from \$1.5 to \$2.6 million over the 5-year analysis period (average of \$313,115 to \$532,728 per year), which represents less than 0.01% of the \$8.6 billion ocean economy in Hawai'i, and even less of Hawai'i's economy overall.

⁸ For the purposes of this analysis, it was assumed that one trip is equal to one day fished under a single permit.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

5.2.1.6 Establishment of a White List and Limited Collection (Preferred) Alternative

Under the Establishment of a White List and Limited Collection (Preferred) Alternative, Aquarium Permits and CMLs would be issued to 15 fishers for the use of fine mesh nets (and other legal methods). This would create a minimum of 15 jobs for the 15 fishers who would have permits.

The 15 fishers would each be allowed to collect and sell a limited number of each of the 35 species on the proposed White List (see Section 3.6.1). Based on the average per-fish values from 2018 and 2019 (see Section 4.1.1), and assuming that each fisher reached their individual catch quota for each species, the Preferred Alternative would add an average of \$860,348 to the economy each year (see Table 5-3), for a total of up to \$4.3 million over the 5-year analysis period. Annual growth, if it did occur, would not be the result of increased collection since the total allowable catch would not change. Growth could occur based on an increase in the market value of the species on the proposed White List, but what that growth might be cannot be estimated at this time.

Table 5-3. Predicted gross annual sales based on average per fish values (see Section 4.1.1) from 2018/2019 and assuming the entire individual catch quota for each species for each fisher.

Species	Total Potential Catch (15 fishers combined)	Average Value	Projected Annual Sales
Bandit Angelfish	638	\$162.16	\$103,458.08
Bicolor Anthias	3,140	\$6.11	\$19,185.40
Brown Surgeonfish (Lavender, Forktail Tang)	969	\$1.42	\$1,375.98
Crosshatch (Redtail) Trigger	759	\$118.01	\$89,569.59
Crowned Puffer (Saddleback, Crown Toby)	1,848	\$1.76	\$3,252.48
Dragon Wrasse (Rockmover)	470	\$4.52	\$2,124.40
Eightline Wrasse	1,905	\$3.14	\$5,981.70
Fisher's Angelfish	1,627	\$5.20	\$8,460.40
Flame Wrasse	3,480	\$26.49	\$92,185.20
Forcepsfish	2,817	\$2.82	\$7,943.94
Fourline Wrasse	2,722	\$8.13	\$22,129.86
Gilded Triggerfish (Bluethroat Trigger)	1,483	\$8.12	\$12,041.96
Golden Dwarf Moray (Dwarf Moray)	215	\$31.65	\$6,804.75
Hawai'i Whitespotted Toby (Puffer)	3,382	\$1.50	\$5,073.00
Henicopus Butterfly (Pennantfish)	1,061	\$3.16	\$3,352.76
Kole	11,983	\$4.53	\$54,282.99
Milletseed (Lemon) Butterflyfish	3,154	\$2.65	\$8,358.10
Moorish Idol	1,067	\$5.18	\$5,527.06
Orangeband (Shoulder) Surgeonfish	3,875	\$2.62	\$10,152.50

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

Species	Total Potential Catch (15 fishers combined)	Average Value	Projected Annual Sales
Orange-spine Unicornfish (Clown Tang)	2,432	\$6.44	\$15,662.08
Ornate Wrasse (Pinkface)	4,066	\$3.60	\$14,637.60
Potter's Angel	7,312	\$8.43	\$61,640.16
Raccoon Butterfly	626	\$4.60	\$2,879.60
Saddle Wrasse	1,597	\$1.63	\$2,603.11
Shortnose (Geoffroy's) Wrasse	2,592	\$4.01	\$10,393.92
Spotted Boxfish	1,178	\$5.85	\$6,891.30
Threadfin Butterfly	366	\$10.13	\$3,707.58
Whitemouth Moray	140	\$25.44	\$3,561.60
Yellow Tang	23,524	\$6.49	\$152,670.76
Yellowtail Coris (Clown Wrasse)	1,543	\$5.10	\$7,869.30
Zebra Moray	258	\$8.82	\$2,275.56
Zebra Hermit Crab	136,917	\$0.08	\$10,953.36
Halloween Hermit Crab	9,519	\$0.19	\$1,808.61
Cleaner Shrimp	2,946	\$3.00	\$8,838.00
Feather Duster Worm	51,213	\$1.81	\$92,695.53
Total O'ahu Fishery (all 15 fishers)	n/a	n/a	\$746,052.72

5.2.2 Indirect Effects

Indirect socioeconomic impacts of the commercial aquarium fishery would primarily involve the additional profits from the aquarium fish market (including freight and packaging), as well as other tourist businesses such as snorkel and dive operations that rely on seeing and interacting with a healthy reef ecosystem. The presence of a healthy reef ecosystem may also impact overall land/home values on the island of O'ahu, as well as the intangible benefit of the presence of reef fish in their natural habitat for local residents.

As described in Section 4.1.1, the total sales of the Hawaiian aquarium fishery (including freight and packaging) is nearly six times the ex-vessel value (Walsh et al. 2003). Therefore, it is estimated that the commercial aquarium fishery indirectly adds approximately five times the direct socioeconomic costs described in Section 5.2.1 to the economy.

5.2.2.1 No Action Alternative

Under the No Action Alternative, no commercial aquarium fishing would occur on O'ahu, and the direct economic impacts include a loss of approximately \$2.9 million over the 5-year analysis period when compared with the Pre-aquarium Collection Ban Alternative. A direct loss of \$2.9 million would represent an indirect loss of approximately \$14.7 million over the 5-year analysis period, or an average of \$2.9 million per year, representing less than 0.01% of the annual \$84.9 billion gross domestic product of Hawai'i.

Under the No Action Alternative, no interaction between other tourist operations or local residents and commercial aquarium fishers would occur on O'ahu. No scientific data exist to suggest that in the absence of aquarium fishers an increase in other tourist operations would occur.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

5.2.2.2 CML-only Alternative

Under the CML-only Alternative, commercial aquarium fishing on O'ahu would continue using methods other than fine mesh nets.

The commercial aquarium fishery is expected to add approximately \$2.1 million over the 5-year analysis period to the economy under the No Action Alternative, for an indirect economic benefit (e.g., export of fish, freight, packaging, etc.) of approximately \$10.6 million over the 5-year analysis period, or an average of \$2.1 million per year, representing less than 0.01% of the annual \$84.9 billion gross domestic product of Hawai'i.

Based on the direct economic loss of approximately \$835,323 over the 5-year analysis period compared to the Pre-Aquarium Collection Ban Alternative (this loss is described in Section 5.2.1.1), approximately \$20.8 million in indirect economic benefits of this fishery would not occur over the 5-year analysis period, or an average of \$4.1 million per year, representing less than 0.01% of the annual \$84.9 billion gross domestic product of Hawai'i.

Under the CML-only Alternative, a portion of the direct and indirect income from this fishery (total of \$12.7 million over the 5-year analysis period) would continue to be put back into Hawai'i's economy through re-investment efforts in terms of equipment, maintenance, supplies, and personnel, which would be \$5 million less under the No Action Alternative compared to the Pre-Aquarium Collection Ban Alternative due to the lower fishery value under this alternative.

In addition, while the aquarium fishery directly employs the collectors, these collectors hire staff/assistants, sell their catch to wholesalers, who in turn get the fish to the market, which includes pet stores and their customers (Dierking 2002). This economic value is represented in the \$10.6 million indirect economic benefit, but there are also jobs, which cannot be quantified at this time. Given the \$5 million loss compared to the Pre-Aquarium Collection Ban Alternative, it is possible that the CML-only Alternative would result in fewer jobs than the Pre-Aquarium Collection Ban Alternative.

No scientific data exist to suggest that in the absence of the commercial aquarium fishery an increase in other tourist operations would occur.

5.2.2.3 Pre-Aquarium Collection Ban Alternative

Under the Pre-Aquarium Collection Ban Alternative, commercial aquarium fishing would occur on O'ahu using fine mesh nets, and it is assumed for this analysis that collection rates, including the value and sales of fish, would follow those prior to the October 2017 commercial aquarium collection ban (see Table 4-2). Based on the direct economic value of \$2.9 million over the 5-year analysis period, the commercial aquarium fishery would indirectly (e.g., export of fish, freight, packaging, etc.) add an additional \$14.7 million under the Pre-Aquarium Collection Ban Alternative to the economy of Hawai'i, or an average of \$2.9 million per year, representing <0.01% of the annual \$84.9 billion gross domestic product of Hawai'i.

Indirect socioeconomic impacts between commercial aquarium fishers, dive tour operators, local residents, and subsistence/cultural fishers are possible if the commercial aquarium fishing leads to a decrease in demand for snorkel and scuba tours or a decrease in availability of species of fish targeted for

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

subsistence/cultural fishing activities. However, the average amount of fish collected for 17 of the 20 top collected species is at or below 1% of their overall O'ahu populations and as discussed in several sections of this FEIS, it is very likely that Flame Wrasse is collected below 1% of its overall population. Approximately 10.6% of the Yellow Tang population is collected and 2.2% of the Potter's Angelfish population is collected. The small percentage of fish collected over multiple areas would be imperceptible to the average observer.

Available data do not suggest that the Pre-Aquarium Collection Ban Alternative has impacted the tourism industry or land values in Hawai'i. Hawai'i's tourism industry achieved new records in total visitor spending and visitor arrivals in 2017, marking the sixth consecutive year of record growth in both categories. Total spending by visitors to the Hawaiian Islands increased 5.6% to a new high of \$16.81 billion (HTA 2018). When adjusted for inflation, total visitor spending was up 3.5% from 2016 (Figure 3). A total of 9,404,346 visitors came by air or by cruise ship to the state, up 5.3% from the previous record of 8,934,277 visitors in 2016. Total visitor days rose 4.8% compared to 2016. The average spending per day by these visitors (\$198 per person) was also higher than 2016 (\$197 per person; HTA 2018).

Despite the housing crisis and recent recession, the average sale price of homes steadily increased in Hawai'i from 2011 to 2014 after a few years of year-to-year fluctuation. The average sale price of homes in 2014 was \$594,440, which was 26.4% higher than the average sale price in 2011. A rapid price increase was observed particularly in 2013 and 2014. The average sale price in 2013 and 2014 was about 10% higher than the price in the prior year. In 2015, the total number of home sales increased by 9.3%, but the average sale price was 0.3% lower than the previous year (HDBEDT 2016). These price increases occurred while commercial aquarium collection was also occurring, suggesting that collection is not impacting home values.

Under the Pre-Aquarium Collection Ban Alternative, a portion of the direct and indirect income from this fishery (total of \$17.7 million over the 5-year analysis period) would continue to be put back into Hawai'i's economy through re-investment efforts in terms of equipment, maintenance, supplies, and personnel, which would be greater under the Pre-Aquarium Collection Ban Alternative than under the No Action Alternative due to the higher value of the fishery under this alternative.

In addition, while the aquarium fishery directly employs permitted collectors, these collectors hire staff/assistants, sell their catch to wholesalers, who in turn get the fish to the market, which includes pet stores and their customers (Dierking 2002). This economic value is represented in the \$14.7 million indirect economic benefit, but there are also jobs, which cannot be quantified at this time.

5.2.2.4 Expanded Waikiki MLCD and Flame Wrasse Conservation Alternative

The indirect impacts of the Expanded Waikiki MLCD and Flame Wrasse Conservation Alternative would be similar to those of the Pre-Aquarium Collection Ban Alternative. Based on the direct economic benefit of \$2.8 million over the 5-year analysis period, an indirect economic benefit of nearly \$14 million would be added to the economy (e.g., export of fish, freight, packaging, etc.) , representing less than 0.02% of the \$84.9 billion annual gross domestic product of Hawai'i.

The expanded Waikiki MLCD is located near Waikiki and Honolulu, an area used quite extensively by tourists and tour operators. Within the expanded Waikiki MLCD, no commercial aquarium fish collection

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

would occur; however, no restrictions would be placed upon other fisheries. Exclusion of commercial aquarium fishers from this area would eliminate any user conflict there and potentially serve as a refuge for fish populations, though other consumptive users would still be able to fish in this area.

Under the Expanded Waikiki MLCD and Flame Wrasse Conservation Alternative, a portion of the direct and indirect income from this fishery (total of nearly \$16.8 million over the 5-year analysis period) would continue to be put back into Hawai'i's economy through re-investment efforts in terms of equipment, maintenance, supplies, and personnel, which would be almost \$1 million less under the Expanded Waikiki MLCD and Flame Wrasse Conservation Alternative compared to the Pre-Aquarium Collection Ban Alternative due to the lower fishery value under this alternative.

In addition, while the aquarium fishery directly employs the collectors, these collectors hire staff/assistants, sell their catch to wholesalers, who in turn get the fish to the market, which includes pet stores and their customers (Dierking 2002). This economic value is represented in the \$14 million indirect economic benefit, but there are also jobs, which cannot be quantified at this time. Given the \$1 million loss compared to the Pre-Aquarium Collection Ban Alternative, it is possible that this alternative would result in fewer jobs than the Pre-Aquarium Collection Ban Alternative.

5.2.2.5 Limited Permit Issuance Alternative

Under the Limited Permit Issuance Alternative, Aquarium Permits and CMLs would be issued for 20 fishers for the use of fine-mesh nets on O'ahu. Based on the direct economic benefit of \$1.5 to \$2.6 million over the 5-year analysis period, an indirect economic benefit of \$7.5 to \$13 million would be added to the economy (e.g., export of fish, freight, packaging, etc.), representing less than 0.02% of the \$84.9 billion annual gross domestic product of Hawai'i.

Other indirect impacts of the Limited Permit Issuance Alternative would be similar to those of the Pre-Aquarium Collection Ban Alternative (see Section 5.2.2.2) and the Expanded Waikiki MLCD and Flame Wrasse Conservation Alternative (see Section 5.2.2.3).

Under the Limited Permit Issuance Alternative, a portion of the direct and indirect income from this fishery (total of \$8.5-\$15.6 million over the 5-year analysis period) would continue to be put back into Hawai'i's economy through re-investment efforts in terms of equipment, maintenance, supplies, and personnel. Given this range, this could be a loss of \$2.1 to \$9.2 million when compared to the Pre-Aquarium Collection Ban Alternative.

While the aquarium fishery directly employs the collectors, these collectors hire staff/assistants, sell their catch to wholesalers, who in turn get the fish to the market, which includes pet stores and their customers (Dierking 2002). This economic value is represented in the \$7.5 to \$13 million indirect economic benefit, but there are also jobs, which cannot be quantified at this time. If a loss of up to \$9.2 million compared to the Pre-Aquarium Collection Ban is seen, it is anticipated that the Limited Permit Issuance Alternative could result in fewer jobs.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

5.2.2.6 Establishment of a White List and Limited Collection (Preferred) Alternative

Under the Establishment of a White List and Limited Collection (Preferred) Alternative, Aquarium Permits and CMLs would be issued for 15 fishers for the use of fine-mesh nets (and other legal methods) on O'ahu, and catch would be limited to the 35 species on the proposed White List and to the individual catch quotas by fisher set for each species. Based on the direct economic benefit of \$4.3 million over the 5-year analysis period, an indirect economic benefit of \$21.5 million would be added to the economy, representing less than 0.03% of the \$84.9 billion annual gross domestic product of Hawai'i.

Other indirect impacts of the Limited Permit Issuance Alternative would be similar to those of the Pre-Aquarium Collection Ban Alternative (Section 5.2.2.2), though collection of any species not on the proposed White List would not occur.

5.2.3 Cumulative Impacts

For the period 2000 to 2017, the commercial aquarium fishery on O'ahu added an average of \$540,542 (inflation-adjusted 2019 dollars) annually to the state of Hawai'i's economy, while the overall aquarium fishery within the state of Hawai'i added an average of \$2,172,028 (inflation-adjusted 2019 dollars) (Table 4-1 and Table 4-2). The O'ahu aquarium fishery accounts for approximately 25% of the overall commercial aquarium fishery within Hawai'i. In 2016, the overall Gross Domestic Product (GDP) of Hawai'i was \$84.9 billion, of which, the aquarium fishery contributed \$2,257,021 (0.003%), of which \$563,418 was from the O'ahu landings. Over the 5-year analysis period, it is estimated that the commercial aquarium fishery on O'ahu would directly add an estimated \$2.1 million (under the CML-only Alternative or the Limited Permit Issuance Alternative) to \$2.9 million (under the Pre-Aquarium Collection Ban Alternative) to the state's economy or contribute nothing under the No Action Alternative since no collection would occur.

5.2.4 Mitigation

No mitigation is proposed.

5.3 CULTURAL RESOURCES

5.3.1 Direct and Indirect Impacts

A full analysis of the cultural impacts of commercial aquarium collection is found in the Cultural Impact Assessment (CIA) included in Appendix A. As part of the CIA, extensive oral interviews were conducted with numerous individuals from multiple user groups (including cultural practitioners, aquarium collectors, subsistence and commercial fishers, charter boat operators, and researchers) who represent various communities within Hawai'i. While some of the consulted individuals expressed specific cultural concerns with respect to fish, others stressed the ecological importance of the fish, and the need for them to live out their life cycles in their natural habitats. As evident in the statements made by multiple individuals, the take of fishes for commercial aquarium purposes from O'ahu has a long and contentious history, and it remains a point of conflict. As discussed in Section 4.2, and detailed in the CIA, many of the fish species collected by commercial aquarium fishers have a cultural significance in Hawai'i, and there are distinct differences

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

between the traditional Native Hawaiian approach to fish harvest and management and the western model approach.

As concluded in the CIA, cultural impacts would occur if issuance of Aquarium Permits under an alternative would cause a significant decline in the population of a species considered to be a cultural resource, either directly through the collection of fish or indirectly through habitat impacts. However, some interviewees expressed the belief that collection for aquarium purposes, regardless of impact or sustainability, is a violation of traditional beliefs (see Appendix A). A total of 20 fish species were evaluated for their cultural importance. Table 4-6 lists the 20 most commonly collected species on O'ahu, and Section 4.4.4 includes a brief summary of known cultural significance by species. Additional species, and their cultural significance, are discussed in Section 4.4.5 and 4.4.6. While not all species have a known Hawaiian cultural significance, for this analysis, it was assumed that the species identified in Section 4.4 as having a cultural use for food, medicinal, religious or ceremonial purposes could have a cultural impact if populations of those species were impacted.

As detailed in Section 5.4, many populations of the 35 fish species analyzed in this EIS would be collected at less than 1% of their estimated population size under any of the six alternatives under consideration; the Preferred Alternative does not include any collection above 4.5% of an estimated population size, and restricts collection to just 31 fish species (whereas the other alternatives do not include a restriction on the number of species which can be collected). However, given that some Hawaiians believe any collection for aquarium purposes is contrary to cultural practices, all action alternatives would impact cultural practices to varying degrees. No cultural impacts would occur under the No Action Alternative. Under the Expanded Waikiki and Flame Wrasse Conservation Alternative, cultural impacts would be limited to areas outside of the expanded Waikiki MLCD and impacts to Flame Wrasse would be lessened. Cultural impacts under the Limited Permit Issuance Alternative would be similar, though reduced through the limited number of permits which would be issued. Under the Preferred Alternative, impacts on O'ahu may be the least when compared to the other action alternatives due to implementation of the proposed White List (limiting collection to 31 species of fish and 4 species of invertebrates) and total allowable catch limits for all species.

5.3.2 Cumulative Impacts

It is acknowledged that cultural resources, including traditional practices specific to both species and places, have been impacted by past and current actions, and will continue to be impacted by reasonably foreseeable future actions. The cumulative impacts of the six alternatives under consideration are addressed in this section.

It is not possible to fully quantify the cumulative effects of past and ongoing actions on cultural practices and beliefs. Many users and user groups have collected fish in the waters around the island of O'ahu for various purposes for centuries. The commercial aquarium fishery has existed on O'ahu since the late 1940s and in the past the fishery has impacted cultural resources by virtue of the fact that commercial aquarium collection occurs in a culturally significant area (the ocean) and, in some instances involves culturally significant species. However, commercial aquarium collection is not the only fishery occurring in the ocean and affecting some of these species, including those with cultural significance (e.g., Achilles Tang) (see Section 5.4.3). Harvest of some of these species by other non-regulated users (e.g., subsistence fishers,

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

non-aquarium commercial and recreational fishers) occurs and is anticipated to continue under any of the six alternatives under consideration. In addition, other ocean users may indirectly affect reef fish and the reefs they depend on, such as beachgoers using sunscreen, scuba divers and snorkelers affecting fish behavior, and boaters anchoring on top of reefs (see Section 5.4.3.4). Beach and shoreline development may also have effects on reefs and reef fish. In addition to effects on culturally significant species by the various user groups discussed above, climate change resulting in warming ocean temperatures and habitat loss due coral bleaching also affects reef fishes including population effects (see Section 5.4.3.5).

As concluded in the CIA (Appendix A), cultural impacts would occur if a significant decline in the population of a species considered to be a cultural resource occurs. While no historic population trend data are available for the fish species on O'ahu, the projected level of collection of the 32 species with population estimates analyzed in this FEIS is below 1% for most of the species and is below 5% for 30 of the 32 species under all six alternatives. Under the Pre-Aquarium Collection Ban Alternative, the Golden Dwarf Moray may be collected at up to 5.2% of the population and the Yellow Tang would be collected at up to 8.2%; under the Preferred Alternative, collection of these two species would be capped to 4.5%.

Measures included in the Preferred Alternative (e.g., limited permit issuance, establishment of a White List, and creation of catch limits) may minimize cultural impacts by limiting collection to 31 species and creating a hard upper limit on collection of those species. The limited number of permits may decrease user conflict between commercial collectors and subsistence fishers or cultural practitioners.

5.3.3 Mitigation

No mitigation is proposed. Nevertheless, the Preferred Alternative includes mitigative measures (see Section 5.0) such as the establishment of a White List, a reduction in the number of Aquarium Permits and CMLs that would be issued, and catch quotas for all species on the White List, all of which would minimize impacts to cultural resources.

5.4 BIOLOGICAL RESOURCES

The No Action Alternative would not involve any aquarium collection. Biological impacts are calculated based on historic trends for the CML-only Alternative, Pre-Aquarium Collection Ban Alternative, Expanded Waikiki MLCD and Flame Wrasse Conservation Alternative, and the Limited Permit Issuance Alternative. Biological impacts are calculated based on the individual catch quotas (Section 3.6.1) for the Establishment of a White List and Limited Collection Alternative. Therefore, historic trend data are provided for the entire fishery and for the 20 fishers who would be issued permits under the Limited Permit Issuance Alternative but are not applicable for the 15 fishers who would be issued permits under the Preferred Alternative. Table 5-4 summarizes how impacts are calculated by alternative.

Table 5-4. Summary of biological impact analysis by alternative.

Alternative	Impact
No Action	None (no collection)
CML-Only	Follow 2018-2019 collection trends

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

Alternative	Impact
Pre-Aquarium Collection Ban	Follow historic (2000-2017) trends
Expanded Waikiki MLCD and Flame Wrasse Conservation	Follow historic (2000-2017) trends, with a small decrease due to decreased catch of Flame Wrasse
Limited Permit Issuance	Follow historic (2000-2017) trends of the 20 fishers who would be issued permits
Establishment of a White List and Limited Collection (Preferred) Alternative	Based on individual catch quotas and issuance of 15 permits, assumes each permittee collects the maximum for each species

5.4.1 Direct Effects

No evidence exists of consistent growth in the number of fish collected on O’ahu, with 66,896 fish collected in 2000 compared to a collection of 66,059 fish in 2017 (Table 4-5, DAR 2018a). Therefore, the analysis in this section uses as a baseline (i.e., pre-aquarium collection ban conditions) the average collection of aquarium fish on O’ahu from 2000 to 2017 (71,983 fish per year) as the most likely scenario, and the maximum collection (100,662 fish, collected in 2012) as a reasonable worst-case scenario for a predicted range of the annual take for the 5-year analysis period, with no annual growth applied. It is acknowledged that, in addition to the number of fish collected, incidental mortality may occur in fish that are released. However, there are no data available to analyze these impacts, and it is therefore assumed that the magnitude of these impacts would not change from what has historically occurred.

5.4.1.1 No Action Alternative

Under the No Action Alternative issuance of Aquarium Permits and CMLs for aquarium collection would not occur and commercial aquarium fishing would not be permitted on O’ahu. Therefore, collection would be zero, and reef habitat would not be affected by commercial aquarium collection.

5.4.1.2 CML-only Alternative

Under the CML-only Alternative, collection of aquarium fish using fine mesh nets would not occur, though collection of fish and invertebrates may continue using methods not requiring an Aquarium Permit. Under the CML-only Alternative, the size and daily bag limits under HAR §13-77 would not apply (see Section 1.2.3).

After the ban on the use of fine mesh nets in October 2017, commercial aquarium collectors on O’ahu collected 46,174 fish in the 2018 calendar year (based on data provided by the DAR), and an additional 68,497 fish during the first part of 2019 (data provided on October 21, 2019, DAR 2019b). These values are considered to be the best predictor of the amount of collection that would occur if the ban on Aquarium Permits continues but CML issuance resumes. Both values (2018 and 2019 to-date) fall within the range of historic aquarium collection from 2000 to 2017 (Table 4-5) and suggest that collection may continue to follow historic rates, even without the use of fine mesh nets. Assuming that between 46,174 fish (the number collected in 2018 without fine mesh nets) and 100,662 fish (the maximum number collected in a given year since 2000) would be collected annually, a total of 230,870 to 503,310 fish would be collected over the 5-

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

year analysis period. It is assumed for this analysis that the species composition of collection under the CML-only Alternative would follow that shown in 2018 and 2019, rather than historic species composition, since the collection methods have changed (i.e., no use of fine mesh nets).

Fish Species

As stated above, under the CML-only Alternative, the size and daily bag limits under HAR §13-77 would not apply (see Section 1.2.3), including regulations related to Yellow Tang, Kole, Potter's Angelfish, Orangespine Unicornfish, Moorish Idol, Bandit Angelfish, Achilles Tang and Hawaiian Cleaner Wrasse. Of the 114,671 fish collected on O'ahu in 2018 and 2019, the species was disclosed for 105,230 individuals (91.8%). Of the 65 species of fish reported, Yellow Tang and Kole made up 80.4% of the collection (Table 5-54).

Ochavillo and Hodgson (2006) suggest collection of between 5% and 25% is sustainable for various reef species in the Philippines that are similar to those found on O'ahu (e.g., tang, wrasse, butterflyfish, angelfish, triggerfish). Similar data for the species collected on O'ahu are not available to determine species-specific sustainable thresholds; therefore, this research represents the best available science.

Of the 35 fish species analyzed in this FEIS, 32 have population estimates. Of these 32 fish species, 28 would be collected at a rate of less than 1% of their population annually (Table 5-5). Of the remaining four species, the Bicolor Anthias, Kole, and Golden Dwarf Moray would be collected at less than 2% of their populations annually (Table 5-5). The IUCN has noted that, while popular, commercial aquarium collection is not considered a major threat to the Kole, and there is no evidence of declines from harvesting (McIlwain et al. 2012b). The Bicolor Anthias and Golden Dwarf Moray are both listed as Least Concern by the IUCN (Williams et al. 2016, Smith et al. 2019a).

The last species, the Yellow Tang, would be collected at a rate of 3.8% to 8.2% of the PIFSC-ESD (2020) population estimates (Table 5-5), in large part due to the higher proportion of the collection that this species represents under the CML-only Alternative when compared to conditions prior to the October 2017 ban on Aquarium Permits (59.2% of the collection without the use of fine mesh nets, compared to 7.0% under the Pre-Aquarium Collection Ban Alternative).

Table 5-5. Summary of the 2018-2019 collection of selected fish species on the island of O'ahu (DAR 2018, 2019b), O'ahu population estimates (PIFSC-ESD 2020), and the projected annual collection under the CML-only Alternative and the impact on populations. Projected collection is based on the species composition from 2018-2019 (without the use of fine mesh nets; total of 105,230 fish reported at the species level) multiplied by the total projected collection of 46,174 to 100,662 fish per year.

Common Name	Scientific Name	Mean O'ahu Population Estimate (lower-upper estimation limit)	Total Number Collected	% of all identified fish collected	Projected Annual Collection	Projected % of Mean Population Collected ²
Yellow Tang ³	<i>Zebrasoma flavescens</i>	728,777 (0-1,540,367)	62,341	59.2%	27,335 - 59,592	3.8% - 8.2%

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

Common Name	Scientific Name	Mean O'ahu Population Estimate (lower-upper estimation limit)	Total Number Collected	% of all identified fish collected	Projected Annual Collection	Projected % of Mean Population Collected ²
Kole ³	<i>Ctenochaetus strigosus</i>	1,690,372 (803,819-2,576,925)	22,299	21.2%	9,789 - 21,340	0.6% - 1.3%
Potter's Angelfish ³	<i>Centropyge potteri</i>	512,697 (69,122-956,271)	4,731	4.5%	2,078 - 4,530	0.4% - 0.9%
Orangespine Unicornfish ³	<i>Naso lituratus</i>	837,112 (89,180-1,575,044)	1,901	1.8%	831 - 1,812	0.1% - 0.2%
Ornate Wrasse	<i>Halichoeres ornatus</i>	2,137,281 (568,609-3,705,953)	520	0.5%	231 - 503	<0.1%
Flame Wrasse ⁴	<i>Cirrhilabrus jordani</i>	n/a	530	0.5%	231 - 503	n/a
Fourline Wrasse	<i>Pseudocheilinus tetraena</i>	134,617 (0-285,987)	324	0.3%	139 - 302	0.1% - 0.2%
Hawaiian Whitespotted Toby	<i>Canthigaster jactator</i>	2,513,096 (1,939,093 - 3,087,100)	433	0.4%	185 - 403	<0.1%
Forcepsfish	<i>Forcipiger flavissimus</i>	345,009 (88,777-601,240)	849	0.8%	369 - 805	0.1% - 0.2%
Milletseed Butterflyfish	<i>Chaetodon miliaris</i>	1,452,891 (0-3,298,935)	458	0.4%	185 - 403	<0.1%
Shortnose (Geoffroy's) Wrasse	<i>Macropharyngodon geoffroy</i>	481,899 (207,785-756,013)	868	0.8%	369 - 805	0.1% - 0.2%
Bicolor Anthias	<i>Pseudanthias bicolor</i>	69,760 (0-194,445)	975	0.9%	416 - 906	0.6% - 1.3%
Orangeband Surgeonfish	<i>Acanthurus olivaceus</i>	1,534,094 (821,719-2,246,470)	715	0.7%	323 - 705	<0.1%
Moorish Idol ³	<i>Zanclus cornutus</i>	251,451 (129,331-373,571)	733	0.7%	323 - 705	0.1% - 0.3%
Multiband Butterflyfish	<i>Chaetodon multicinctus</i>	415,710 (163,339-668,081)	401	0.4%	185 - 403	<0.1% - 0.1%
Psychedelic Wrasse	<i>Anampses chrysocephalus</i>	69,693 (5,081-134,305)	615	0.6%	277 - 604	0.4% - 0.9%
Eightline Wrasse	<i>Pseudocheilinus octotaenia</i>	59,945 (0-135,882)	101	0.1%	46 - 101	0.1% - 0.2%
Crowned Puffer	<i>Canthigaster coronata</i>	319,076 (151,702-486,450)	135	0.1%	46 - 101	<0.1%
Saddle Wrasse	<i>Thalassoma duperrey</i>	17,655,664 (14,778,717-20,532,611)	33	<0.1%	<46 - <101	<0.1%
Fisher's Angelfish ⁵	<i>Centropyge fisheri</i>	117,920 (8,395-227,445)	407	0.4%	185 - 403	0.2% - 0.3%
Bandit Angelfish	<i>Apolectichthys arcuatus</i>	n/a	489	0.5%	212 - 463	n/a
Brown Surgeonfish (Lavender, Forktail Tang)	<i>Acanthurus nigrofuscus</i>	10,523,860 (6,948,387-14,099,332)	481	0.5%	211 - 460	<0.1%
Crosshatch Trigger	<i>Xanthichthys mento</i>	n/a	235	0.2%	92 - 201	n/a
Dragon Wrasse	<i>Novaculichthys taeniourus</i>	54,784 (2,249-107,318)	27	<0.1%	12 - 26	<0.1%

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

Common Name	Scientific Name	Mean O’ahu Population Estimate (lower-upper estimation limit)	Total Number Collected	% of all identified fish collected	Projected Annual Collection	Projected % of Mean Population Collected ²
Gilded Triggerfish (Blue Throat)	<i>Xanthichthys auromarginatus</i>	162,831 (0-333,479)	412	0.4%	181 - 394	0.1% - 0.2%
Golden Dwarf Moray	<i>Gymnothorax melatremus</i>	4,761 (0-14,275)	94	0.1%	41 - 90	0.9% - 1.9%
Heniochus Butterfly	<i>Heniochus diphreutes</i>	301,466 (0-697,765)	70	0.1%	31 - 67	<0.1%
Raccoon Butterfly	<i>Chaetodon lunula</i>	201,288 (57,190-345,385)	42	<0.1%	18 - 40	<0.1%
Spotted Boxfish	<i>Ostracion meleagris</i>	104,861 (27,348-182,375)	118	0.1%	52 - 113	<0.1% - 0.1%
Threadfin Butterfly	<i>Chaetodon auriga</i>	31,081 (0-65,523)	152	0.1%	67 - 145	0.2% - 0.5%
Whitemouth Moray	<i>Gymnothorax meleagris</i>	58,821 (5,662-111,981)	9	<0.1%	4 - 9	<0.1%
Yellowtail Coris	<i>Coris gaimard</i>	397,004 (181,127-612,880)	98	0.1%	43 - 94	<0.1%
Zebra Moray	<i>Gymnothorax zebra</i>	11,501 (0-34,495)	11	<0.1%	5 - 11	<0.1% - 0.1%
Achilles Tang ¹	<i>Acanthurus achilles</i>	73,299 (0-173,655)	37	<0.1%	18 - 40	<0.1% - 0.1%
Hawaiian Cleaner Wrasse ¹	<i>Labroides phthirophagus</i>	266,970 (106,698-427,242)	301	0.3%	132 - 288	0.1%

¹Regulated species (e.g., bag or size limits) on the island of O’ahu.

²See paragraph above this table. Percent of population collected is likely below 1%. Estimated population derived from NOAA data collected between 2010 and 2019 (PIFSC-ESD 2020).

³SGCN.

The three species without population estimates are the Bandit Angelfish, Crosshatch Trigger, and Flame Wrasse. Each species is discussed below.

A total of 489 Bandit Angelfish were collected in 2018 and 2019, making up 0.46% of the fish collected on O’ahu. It is anticipated that approximately 212 to 463 Bandit Angelfish would be collected annually over the 5-year analysis period (0.46% of the 46,174 to 100,662 fish collected annually, see Section 5.4.1.1). A population estimate for Bandit Angelfish is not available from the PIFSC-ESD data due to the species’ deep-water habits, and as discussed in Section 4.4.5.2, Kane and Tissot (2017) also reported the deep-water habits of the Bandit Angelfish, and their research demonstrates that the vast majority of the Bandit Angelfish population occurs at depths below the PIFSC-ESD survey depth. This species is generally only collected at depths at which normal recreational diving does not occur. Due to the complexity and difficulty of collecting the Bandit Angelfish, its population will likely continue to not receive significant pressure from the commercial aquarium fishery. As noted in Section 4.4.5.2, the overall global population is considered stable (Pyle et al. 2010b).

A total of 235 Crosshatch Trigger were collected in 2018 and 2019, representing 0.2% of the fish collected on O’ahu. It is anticipated that approximately 92 to 201 Crosshatch Trigger would be collected annually over the 5-year analysis period (0.2% of the 46,174 to 100,662 fish collected annually). A population

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

estimate for Crosshatch Trigger is not available from the PIFSC-ESD data due to the deep-water habits of the species. However, Froese and Pauly (2020) state that the IUCN lists the species as least concern, and that the species is known to lay over 32,000 eggs, making it highly resilient to fishing pressure.

A total of 530 Flame Wrasse were collected in 2018 and 2019, representing 0.5% of the fish collected on O'ahu. It is anticipated that approximately 231 to 503 Flame Wrasse would be collected annually over the 5-year analysis period (0.5% of the 46,174 to 100,662 fish collected annually). A population estimate for Flame Wrasse is not available due to the deep-water habits of the species. However, the IUCN lists this species as 'Least Concern' and states that the species is relatively common along drop off areas (Rocha 2010). In addition, most of its range falls within the protected Papahānaumokuākea Marine National Monument, where fishing is prohibited (Rocha 2010).

Historic collection data on an additional 23 SGCN fish species are included in Appendix B. Collection data from 2018, potentially due to data confidentiality (see Section 5.1), is only available for two of these SGCN species, the Bluestripe Butterflyfish (82 collected) and Flame Angelfish (34 collected).

Invertebrate Species

As noted in Section 4.4.6, marine invertebrate collection does not require an Aquarium Permit, but does require a CML. It is assumed that collection under the CML-only Alternative would follow historic rates.

Between 2000 and 2017, only 44 invertebrate species were reported by enough permits (>2 permits reporting from each area of collection during each year of collection) to determine total number of individuals collected. Collection areas with less than three permits reporting fall under the DAR non-disclosure agreement, in which totals are not released publicly (Section 5.1). A total of 2,971,008 individual marine invertebrates have been reported under Aquarium Permits since 2000 on the island of O'ahu, which is an average of 165,056 invertebrates per year, and a maximum of 419,804 (Table 4-8). Of the invertebrates collected from O'ahu, 89.7% (2,664,728 individuals) reported represent just three species; hermit crabs (species not specified), Feather Duster Worms, and Zebra Hermit Crabs (Table 4-8). An additional 41 species account for the other 10.3% of invertebrates reported collected (excluding non-disclosed data) (DAR 2018a). While data from 2018 (Table 4-8) show a decrease in collection of invertebrates, it is unclear whether this decrease is related to the ban on fine mesh nets. The decrease in reported collection of invertebrates could be an artifact of data confidentiality rules, or due to reporting of invertebrates via a CML Catch Report rather than the Aquarium Catch Report (see Section 4.4.6). Data on CML Catch Reports are not available at this time.

Given that collection of invertebrates is not an activity governed by Aquarium Permits, the issuance or non-issuance of Aquarium Permits is not anticipated to affect the number of individuals or the species of invertebrates collected over the 5-year analysis period. Therefore, it is anticipated that these historic collection levels would continue annually over the 5-year analysis period, for a total of 825,280 to 2,099,020 invertebrates collected over the 5-year analysis period. Table 5-6 summarizes the projected annual collection for the five invertebrate species analyzed in this EIS. Projected annual collection ranges from 1,486 to 212,673 invertebrates, depending on the species (Table 5-6).

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

Table 5-6. Summary of the 2000-2017 collection of selected invertebrate species on the island of O’ahu (DAR 2018a) and the projected annual collection under the CML-only Alternative. Projected collection is based on the species composition from 2000-2017 (total of 2,971,008 invertebrates reported at the species level for all fishers or total of 93,023 invertebrates for the 20 fishers) multiplied by the total projected collection (165,056 to 419,804 invertebrates per year for all fishers, or 5,168 to 12,643 invertebrates per year for the 20 fishers).

Common Name	Scientific Name	All fishers			20 fishers		
		Total Number Collected	% of all identified invertebrates collected	Projected Annual Collection	Total Number Collected	% of all identified invertebrates collected	Projected Annual Collection
Hermit Crab	Various species	1,505,061	50.66%	83,617 – 212,673	4,230	4.55%	235 - 575
Zebra Hermit	<i>Clibanarius zebra</i>	694,565	23.4%	38,623 – 98,234	1,653	1.78%	92 - 225
Halloween Hermit	<i>Calcinus elegans</i>	46,700	1.6%	2,641 – 6,717	235	0.25%	13 - 32
Cleaner Shrimp	<i>Lysanata amboinensis</i>	25,240	0.9%	1,486 – 3,778	17,089	18.37%	949 – 2,323
Feather Duster Worm	<i>Sabellastare sanctijosephi</i>	465,102	15.7%	25,914 – 65,909	54,649	58.75%	3,036 – 7,428

Reef Habitat

Herbivory

Herbivores, which feed on marine algae, and especially coral scraping herbivores such as parrotfish (Scaridae), are widely considered to play a key role in the overall health and subsequent recovery of coral reefs after disturbances such as bleaching. Multiple studies have documented the importance of the protection of herbivorous fish for reef recovery (e.g., Bellwood et al. 2004, Mumby and Steneck 2008, Hughes et al. 2010). The four largest groups of herbivorous coral reef fishes are the parrotfishes, damselfishes (Pomacentridae), rabbitfishes (Siganidae), and surgeonfishes (Acanthuridae). No parrotfishes, damselfishes, or rabbitfishes (do not occur in Hawai’i) are included in the 35 fish species analyzed in this FEIS. The diets of the species analyzed in this FEIS are summarized in Table 4-4

Hughes et al. (2007) found that large herbivorous fish can aid coral reef recovery after a bleaching event, with coral cover doubling (to 20%) over a 3-year-period within a no-fishing reserve where large herbivorous fish were abundant. Excluding these large herbivorous fish led to increases in macroalgae, which suppressed the fecundity, recruitment, and survival of corals. Increased grazing by herbivores can reduce macroalgae cover, which competes with corals (Mumby et al. 2006). Jessen et al. (2013) simulated overfishing on coral reefs in the Central Red Sea by excluding herbivores, which resulted in a 300-fold increase in algal dry mass.

Sweirtz and Vermeij (2016) stated that “many coral reefs have seen large increases in the benthic cover of turf algae, a less noticeable and more complex functional group than the more often studied macroalgae. Turf algae (or “algal turfs”) are dense, multi-species assemblages of filamentous benthic algae, including small individuals of macroalgae and cyanobacteria, that are typically less than 1 cm in height”. As stated

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

above, Tissot and Hallacher (2003) did not find any significant differences in macroalgae between areas open and closed to aquarium collection. Turf algae are typically the major competitor for space with corals, but Kelly et al. (2016) conducted a study on Maui that found that the majority of herbivore fish species predominantly (70-100%) feed on turf algae. This illustrates the importance of herbivores for coral reef resiliency since competition with turf algae can place additional strain on coral reef systems.

Herbivores are key to maintaining low algal abundance (e.g., Mumby and Steneck 2008). As described in Hughes et al. (2010), depletion of herbivores can result in dense stands of macroalgae, preventing the return of corals by shading, destabilizing microbial communities, and promoting coral disease.

Mumby and Steneck (2008) defined an unhealthy reef as one lacking the resilience needed for natural recovery, which can be caused by overharvesting of herbivores. Furthermore, top-down control of algal blooms (compared to bottom-up or nutrient-controlled causes) exerts the dominant influence (Mumby and Steneck 2008). However, algal blooms are reversible if higher abundance of herbivorous fish can be achieved (Hughes et al. 2010).

Despite the overwhelming evidence of the importance of herbivores, the scientific evidence is not always clear that increasing herbivore populations will necessarily enhance coral reef recovery. While a number of field and experimental studies have found such a relationship (e.g., Hughes et al. 2007, Mumby and Harborne 2010, Burkepile and Hay 2010, Rasher et al. 2010) other studies have not (e.g., Carassou et al. 2013, McClanahan 2008, Graham et al. 2008, Kramer and Heck 2007, Mora 2008).

Given the conflicting data on the role of herbivores on reef recovery, Adam et al. (2015) provided the following recommendations:

1. Local management efforts should focus on minimizing direct sources of coral mortality (e.g., sedimentation and pollution), as well as restoring ecological processes (e.g., herbivory). Reducing nutrient inputs may mitigate negative impacts of ocean warming, and may also reduce algal productivity, facilitating the control of algae by herbivores.
2. Maintaining healthy herbivore populations, especially parrotfishes, can mitigate the negative impacts of ocean warming since abundant herbivores can control algae that inhibit coral recovery following coral decline.
3. Implementation of marine protected areas or other spatial restrictions on herbivore harvest will only be effective if also sustainably managing herbivore populations outside of the protected areas.

Parrotfish are not commonly collected by commercial aquarium collectors, though they have been reported in 14 of the 18 years between 2000 and 2017, the maximum number collected in a year was 31, with an average of 9 per year (DAR 2018a). None were reported in 2018 or 2019, though that may be due to Hawaii's data confidentiality rules. Regardless, collection of parrotfish under the CML-only Alternative is anticipated to be minor (<31 individuals per year). The diets of each of the 35 fish species analyzed in this EIS are summarized in Table 4-4. Herbivores collected by the aquarium fishery typically consist of the smaller size classes due to market demand (i.e., minimal market for large adult fish in the aquarium trade). However, in the absence of fine mesh nets, some regulations (e.g., HAR 13-77 prohibits the collection of more than 6 Yellow Tang/day larger than 5 inches) including bag limits and prohibitions for several

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

herbivorous species on O'ahu (e.g., Yellow Tang, Kole and Potter's Angelfish, see Section 1.2.3 for details on regulations), no longer apply. These three species made up 84.9% of all individuals collected by commercial aquarium fishers on O'ahu following the ban on small mesh nets in October 2017 (compared to 45.3% pre-ban, see Table 4-6). However, even with making up the highest proportion of the catch, analysis based on PIFSC-ESD (2020) population estimates indicate the average annual collection of Kole and Fishers Angelfish would make up less than 2% of the overall island of O'ahu population estimates (Table 5-5). The Yellow Tang would be collected at a rate of 3.8% to 8.2% of the PIFSC-ESD (2020) population estimates (Table 5-5).

Coral Damage

Similar to any other boat user group, it is possible that coral could be inadvertently damaged by an anchor. In addition, similar to other user groups who interact with the reefs, the activities of aquarium collectors could inadvertently damage coral. Due to the current coral protection laws, fishers place aquarium nets in low density coral areas to ensure no damage is done to the coral, and place anchors in sandy channel areas or flat hard bottoms when available. If no sandy channel or flat hard bottom is available, fishers drift dive while collecting, which does not involve anchoring at all. This ensures no coral damage, and that the fishers remain in compliance with existing regulations (see Section 1.2.5).

In a study analyzing the effects of aquarium collectors on coral reef fishes in Kona, Hawai'i, Tissot and Hallacher (2003) concluded that there were no significant differences in damaged coral between control and collected sites (i.e., sites where aquarium collection occurs) to indicate the presence of destructive fishing practices. In addition, they found no increases in the abundance of macroalgae where the abundance of herbivores was reduced by aquarium collecting, though as noted above, turf algae is the primary food of herbivores, and thus healthy herbivore populations are critical for healthy coral populations.

The DAR has been conducting related observations since 2003 (DAR 2018c). Monitoring of coral reef benthic cover is conducted approximately every four years at 25 permanent monitoring sites. Monitoring is conducted more frequently if substantial benthic change occurs between regular sampling years (e.g., after a coral bleaching event). The analysis compares the presence or absence of commercial aquarium collecting in West Hawai'i relative to overall coral cover and changes in coral cover. Major results of the study are summarized below:

- Coral cover was slightly higher within areas closed to the commercial aquarium fishery compared to open areas, but the difference was not statistically significant for any year of monitoring (2003: $p = 0.276$; 2007: $p = 0.275$; 2011: $p = 0.496$; 2014: $p = 0.554$; 2016: $p = 0.673$; 2017: $p = 0.782$). Additionally, there was no apparent trend of declining coral cover in the open areas over time.
- From 2003 to 2017, overall mean coral cover declined less within open areas compared to areas closed to commercial aquarium collection (Closed areas: $-22.5\% \pm 3.4\%$; Open areas: $-15.5\% \pm 2.3\%$), but this difference in change in coral cover was not significant ($p = 0.093$).
- From 2014 to 2016, West Hawai'i experienced a severe coral bleaching and mortality event, which peaked in the fall of 2015. Over this time-period, overall mean coral cover decline was slightly less

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

in the areas open to commercial aquarium collection, but again, the difference was not significant (Closed areas: $-19.6\% \pm 6.0\%$; Open areas: $-17.6\% \pm 1.3\%$; $p = 0.605$).

- From 2016 to 2017, approximately one year after coral post-bleaching mortality subsided, minimal change in coral cover was documented within areas open to commercial aquarium collection (Open areas: $0.07\% \pm 2.1\%$), compared to a slight decline in mean coral cover in areas closed to collection (Closed: $-1.94\% \pm 2.3\%$), and this difference was statistically significant ($p = 0.038$).

While these two studies do not indicate significant differences between fished and unfished areas, that does not mean that no damage occurs. However, until further studies are conducted, they provide the best available science on the direct effects of commercial aquarium collection on coral.

Invasive Species

It is anticipated that implementation of CML-only Alternative would have a minor effect on invasive fish species over the 5-year analysis period. No Bluestripe Snapper, Peacock Grouper or Blacktail Snapper were reported during 2018 or 2019, though this could be due to confidentiality (see Section 5.1).

Impact of Aquarium Collection on Overall Fish Populations and Recruitment

While research into the reproductive biology and fecundity (i.e., ability to produce offspring) of specific species of reef fish is limited in availability, some generalities can be derived from available research, and most reef species are long-lived and highly productive. For reef fishes in general, the relationship between size and fecundity is well documented, with larger fish producing exponentially more eggs (Thresher 1984, Berkeley et al. 2004). Moreover, evidence from a diverse set of species indicates that older individuals produce larger, faster growing, and more starvation-resistant larvae (Thresher 1984, Bobko and Berkeley 2004). For these reasons, Birkeland and Dayton (2005) recommend protecting larger or older individuals. Under the CML-only Alternative, without the use of fine-mesh nets, it is assumed that the individuals collected will tend to be larger than those that would be collected under the other three alternatives under consideration (which all include the use of fine mesh nets).

Yellow Tang is a species which provides a good example of high fecundity, as well as the relationship between size and fecundity. Bushnell et al. (2010) studied Yellow Tang and found large individual variation in batch fecundity, with a range from 44 to >24,000 eggs per female produced on a single sampling date. Smaller females (3.1-4.75-inch standard length [LS]), produced limited numbers of eggs, while larger females (≥ 4.75 -inch LS) were capable of maximal egg production (>20,000 eggs per batch). Bushnell et al. (2010) estimated the annual fecundity of Yellow Tang to average 1,055,628 eggs per female (with a standard error of 120,596 eggs). Another example of high fecundity is the Saddle Wrasse, which has a documented population doubling time of less than 15 months (Froese and Pauly 2008 as cited in Shea et al. 2010).

In addition to high levels of fecundity, many reef fish are long-lived. Choat and Axe (1996) studied four *Naso* species in the Great Barrier Reef, and found life spans of 35 to 40 years, with rapid growth during the first 3 to 4 years of life. Eble et al. (2009) found that the Hawaiian kala (*Naso unicornis*) is also long-lived, with rapid initial growth. Sampled kala ranged in age from 1 to 58 years with the majority of growth occurring

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

within the first 15% of the life span. These two studies indicate that *Naso* species in general exhibit lifespans in excess of 40 years (Eble et al. 2009). While studying habitat- and sex-specific life history patterns of Yellow Tang, Claisse et al. (2009) found a 41-year-old individual. In addition, they found median size and age at the transition between deeper coral-rich and shallow turf dominated habitat use were about 0.75 inch longer and about 2 years older for males than females and coincided with an increase in reproductive output. The sexual difference in size at habitat transition, combined with sexual size dimorphism results in differences in the size distributions of both sexes in the two habitats (Claisse et al. 2009).

Due to the combination of a high fecundity and long lifespan, reef fish can likely sustain fairly high levels of continuous harvest. While specific research into sustainable levels of take has not been conducted for the majority of reef fishes, as discussed previously, Ochavillo and Hodgson (2006) suggest collection of between 5% and 25% is sustainable for various reef species in the Philippines that are similar to those found on O’ahu (e.g., tang, wrasse, butterflyfish, angelfish, triggerfish). Froese et al. (2005) estimated a species’ resilience to fishing pressure based on their life history parameters, as shown in 7 below.

Table 5-7. Resiliency to fishing pressure (adapted from Froese et al. 2005).

Parameter	Definition	Resiliency			
		High	Medium	Low	Very Low
r_{max} (1/year)	the intrinsic rate of population increase	>0.5	0.16 – 0.50	0.05 – 0.15	<0.05
K (1/year)	the growth coefficient, which is the rate at which the asymptotic length is approached	>0.3	0.16 – 0.30	0.05 to 0.15	<0.05
Fecundity (1/year)	Minimum number of eggs per female per year	>10,000	100 to 1,000	10 to 100	<10
t_m (years)	Age at first maturity	<1	2 to 4	5 to 10	>10
t_{max} (years)	Life span	1 to 3	4 to 10	11 to 30	>30

Of the 35 fish species which are evaluated in this FEIS, 34 were evaluated by Froese et al. (2020) for resilience (the Moorish Idol was not). Of the 34 species evaluated, 25 species (73.5%) were considered high resiliency with a less than 15-month population doubling time, 7 species (20.6%) were considered medium resiliency with a 1.4-4.4-year doubling time, and 2 species (5.9%) were considered very low resiliency, with a population doubling time of over 14 years.

The high resilience species included Yellow Tang (with a fecundity of over 10,000), Kole (with a growth coefficient of 0.9), Milletseed Butterflyfish (with a growth coefficient of 1.13), Saddle Wrasse (with a age at first maturity of 1), Crosshatch Trigger (with a fecundity of 32,000), Spotted Boxfish (with a fecundity assumed to be over 10,000), Threadfin butterfly (with a growth coefficient greater than 1), and 18 other species based on preliminary growth coefficient or fecundity. Medium resilience species included Yellowtail Coris, Golden Dwarf Moray, Gilded Triggerfish, Dragon Wrasse, Brown Surgeonfish, Bandit Angelfish, and

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

Orangespine Unicornfish. The two species with very low resiliency were the Whitemouth Moray and Zebra Moray, however both species are listed as “Least Concern” by the IUCN (see Section 4.4.5).

Of the 35 fish species analyzed in this EIS, population estimates were available for 32 (91%). The three species without population estimates are the Bandit Angelfish, Flame Wrasse and Crosshatch Trigger, which are all discussed above.

Of the 32 species with populations estimates, 28 species would be collected at numbers below 1% of their overall population under the CML-only Alternative, 3 species would be collected at numbers below 2% of their overall population, and the Yellow Tang would be collected at a rate of 3.8% to 8.2% of the PIFSC-ESD (2020) population estimates.

In addition to the low percentage of the populations which are harvested each year for most species, commercial aquarium fishing has a distinct advantage over other types of fishing because it is targeted to specific species, and within those species, it primarily targets specific size-classes which minimizes the impact to the brood stock. Because commercial aquarium fishers target the smaller individuals in populations, the larger individuals with higher fecundity are left within the population.

5.4.1.3 Pre-Aquarium Collection Ban Alternative

Under the Pre-Aquarium Collection Ban Alternative, issuance of an unlimited number of Aquarium Permits and CMLs would occur, and commercial aquarium fish collection would take place. It is likely that annual fishing pressure on the species collected in the past would remain relatively the same over the 15-year analysis period, resulting in an estimated 71,983 (18-year average) individual fish and 165,056 invertebrates collected from the island of O’ahu’s populations each year, up to a maximum of 100,662 fish per year (Table 4-5 and Table 4-8). Collection numbers of fish for the island of O’ahu have ranged from 35,811 individuals in 2003, to 100,662 in 2012 (Table 4-5). Collection numbers of invertebrates for the island of O’ahu have ranged from 30,910 individuals in 2003, to 419,804 in 2007 (Table 4-8). As described in Section 5.4.1, there is no evidence for a growth in the number of fish collected annually on O’ahu, and therefore similar collection numbers of individual species would be expected annually over the 5-year analysis period. Based on the average and maximum fish annual fish collection rates, a total of 359,915 to 503,310 fish would be collected over the 5-year analysis period.

Fish Species

Since 2000, a total of 238 fish species have been collected on the island of O’ahu under Aquarium Permits. Of these 238 species, 124 species account for less than 1% each of the total aquarium fish catch from 2000-2017. An additional 94 species do not have data available due to the DAR confidentiality requirements (Section 5.1). The remaining 20 aquarium fish species collected on the island of O’ahu under Aquarium Permits make up 80% of all fish collected, and these species are summarized in Table 5-8. The top 3 collected species account for 45.3% of all aquarium fish collected (1,295,700) on O’ahu since 2000 and are described in detail below. The other 17 species that make up the top 20 species account for 33.6% of all aquarium fish collected from O’ahu. Since 2000, collection of these 17 species ranged from 4 to 12,666 individuals per year, with most species averaging below 2,000 individuals annually over the 18-year period. In addition to the top 20 species, Table 5-8 also includes historic collection data on the other 15 fish species

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

analyzed in this EIS, including other regulated species and other species on the proposed White List (which would not apply to the Pre-Aquarium Collection Ban Alternative, but are analyzed nonetheless since collection of these species would be permitted).

The Yellow Tang has been the most collected species every year since 2004. In 2000, 2001, and 2003, more individual Potter's Angelfish and Kole were collected, followed by Yellow Tang. In recent years (2014–2017) Yellow Tang were collected nearly twice as much as the next highest collected aquarium fish (Kole).

Since 2000, 273,356 Yellow Tang were collected on the island of O'ahu. The average number of Yellow Tang collected each year since 2000 was 15,186 individuals, ranging from a minimum catch of 2,546 individuals (2001) to a maximum of 38,344 individuals (2015). However, in July 2015, the regulations in HAR §13-77 were put into place (see Section 1.2.3), limiting the collection of Yellow Tang to no more than 100 individuals a day, as well as imposing additional regulations on size. Therefore, it is anticipated that under the Pre-Aquarium Collection Ban Alternative, collection would follow the rates seen in 2016 and 2017, when these bag limits were in place, for an average collection of 22,997 Yellow Tang per year, and a maximum collection of 23,524 per year. This represents 3.2% of the estimated O'ahu Yellow Tang population based on PIFSC-ESD (2020) data (728,777 individuals; Table 5-8).

Since 2000, 175,425 Kole were collected on the island of O'ahu. The average number of Kole collected each year since 2000 was 9,746, ranging from a minimum catch of 2,917 individuals (2002) to a maximum of 17,748 individuals (2015). However, in July 2015, the regulations in HAR §13-77 were put into place (see Section 1.2.3), limiting the collection of Kole to no more than 75 individuals a day, as well as imposing additional regulations on size. Therefore, it is anticipated that under the Pre-Aquarium Collection Ban Alternative, collection would follow the rates seen in 2016 and 2017, when these bag limits were in place, for an average collection of 11,916 Kole per year, and a maximum collection of 11,983 per year. This represents 0.7% of the estimated O'ahu Kole population based on PIFSC-ESD (2020) data (1,690,372 individuals; Table 5-8).

Since 2000, 138,669 Potter's Angelfish were collected on the island of O'ahu. The average number of Potter's Angelfish collected each year since 2000 was 7,704 individuals, ranging from a minimum catch of 4,698 individuals (2003) and maximum of 10,940 individuals (2010). However, in July 2015, the regulations in HAR §13-77 were put into place (see Section 1.2.3), limiting the collection of Potter's Angelfish to no more than 50 individuals a day. Therefore, it is anticipated that under the Pre-Aquarium Collection Ban Alternative, collection would follow the rates seen in 2016 and 2017, when these bag limits were in place, for an average collection of 6,602 Potter's Angelfish per year, and a maximum collection of 7,321 per year. This represents 1.3% to 1.4% of the estimated O'ahu Potter's Angelfish population based on PIFSC-ESD (2020) data (512,697 individuals; Table 5-8).

For the 28 remaining species analyzed, based on PIFSC-ESD (2020) population estimates and the average collection over the past 18 years (or from 2016/2017 for regulated species, which include the Orangespine Unicornfish and Moorish Idol), 25 species would be collected at numbers below 1% of their overall population if an average collection occurs annually, and at or below 2% if the maximum collection were to occur during a single year (Table 5-8). An additional 3 species would be collected at numbers below 2% of their overall population if an average collection occurs annually, and below 5% if the maximum collection were to occur during a single year (Table 5-8). For the 1 remaining species, the Golden Dwarf Moray, it is

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

estimated that up to 5.2% of the population would be collected if the maximum collection rate occurred in a single year, but an average year would result in collection of less than 1.5% of the estimated population.

Table 5-8. Summary of 35 selected fish species collected on the island of O’ahu from 2000 to 2017 (DAR 2018a), O’ahu population estimates (PIFSC-ESD 2020), and predicted impact of collection under the Pre-Aquarium Collection Ban Alternative based on historic collection rates (DAR 2018a).

Common Name	Scientific Name	Mean O’ahu Population Estimate ¹ (lower-upper estimation limit)	Average Number Collected per Year ²	Maximum Number Collected per Year ³	Average % of Mean Population Collected ⁴	Max % of Mean Population Collected ⁵
Yellow Tang ⁶	<i>Zebrasoma flavescens</i>	728,777 (0-1,540,367)	22,997	23,524	3.2%	3.2%
Kole ⁶	<i>Ctenochaetus strigosus</i>	1,690,372 (803,819-2,576,925)	11,916	11,983	0.7%	0.7%
Potter’s Angelfish ⁶	<i>Centropyge potteri</i>	512,697 (69,122-956,271)	6,602	7,321	1.3%	1.4%
Orangespine Unicornfish ⁶	<i>Naso lituratus</i>	837,112 (89,180-1,575,044)	2,128	2,432	0.3%	0.3%
Ornate Wrasse	<i>Halichoeres ornatissimus</i>	2,137,281 (568,609-3,705,953)	2,562	4,066	0.1%	0.2%
Flame Wrasse	<i>Cirrhilabrus jordani</i>	n/a	1,605	3,480	n/a	n/a
Fourline Wrasse	<i>Pseudocheilinus tetrataenia</i>	134,617 (0-285,987)	1,605	2,722	1.2%	2.0%
Hawaiian Whitespotted Toby	<i>Canthigaster jactator</i>	2,513,096 (1,939,093 - 3,087,100)	1,590	3,382	0.1%	0.1%
Forcepsfish	<i>Forcipiger flavissimus</i>	345,009 (88,777-601,240)	1,583	2,817	0.5%	0.8%
Milletseed Butterflyfish	<i>Chaetodon miliaris</i>	1,452,891 (0-3,298,935)	1,405	3,154	0.1%	0.2%
Shortnose (Geoffroy’s) Wrasse	<i>Macropharyngodon geoffroy</i>	481,899 (207,785-756,013)	1,355	2,592	0.3%	0.5%
Bicolor Anthias	<i>Pseudanthias bicolor</i>	69,760 (0-194,445)	1,344	3,407	1.9%	4.9%
Orangeband Surgeonfish	<i>Acanthurus olivaceus</i>	1,534,094 (821,719-2,246,470)	1,343	3,875	0.1%	0.3%
Moorish Idol ⁶	<i>Zanclus cornutus</i>	251,451 (129,331-373,571)	952	1,067	0.4%	0.4%
Multiband Butterflyfish	<i>Chaetodon multicinctus</i>	415,710 (163,339-668,081)	1,007	2,296	0.2%	0.6%

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

Common Name	Scientific Name	Mean O'ahu Population Estimate¹ (lower-upper estimation limit)	Average Number Collected per Year²	Maximum Number Collected per Year³	Average % of Mean Population Collected⁴	Max % of Mean Population Collected⁵
Psychedelic Wrasse	<i>Anampses chrysocephalus</i>	69,693 (5,081-134,305)	913	1,182	1.3%	1.7%
Eightline Wrasse	<i>Pseudocheilinus octotaenia</i>	59,945 (0-135,882)	892	1,905	1.5%	3.2%
Crowned Puffer	<i>Canthigaster coronata</i>	319,076 (151,702-486,450)	809	1,848	0.3%	0.6%
Saddle Wrasse	<i>Thalassoma duperrey</i>	17,655,664 (14,778,717-20,532,611)	804	1,597	0.0%	0.0%
Fisher's Angelfish ⁷	<i>Centropyge fisheri</i>	117,920 (8,395-227,445)	756	1,627	0.6%	1.4%
Bandit Angelfish	<i>Apolemichthys arcuatus</i>	n/a	286	638	n/a	n/a
Brown Surgeonfish (Lavender, Forktail Tang)	<i>Acanthurus nigrofuscus</i>	10,523,860 (6,948,387-14,099,332)	454	969	<0.1%	<0.1%
Crosshatch Trigger	<i>Xanthichthys mento</i>	n/a	388	759	n/a	n/a
Dragon Wrasse	<i>Novaculichthys taeniourus</i>	54,784 (2,249-107,318)	155	470	0.3%	0.9%
Gilded Triggerfish	<i>Xanthichthys auromarginatus</i>	162,831 (0-333,479)	497	1,483	0.3%	0.9%
Golden Dwarf Moray	<i>Gymnothorax melatremus</i>	4,761 (0-14,275)	66	247	1.4%	5.2%
Heniocus Butterfly	<i>Heniocus diphreutes</i>	301,466 (0-697,765)	630	1,061	0.2%	0.4%
Raccoon Butterfly	<i>Chaetodon lunula</i>	201,288 (57,190-345,385)	310	641	0.2%	0.3%
Spotted Boxfish	<i>Ostracion meleagris</i>	104,861 (27,348-182,375)	576	1,934	0.5%	1.8%
Threadfin Butterfly	<i>Chaetodon auriga</i>	31,081 (0-65,523)	239	390	0.8%	1.3%
Whitemouth Moray	<i>Gymnothorax meleagris</i>	58,821 (5,662-111,981)	48	140	0.1%	0.2%
Yellowtail Coris	<i>Coris gaimard</i>	397,004 (181,127-612,880)	673	1,543	0.2%	0.4%
Zebra Moray	<i>Gymnothorax zebra</i>	11,501 (0-34,495)	110	258	1.0%	2.2%
Achilles Tang	<i>Acanthurus achilles</i>	73,299 (0-173,655)	450	1,266	0.6%	1.7%

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

Common Name	Scientific Name	Mean O'ahu Population Estimate ¹ (lower-upper estimation limit)	Average Number Collected per Year ²	Maximum Number Collected per Year ³	Average % of Mean Population Collected ⁴	Max % of Mean Population Collected ⁵
Hawaiian Cleaner Wrasse	<i>Labroides phthirophagus</i>	266,970 (106,698-427,242)	625	1,060	0.2%	0.4%

¹Estimated population derived from NOAA data collected between 2010 and 2019 (PIFSC-ESD 2020).

²Average calculated from collection reports from 2000 to 2017 (DAR 2018a).

³Maximum calculated from collection reports from 2000 to 2017 (DAR 2018a).

⁴Calculated from average collected for each species between 2000 and 2017 and PIFSC-ESD population estimates.

⁵Calculated from the maximum collected for each species between 2000 and 2017 and PIFSC-ESD population estimates.

⁶Regulated species (e.g., bag or size limits) on the island of O'ahu. The average and maximum collection values for these species is based off of data from 2016 and 2017, which reflect collection rates under the current bag limits.

⁷SGCN.

For the four fish species without population estimates, see discussion in Section 5.4.1.2, though actual collection numbers would be anticipated to differ as shown in Table 5-8.

Historic collection data on an additional 23 SGCN fish species are included in Appendix B. Of the 23 species, 11 (48%) were collected in less than 50% of the years between 2000 and 2017. Ten of the species were always collected by fewer than three collectors, and therefore no average or maximum collection values are available due to data confidentiality (see Section 5.1). For the remaining 13 species, average collection (from years with available data, i.e., excluding years with data confidentiality issues) was below 100 per year for 8 of the species, and ranged from 6 per year for the Blackside Razorfish to 538 per year for the Hawaiian Anthias (Appendix B).

Invertebrate Species

See analysis presented in Section 5.4.1.2.

Reef Habitat

Impacts to reef habitat and herbivores would be similar to those described for the CML-only Alternative (see Section 5.4.1.2). However, under the Pre-Aquarium Collection Ban Alternative, bag limits and prohibitions would be in place for several herbivorous species on O'ahu, including Yellow Tang (100 total daily, 6 individuals <1.5 inches and 6 individuals >5 inches), Kole (75 total daily, 6 >5 inches) and Potter's Angelfish (50 total daily). While these 3 species made up 60.5% of all individuals collected by commercial aquarium fishers from O'ahu in 2016 and 2017 (when the bag limits were in place), analysis based on PIFSC-ESD population estimates indicates the predicted annual collection of these 3 species represents approximately 3.2% of the overall island of O'ahu population of Yellow Tang, approximately 1.3% to 1.4% of the overall island of O'ahu population of Potter's Angelfish, and approximately 0.7% of the overall island of O'ahu population of Kole (Table 5-8).

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

Invasive Species

It is anticipated that implementation of the Pre-Aquarium Collection Ban Alternative would have a minor effect on invasive fish species over the 5-year analysis period. A total of 2,621 individual Bluestripe Snappers and 175 Peacock Grouper, have been reported collected from O'ahu since 2000. The Blacktail Snapper has not been reported as caught from O'ahu over the 18-year analysis period.

Impact of Aquarium Collection on Overall Fish Populations and Recruitment

Of the 35 fish species analyzed in this EIS, population estimates were available for 32 (91%). The three species without a population estimate are the Bandit Angelfish, the Crosshatch Trigger, and the Flame Wrasse, which are discussed above in Section 5.4.1.2.

Of the 32 species with populations estimates, 31 species would be collected at numbers below 5% of their estimated population sizes, and one species may be collected at up to 5.2% of its estimated population (the Golden Dwarf Moray, when using the maximum collection rate).

In addition to the low percentage of the populations which are harvested each year for most species, commercial aquarium fishing has a distinct advantage over other types of fishing because it is targeted to specific species, and within those species, it primarily targets specific size-classes which minimizes the impact to the brood stock. Because commercial aquarium fishers target the smaller individuals in populations, the larger individuals with higher fecundity are left within the population. This is particularly true of all alternatives that would include the issuance of Aquarium Permits, as the regulations set forth in HAR §13-77 (Section 1.2.3) would be in place, which place bag and/or size limits on several species, including the Yellow Tang, Kole, Orangespine Unicornfish, Potter's Angelfish and Moorish Idol.

5.4.1.4 Expanded Waikiki MLCD and Flame Wrasse Conservation Alternative

The Expanded Waikiki MLCD and Flame Wrasse Conservation Alternative would include issuance of an unlimited number of Aquarium Permits and CMLs for O'ahu, a 740-acre (299.5-hectare) expansion of the Waikiki MLCD (Figure 2), and implementation of a daily bag limit of 10 Flame Wrasse per day for the O'ahu commercial aquarium fishery. Within the expanded Waikiki MLCD, no commercial aquarium fish collection would occur (due to the addition of a permit condition added to each Aquarium Permit); however, no restrictions would be placed upon other fisheries.

Under the Expanded Waikiki MLCD and Flame Wrasse Conservation Alternative, direct impacts would be the same as those described in Section 5.4.1.3 for the Pre-Aquarium Collection Ban Alternative for all fish, invertebrate, and coral species/reef with the exception of the Flame Wrasse. While the Expanded Waikiki MLCD and Flame Wrasse Conservation Alternative includes expansion of the Waikiki MLCD, the data analyzed for this FEIS cannot be used to quantify the number of fish collected or the species collected from this area. It is expected that any reduced collection of aquarium fish within this area would be offset by redirection of effort and resources by commercial aquarium fishers to other areas of O'ahu open to commercial aquarium collection. However, even if no change in the overall fish collection rates is predicted, there are still potential benefits to expanding the existing MLCD. Friedlander et al. (2007) found that biomass within the existing Waikiki MLCD was 2.5 times higher than adjacent control sites. While the

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

expanded area of the Waikiki MLCD would only be closed to commercial aquarium collection, similar areas in West Hawai'i have shown that fish from protected Fish Replenishment Areas (where only commercial and recreational fishing is banned, and other forms of fishing can continue) will seed unprotected areas (Christie et al. 2010). The use of areas closed to aquarium collection in West Hawai'i was implemented in 1999, and the DAR has determined that it has been "very successful" at driving increases in Yellow Tang populations (the most heavily targeted aquarium fish in West Hawai'i; DAR 2019a). It is assumed that the expanded Waikiki MLCD would have similar benefits as the Fish Replenishment Areas on Hawai'i Island.

The Expanded Waikiki MLCD and Flame Wrasse Conservation Alternative would include a conservation measure imposing a bag limit of 10 Flame Wrasse per day. It is anticipated that this will result in a 60% reduction in the number of Flame Wrasse taken by the commercial aquarium fishery on O'ahu. Therefore, under the Expanded Waikiki MLCD and Flame Wrasse Conservation Alternative, catch of Flame Wrasse over the 5-year analysis period is estimated to be reduced by 60% from that under the Pre-Aquarium Collection Ban Alternative, to 642 to 1,392 Flame Wrasse per year (40% of the 1,605 to 3,480 Flame Wrasse that would be collected under the Pre-Aquarium Collection Ban Alternative).

5.4.1.5 Limited Permit Issuance Alternative

Under the Limited Permit Issuance Alternative, Aquarium Permits and CMLs would be issued to 20 fishers for the use of fine-mesh nets on O'ahu. Other commercial aquarium fishers would not be permitted to use fine mesh nets, though collection of aquarium fish would still be permitted using other legal means.

The 20 fishers who would be issued Aquarium Permits collected an average of 38,602 fish per year up to a maximum of 53,920 fish from O'ahu in a single year during the period from 2000 to 2017 (see Table 4-2). Assuming collection is between these values, a total of 193,010 to 269,600 fish would be collected over the 5-year analysis period.

Fish Species

Based on PIFSC-ESD (2020) population estimates and the average collection over the past 18 years from the 20 fishers, 29 of the 32 species with population estimates would be collected at numbers at or below 1% of their overall population if an average collection occurs over each year (Table 5-9). Even at their maximum collection rates, 25 of the 32 species would be collected at numbers at or below 1% of their overall populations (Table 5-9). All seven of the remaining species would be collected at levels below 5% of their overall populations, even at the maximum collection rates (Table 5-9).

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

Table 5-9. Selected fish species collected on the island of O’ahu from 2000 to 2017 (DAR 2018a), O’ahu population estimates (PIFSC-ESD 2020), and the predicted impact of collection under the Limited Permit Issuance Alternative based on historic collection by the 20 fishers.

Common Name	Scientific Name	Mean O’ahu Population Estimate ¹ (lower-upper estimation limit)	Average Number Collected per Year by 20 fishers	Maximum Number Collected per Year by 20 fishers	% of Mean Population Collected (20 fishers)
Yellow Tang ²	<i>Zebrasoma flavescens</i>	728,777 (0-1,540,367)	8,212	11,075	1.1% - 1.5%
Kole ²	<i>Ctenochaetus strigosus</i>	1,690,372 (803,819-2,576,925)	8,143	8,417	0.5%
Potter’s Angelfish ²	<i>Centropyge potteri</i>	512,697 (69,122-956,271)	4,740	4,812	0.9%
Orangespine Unicornfish ²	<i>Naso lituratus</i>	837,112 (89,180-1,575,044)	1,108	1,212	<0.1%
Ornate Wrasse	<i>Halichoeres ornatus</i>	2,137,281 (568,609-3,705,953)	1,554	1,934	0.1%
Flame Wrasse	<i>Cirrhilabrus jordani</i>	n/a	1,084 (40% = 434)	2,927 (40% = 1,171)	n/a
Fourline Wrasse	<i>Pseudocheilinus tetrataenia</i>	134,617 (0-285,987)	1,268	2,419	0.9% - 1.8%
Hawaiian Whitespotted Toby	<i>Canthigaster jactator</i>	2,513,096 (1,939,093 - 3,087,100)	792	1,377	<0.1% - 0.1%
Forcepsfish	<i>Forcipiger flavissimus</i>	345,009 (88,777-601,240)	953	1,409	0.3% - 0.4%
Milletseed Butterflyfish	<i>Chaetodon miliaris</i>	1,452,891 (0-3,298,935)	723	1,399	<0.1% - 0.1%

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

Common Name	Scientific Name	Mean O'ahu Population Estimate ¹ (lower-upper estimation limit)	Average Number Collected per Year by 20 fishers	Maximum Number Collected per Year by 20 fishers	% of Mean Population Collected (20 fishers)
Shortnose (Geoffroy's) Wrasse	<i>Macropharyngodon geoffroy</i>	481,899 (207,785-756,013)	873	1,716	0.2% - 0.4%
Bicolor Anthias	<i>Pseudanthias bicolor</i>	69,760 (0-194,445)	1,043	2,728	1.5% - 3.9%
Orangeband Surgeonfish	<i>Acanthurus olivaceus</i>	1,534,094 (821,719-2,246,470)	659	1,241	0.1% - 0.1%
Moorish Idol ²	<i>Zanclus cornutus</i>	251,451 (129,331-373,571)	207	217	0.3%
Multiband Butterflyfish	<i>Chaetodon multicolor</i>	415,710 (163,339-668,081)	476	1,074	0.1% - 0.3%
Psychedelic Wrasse	<i>Anampses chrysocephalus</i>	69,693 (5,081-134,305)	489	657	0.7% - 1.5%
Eightline Wrasse	<i>Pseudocheilinus octotaenia</i>	59,945 (0-135,882)	611	1,358	1.0% - 2.3%
Crowned Puffer	<i>Canthigaster coronata</i>	319,076 (151,702-486,450)	407	1,078	0.1% - 0.3%
Saddle Wrasse	<i>Thalassoma duperrey</i>	17,655,664 (14,778,717-20,532,611)	335	1,391	<0.1%
Fisher's Angelfish ³	<i>Centropyge fisheri</i>	117,920 (8,395-227,445)	417	986	0.4% - 0.8%
Bandit Angelfish	<i>Apolectichthys arcuatus</i>	n/a	200	589	n/a
Brown Surgeonfish	<i>Acanthurus nigrofuscus</i>	10,523,860 (6,948,387-14,099,332)	237	708	<0.1%

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

Common Name	Scientific Name	Mean O'ahu Population Estimate ¹ (lower-upper estimation limit)	Average Number Collected per Year by 20 fishers	Maximum Number Collected per Year by 20 fishers	% of Mean Population Collected (20 fishers)
(Lavender, Forktail Tang)					
Crosshatch Trigger	<i>Xanthichthys mento</i>	n/a	269	646	n/a
Dragon Wrasse	<i>Novaculichthys</i>	54,784 (2,249-107,318)	65	184	0.1%-0.3%
Gilded Triggerfish	<i>Xanthichthys auromarginatus</i>	162,831 (0-333,479)	308	567	0.2%-0.3%
Golden Dwarf Moray	<i>Gymnothorax melatremus</i>	4,761 (0-14,275)	60	201	3.3%-4.2%
Heniocus Butterfly	<i>Heniochus diphreutes</i>	301,466 (0-697,765)	416	727	0.1%-0.2%
Raccoon Butterfly	<i>Chaetodon lunula</i>	201,288 (57,190-345,385)	14	66	<0.1%
Spotted Boxfish	<i>Ostracion meleagris</i>	104,861 (27,348-182,375)	3	25	<0.1%
Threadfin Butterfly	<i>Chaetodon auriga</i>	31,081 (0-65,523)	14	63	<0.1% - 0.2%
Whitemouth Moray	<i>Gymnothorax meleagris</i>	58,821 (5,662-111,981)	28	57	<0.1%-0.1%
Yellowtail Coris	<i>Coris gaimard</i>	397,004 (181,127-612,880)	321	564	0.1%
Zebra Moray	<i>Gymnothorax zebra</i>	11,501 (0-34,495)	69	124	0.6%-1.1%
Achilles Tang	<i>Acanthurus achilles</i>	73,299 (0-173,655)	172	625	0.2% - 0.9%

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

Common Name	Scientific Name	Mean O'ahu Population Estimate ¹ (lower-upper estimation limit)	Average Number Collected per Year by 20 fishers	Maximum Number Collected per Year by 20 fishers	% of Mean Population Collected (20 fishers)
Hawaiian Cleaner Wrasse	<i>Labroides phthirophagus</i>	266,970 (106,698-427,242)	296	601	0.1% - 0.2%

¹Estimated population derived from NOAA data collected between 2010 and 2019 (PIFSC-ESD 2020).

²Regulated species (e.g., bag or size limits) on the island of O'ahu. The average and maximum collection values for these species is based off of data from 2016 and 2017, which reflect collection rates under the current bag limits.

³SGCN.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

For the four fish species without population estimates, see discussion in Section 5.4.1.2, though actual collection numbers would be anticipated to differ as shown in Table 5-9. Historic collection data on an additional 23 SGCN fish species are included in Appendix B. Of the 23 species, 18 (78%) have been collected by the 20 fishers between 2000 and 2017. Of those 18 species, 8 (44%) were collected in less than 50% of the years between 2000 and 2017. Average collection of 7 species was less than 10 per year, with average collection ranging from 1 (Hawaiian Knifefish, Hawaiian Morwong and Sunset Bass) to 229 (Hawaiian Anthias; see Appendix B).

Invertebrate Species

Impacts would be similar to those presented in Section 5.4.1.2, however, as shown in Table 5-6, the species composition and collection rates of the 20 fishers differs from alternatives with an unlimited number of permits. Table 5-6 shows the historic collection of invertebrates by the 20 fishers, who collected a total of 93,023 invertebrates between 2000 and 2017. Collection averaged 5,168 per year, with a maximum collection of 12,643 invertebrates in a single year. Assuming collection would fall between the average and maximum historic collection for the 20 fishers, the impacts on invertebrates are summarized in Table 5-6. Over the 5-year analysis period, 25,840 to 63,215 invertebrates (5,168 to 12,643 per year) would be collected.

Reef Habitat

Impacts to reef habitat and herbivores would be similar to those described for the CML-only Alternative (see Section 5.4.1.2), however, with the added benefits of the bag limits described for the Pre-Aquarium Collection Ban Alternative (see Section 5.4.1.3). The 20 fishers collected only 17 individual parrotfish between 2000 and 2017, averaging less than 1 parrotfish per year. In addition, under the Limited Permit Issuance Alternative, the number of Aquarium Permits would be limited to 20 fishers. The bag limits include the Yellow Tang (100 total daily, 6 individuals <1.5 inches and 6 individuals >5 inches), Kole (75 total daily, 6 >5 inches) and Potter's Angelfish (50 total daily]). Analysis based on PIFSC-ESD (2020) population estimates indicates the predicted annual collection of these 3 species represents approximately 1.1% to 1.5% of the overall island of O'ahu population of Yellow Tang, approximately 0.9% of the overall island of O'ahu population of Potter's Angelfish, and approximately 0.5% of the overall island of O'ahu population of Kole (Table 5-9).

Invasive Species

It is anticipated that implementation of the Pre-Aquarium Collection Ban Alternative would have a minor effect on invasive fish species over the 5-year analysis period.

The 20 fishers have reported a total of 504 individual Bluestripe Snappers and 59 Peacock Grouper collected from O'ahu between 2000 and 2017. The Blacktail Snapper has not been reported as caught from O'ahu over the 18-year analysis period.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

Impact of Aquarium Collection on Overall Fish Populations and Recruitment

Of the 35 fish species analyzed in this EIS, population estimates were available for 32 (91%). The three species without population estimates are the Bandit Angelfish, Crosshatch Trigger and Flame Wrasse which are discussed in Section 5.4.1.2. All species with population estimates would be collected at numbers below 5% of their estimated populations.

In addition to the low percentage of the populations which are harvested each year for most species, commercial aquarium fishing has a distinct advantage over other types of fishing because it is targeted to specific species, and within those species, it primarily targets specific size-classes which minimizes the impact to the brood stock. Because commercial aquarium fishers target the smaller individuals in populations, the larger individuals with higher fecundity are left within the population. This is particularly true of all alternatives that would include the issuance of Aquarium Permits, as the regulations set forth in HAR §13-77 (Section 1.2.3) would be in place, which place bag and/or size limits on several species, including the Yellow Tang, Kole, Orangespine Unicornfish, Potter's Angelfish and Moorish Idol.

5.4.1.6 Establishment of a White List and Limited Collection (Preferred) Alternative

Under the Establishment of a White List and Limited Collection (Preferred) Alternative, Aquarium Permits and CMLs would be issued to 15 fishers for the use of fine-mesh nets on O'ahu. No other commercial aquarium collection would occur without undergoing a separate HEPA analysis. Collection would be limited to the 31 fish species and 4 invertebrates shown in Table 3-2 and 3-3, and collection of each species would be limited by the total allowable catch limits.

Fish Species

Based on PIFSC-ESD (2020) population estimates and the maximum allowed collection of each species (shown in Table 3-2), all species with population estimates would be collected at 4.5% or less of the estimated population size. Collection would only be allowed for 31 fish species. Of the species analyzed for other alternatives, Multiband (Pebbled) Butterflyfish, Psychedelic Wrasse, Achilles Tang or Hawaiian Cleaner Wrasse would not be collected under this alternative as they are not on the proposed White List. The SGCN species in Appendix B would also not be collected under this Alternative, as they are not on the White List, though the SGCN Bandit Angelfish and SGCN Fisher's Angelfish are on the proposed White List.

For the 31 species which are on the proposed White List, population estimates are available for 28 of them. Of these 28 species, 18 would be collected at less than 1% of their estimated populations, 5 would be collected at 2% or less of their estimated populations, 3 would be collected at less than 4% of their estimated populations, and two would be collected at up to 4.5% of their estimated population size.

The three species on the proposed White List without population estimates (Flame Wrasse, Bandit Angelfish and Crosshatch Trigger) are discussed in Section 5.4.1.2, but impacts would be anticipated to be at most those shown in Table 3-2 (if all fishers collected their maximum catch quota). Unlike the other alternatives analyzed in this FEIS, this alternative provides a hard upper limit on collection for all species, and ends collection of any species not on the proposed White List.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

Invertebrate Species

Under this alternative, collection of invertebrates would be limited to the four species in Table 3-4. Up to 136,917 Zebra Hermit Crabs, 9,519 Halloween Hermit Crabs, 2,946 Cleaner Shrimp, and 51,213 Feather Duster Worms could be collected on an annual basis. No other invertebrate collection for commercial aquarium use would occur.

Reef Habitat

Impacts to reef habitat and herbivores would be similar to those described for the CML-only Alternative (see Section 5.4.1.2), however, with the added benefits of the creation of a White List (limiting collection to 31 fish species) and implementation of total allowable catch limits for all species (i.e., hard upper limits). The bag limits described in Section 5.4.1.3 would also be in effect. Collection of the Achilles Tang, an herbivore, would not be allowed, and no parrotfish would be collected. Collection of any species would fall below 5% of the estimated population.

Invasive Species

No collection of invasive species would occur under this alternative.

Impact of Aquarium Collection on Overall Fish Populations and Recruitment

Of the 31 fish species on the proposed White List, population estimates were available for 28 (90%). The three species without population estimates are the Bandit Angelfish, Crosshatch Trigger and Flame Wrasse which are discussed in Section 5.4.1.2, and would have catch quotas as shown in Table 3-2 (i.e., a hard upper limit). All species with population estimates would be collected at numbers at or below 4.5% of the estimated population.

In addition to the low percentage of the populations which are harvested each year for most species, commercial aquarium fishing has a distinct advantage over other types of fishing because it is targeted to specific species, and within those species, it primarily targets specific size-classes which minimizes the impact to the brood stock. Because commercial aquarium fishers target the smaller individuals in populations, the larger individuals with higher fecundity are left within the population. This is particularly true of all alternatives that would include the issuance of Aquarium Permits, as the regulations set forth in HAR §13-77 (Section 1.2.3) would be in place, which place bag and/or size limits on several species, including the Yellow Tang, Kole, Orangespine Unicornfish, Potter's Angelfish and Moorish Idol.

5.4.2 Indirect Effects

Under all alternatives, mortality of fish post-harvest will occur. As described in Munday et al. (2015), after a fish has been collected from the reef, they are brought to the surface, transported to an export facility, shipped to import facilities, and then transported to a retail store and eventually to a hobbyist aquarium. Mortality can occur at any point in this supply chain, though immediate mortality is less than 1% (Stevenson et al. 2011, as cited in Munday et al. 2015).

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

When bringing the fish to the surface, there are two methods commonly used in the Hawai'i fishery for avoiding barotrauma to collected fish (either ascent without decompression stops, or ascent with one decompression stop, followed by venting), and neither method resulted in any immediate or delayed mortality (Munday et al. 2015). Furthermore, the stress levels of vented fish versus fish brought to the surface using decompression (multiple stops along the way to the surface, with no venting) were not statistically different (Munday et al. 2015). While this study included limitations, including the lack of additional stressors, since fish were kept for 21 days for observations, and did not have to undergo additional shipment and handling, it does suggest that the collection methods used in Hawai'i minimize the post-collection mortality of fish compared to other methods (e.g., no decompression, or use of cyanide). Munday et al. (2015) stated that while venting has been controversial in this industry due to criticism from animal rights groups, other fishing groups are often encouraged to vent fish before returning them to the ocean.

Additional mortality may occur during transportation, shipping, or once the fish has reached its final destination. No post-collection data are available for fish collected in Hawai'i; however, cyanide-free net-caught fish in the Philippines have been found to have mortality rates of less than 10% through the chain from the reef to retailer (Rubec et al. 2001). This is compared to rates of 14.12% to 21.69% (depending on the experience of the final aquarist) found by Cartwright et al. (2012), which included fish collected using cyanide or other methods. While it is possible that higher post-collection mortality rates could result in the need to collect more fish from the reef, it is not expected that mortality rates will increase over what has previously occurred under historic collection rates. Therefore, because post-collection mortality is not expected to increase under any of the alternatives, it is not anticipated that collection rates will need to increase as a result of increased mortality.

5.4.2.1 No Action Alternative

Under the No Action Alternative issuance of Aquarium Permits and CMLs for aquarium collection would not occur and commercial aquarium fishing would not be permitted on O'ahu. A minor, although unquantifiable, increase in number of fish and invertebrates may occur over the 5-year analysis period, which may provide additional viewing opportunities for tourists, an increase in the prey base, additional individual herbivores to maintain the reef, and increased competition between species for available resources.

5.4.2.2 CML-only Alternative

Under the CML-only Alternative, collection of aquarium fish using fine mesh nets would not occur, though collection of fish and invertebrates may continue using methods not requiring an Aquarium Permit, and without the use of fine mesh nets and the regulations that accompany their use (see Section 1.2.3), the size class of fish collected may increase over that which is caught with fine mesh nets (i.e., the smaller fish would escape the larger mesh), but this impact cannot be quantified at this time. With only a few exceptions for certain species where fishers classify fish as "small", "medium" or "large", the size of fish collected under CMLs is not required to be reported to the DAR, and thus these data are not available. If the size class of fish collected is larger, these larger fish may represent the brood stock.

As shown in Section 5.4.1.2, the species composition of collection appears to have changed in the absence of Aquarium Permits. Collection of fish and invertebrates under the CML-only Alternative would result in

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

temporary and localized decreases in the number of fish and invertebrates over the 5-year analysis period (occurring only at the time and place where collection is occurring), which may provide fewer viewing opportunities for tourists, a decrease in the prey base, and reduced competition between species for available resources. However, given the low proportion of the island populations of the species that would be removed annually (Section 5.4.1.2), and the geographic area over which the removal would occur (i.e., the island of O'ahu), it is anticipated that indirect impacts on viewing opportunities, prey base, and competition would be minor or nonexistent. At the population level, based on the analysis provided in Section 5.4.1.3, no population-level impacts to any population of the 35 fish species analyzed are anticipated. Therefore, no indirect impacts due to commercial aquarium collection on the biological function of herbivore populations are anticipated.

5.4.2.3 Pre-Aquarium Collection Ban Alternative

Under the Pre-Aquarium Collection Ban Alternative issuance of an unlimited number of Aquarium Permits and CMLs would occur and commercial aquarium fish collection using fine mesh nets would take place. An estimated 71,983 (18-year average) to 100,662 (maximum) primarily juvenile fish would be collected from O'ahu and an estimated 165,056 invertebrates (18-year average) would be collected from O'ahu. Collection of 71,983 to 100,662 primarily juvenile fish and over 150,000 invertebrates would result in a temporary and localized decreases in the individual number of fish and invertebrates over the 5-year analysis period (occurring only at the time and place where collection is occurring), which may provide fewer viewing opportunities for tourists, a decrease in the prey base, and reduced competition between species for available resources. However, adequate data do not exist that would allow for a thorough analysis of the potential effects. Given the low proportion of the island populations of the species that would be removed (Section 5.4.1.2), and the geographic area over which the removal would occur (i.e., island of O'ahu), it is anticipated that indirect impacts on viewing opportunities, prey base, and competition would be minor or nonexistent.

5.4.2.4 Expanded Waikiki MLCD and Flame Wrasse Conservation Alternative

Indirect impacts under the Expanded Waikiki MLCD and Flame Wrasse Conservation Alternative would be similar to those of the Pre-Aquarium Collection Ban Alternative. The implementation of the 10 per day bag limit on Flame Wrasse may provide increased viewing opportunities for tourists, but this cannot be quantified at this time. Expansion of the Waikiki MLCD may decrease user conflict within that area, and provide increased viewing opportunities in that area, but again, this cannot be quantified at this time.

5.4.2.5 Limited Permit Issuance Alternative

Indirect impacts under the Limited Permit Issuance Alternative would be similar to those of the Pre-Aquarium Collection Ban Alternative. The implementation of the 10 per day bag limit on Flame Wrasse may provide increased viewing opportunities for tourists, but this cannot be quantified at this time. Expansion of the Waikiki MLCD may decrease user conflict within that area, and provide increased viewing opportunities in that area, but again, this cannot be quantified at this time. The limited issuance of permits to 20 fishers may decrease user conflict in areas open to aquarium collection, though it is anticipated that some additional fishers may continue to collect aquarium fish without the use of fine mesh nets, and this cannot be quantified at this time.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

5.4.2.6 Establishment of a White List and Limited Collection (Preferred) Alternative

Indirect impacts under the Establishment of a White List and Limited Collection (Preferred) Alternative would be similar to those of the Pre-Aquarium Collection Ban Alternative. However, the establishment of a White List may provide increased viewing opportunities for tourists for species no longer collected, but this cannot be quantified at this time. The limited issuance of permits to 15 fishers may decrease user conflict in areas open to aquarium collection.

5.4.3 Cumulative Impacts

As stated in Section 4.4, Toonen et al. (2011) conclude that the Hawaiian Archipelago is not a single, well-mixed marine community, but rather there are at least four significant multi-species barriers to dispersal along the length of the island chain, and that species that appear capable of extensive dispersal, such as Yellow Tang and Kole, show significant population differentiation within the Hawaiian Archipelago. In addition, there are significant consensus genetic breaks that restrict gene flow between islands. Therefore, the geographic boundary for analysis of cumulative effects is the island of O'ahu.

Honolulu, on the island of O'ahu, is the largest population center in Hawai'i, and is in close proximity to reefs, which brings even more humans into contact with the coral reefs, which can increase the risk of anthropogenic stressors (Gorstein 2018).

5.4.3.1 Recreational Aquarium Fish Collection

As of April 2018, all recreational permits for collection of aquarium species with fine mesh nets were voided, and no collection with fine mesh nets is currently legally allowed, pending environmental review (DAR 2019a). Given the five-year analysis period, it cannot currently be predicted when or if these permits will be reinstated, therefore, the following discussion focuses on the cumulative impacts if the permits were to be reinstated, and pressure remained similar to historic rates.

Recreational aquarium fish collection is governed by state law and regulations. Under HRS 188-31, individuals may use fine mesh nets (< 2-inch mesh) to collect aquatic life for an aquarium. A permit is not required if:

- The net has large mesh (more than two-inch mesh);
- The net has small mesh but is less than three feet in length, height, or width, including the handle; or,
- Using a slurp gun.

A recreational aquarium permit is required if using a small mesh net other than a hand net, or a small mesh hand net larger than the dimensions indicated above. Small mesh throw nets are always prohibited. Regardless of whether a permit is required, regulations that impose bag limits, seasons, and limit the size of fish that can be collected apply to all recreational fish collection. The aquarium permit only exempts a person from the small mesh restriction. The recreational aquarium permit rules apply everywhere in the state.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

Under a recreational aquarium permit, individuals are authorized to collect up to five aquatic animals per day (1,825 per year) (HAR 13.60.4). Since 2000, the number of recreational permits issued for the state (island-specific numbers not available) has averaged 159 annually (DAR 2018a). The DAR collected recreational aquarium fish catch information from 1975 until 1985, after which, data collection was discontinued, and currently no reporting of catch is required for recreational aquarium permit holders. Historic recreational collection data were not digitized or processed into a database, and therefore, are not available for analysis (DAR 2018a).

Because reporting of recreational aquarium catch is not required, the impact of recreational collection on species collected on O'ahu cannot be quantified. It is likely that not all recreational permit holders collect the maximum allowable number (1,825); however, if each of the average 159 statewide permit holders were to collect 50% of the allowable catch (913), it would result in the collection of 145,088 aquatic animals annually. These estimates are likely high based on results from Harding (2017), which found that 57% of recreational aquarium permit holders surveyed had not utilized their permit in the previous 12-month period. Of the 43% who had used their permits, their average yearly catch was 45 fish per permit (Harding 2017), which is below the maximum allowable number of 1,825 fish or the 50% used to estimate impacts above.

Because reporting of recreational aquarium catch is not required, the impact of the collection on SGCN, including the Psychedelic Wrasse, Fisher's Angelfish, and Bandit Angelfish, cannot be quantified. Nevertheless, it is likely that SGCN are occasionally collected by recreational aquarium permit holders. However, given the low number of SGCN individuals collected by commercial aquarium collectors (average 913 Psychedelic Wrasse/year; average 756 Fisher's Angelfish/year; average 209 Bandit Angelfish/year) it is estimated that recreational collectors are collecting fewer individuals of these species.

Because reporting of interactions (e.g., damage from contact with collection equipment) with corals resulting from recreational aquarium collecting and recreational aquarium catch is not required, the impact of the interaction with reef habitat cannot be quantified. However, studies conducted by Tissot and Hallacher (2003) found that aquarium collecting had no significant impact (beneficial nor detrimental) on reef habitat. In addition, 15 years of coral reef data collected and analyzed by the DAR (2018b) found no significant difference in coral cover in areas open to commercial aquarium fish collection. It is assumed that recreational aquarium collection would likewise not have a significant impact.

Recreational aquarium collection impacts to biological resources cannot be fully quantified. However, data presented by DAR (2014a, 2019a) for West Hawai'i indicate that some species may be declining in various management areas (i.e., both within areas open to commercial aquarium collection as well as within areas closed to collection) due to factors other than commercial aquarium collecting which may include recreational aquarium collection. This may be the case on O'ahu as well.

5.4.3.2 Non-Aquarium Commercial and Non-Commercial Fishing (Non-Aquarium Fish)

Coral reef species are targeted by non-aquarium commercial fishers using numerous fishing gears including nets, traps, hook and line, spear, hand, and other methods. Commercial fish industry landings in Hawai'i have increased annually since 2006 and the NOAA reported total landings in 2013 were valued near \$108 million dollars (DLNR 2015). Akule (coastal pelagic scads) dominate nearshore commercial landings and are typically collected using surround or fence nets, gillnets or hook and line (WPRFMC 2017). Other top

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

species by weight and value include soldierfishes, parrotfish, surgeonfishes, and goatfishes, which may be targeted because they may bring a high price in some seasons (WPRFMC 2017). The Bluestripe Snapper is one of the principal species in the Hawaiian offshore handline fishery, mainly being caught via handlines, traps and gill nets (Russell et al. 2016).

On the island of Hawai'i, Foo et al. (2021) found that commercial fishing has led to decreases in parrotfish biomass, where current commercial fishing levels are negatively affecting scraper populations. Parrotfish are not commonly collected by commercial aquarium collectors on O'ahu, as none are in the top 20 species historically collected, and none are on the proposed White List in the Preferred Alternative. Historically, parrotfish were reported in 14 of the 18 years between 2000 and 2017, with a maximum collection of 31 and an average of 9 per year (DAR 2018a). Collection under any alternative is expected to be <31 individuals per year and would be zero under the No Action or Preferred Alternative.

Non-commercial fishing includes subsistence/consumptive, recreational, and cultural fishing and gathering activities that occur in ocean and coastal zones. The State of Hawai'i has the most developed recreational fishing infrastructure in the U.S. Pacific and is a substantial economic contributor to the State (WPRFMC 2017). The State of Hawai'i does not track non-commercial fish collection. However, creel surveys suggest that the total inshore non-commercial catch from reef areas could be as high as the reported commercial catch (WPRFMC 2017). It is important to note that resource species (fish targeted for human consumption) are predominantly herbivorous species (DAR 2018 as cited in Foo et al. 2021).

The most recent DAR summary report available on the West Hawai'i aquarium fishery (DAR 2019a) analyzed data collected since 2003 by the Hawai'i Marine Recreational Marine Fishing Survey (HMRFS) and subsequently since 2007 by NOAA's Marine Recreational Information Program (MRIP) to gain perspective on the generalized impact on reef fishes by aquarium collecting versus other types of reef fishing activities. Statewide, looking at the period from 2008 to 2011, the number of reef fishes caught by the recreational and commercial sectors was found to be comparable, averaging 1,511,025 per year for recreational fishers and 1,554,010 per year for commercial (i.e., non-aquarium) fishers.

McCoy et al. (2018) found that 5.6% of households on O'ahu participate in recreational (non-aquarium) fishing. Most of this fishing is conducted using lines from shore (66.8%), which catches an estimated 0.33 pounds of reef fish per hour fished (McCoy et al. 2018). Gorstein (2018) found that, while a smaller proportion of the population of O'ahu participates in fishing and gathering activities, due to the higher population on O'ahu, there are more fishers/gatherers on O'ahu than any other Hawaiian island. The results of McCoy et al. (2018) found that on O'ahu, non-commercial annual catch was approximately 3.3 times commercial catch when comparing the average pounds per year between 2004 and 2013 (McCoy et al. 2018).

On O'ahu, on average the aquarium fishery annually takes nearly a third (71,983/year) the number of reef fishes taken annually by recreational and other commercial fishers combined (194,674/year). However, unlike the aquarium fishery which targets mostly immature fish, the commercial and recreational fisheries selectively target the larger breeding portion of the population which has profound implications for the sustainable usage of the resource (DAR 2014a).

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

The non-aquarium commercial fish industry targets some coral reef species; however, non-aquarium commercial fishers do not directly target most aquarium fish species. Data evaluated for non-aquarium commercial fishing is lacking due to the DAR confidentiality regulations (HRS §189-3). Since most non-aquarium commercial fishers do not target aquarium species, there are usually less than three fishers reporting. Therefore, the data presented in Table 5-10 is underestimated.

Table 5-10. Available data on select species collected by commercial non-aquarium fishers on the island of O’ahu from 2000-2017, and from 2018-2020 (DAR 2020). n.d. = Not Disclosed. Averages are calculated without n.d. years (i.e., only years with reported catch or zero catch). Species on the proposed White List are noted with an asterisk (*).

Species	2000-2017		2018-2020	
	Total	Annual Average	Total	Annual Average
Achilles Tang	34	3	n.d.	0
Yellow Tang*	n.d.	0	0	0
Kole (=Goldring Surgeonfish, Yelloweye, Goldring)*	9,546	562	42	42
Orangeband (=Shoulder) Surgeonfish*	87,627	4,868	11,886	3,962
Moorish Idol*	n.d.	0	0	0
Milletseed Butterflyfish*	<i>n.d.</i>	0	0	0
Orangespine Unicornfish (Clown Tang)*	4,940	309	1,389	463
Whitesaddle Goatfish (SGCN, see Appendix B)	27,838	1,547	583	194
Titan Scorpionfish (SGCN, see Appendix B)	1,087	60	4	4
Apogon spp. (includes Spotted Cardinalfish, SGCN, see Appendix B)	n.d.	0	0	0
Yellowstripe Coris (SGCN, see Appendix B)	20	2	0	0
<i>Kuhlia</i> spp. (includes Hawaiian Flagtail, SGCN, see Appendix B)	22,567	1,254	7,538	2,513

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

Species	2000-2017		2018-2020	
	Total	Annual Average	Total	Annual Average
<i>Iniistius</i> spp. (includes Blackside Razorfish, SGCN, see Appendix B)	8,776	488	404	136

It is expected that the average number of aquarium fish collected annually by non-aquarium commercial fishers will continue at these rates (at a minimum) over the 5-year analysis period.

Because reporting of non-aquarium recreational, cultural, and subsistence/consumptive catch is not required, the impact of recreational, cultural, and subsistence/consumptive collection on reef fish and invertebrates, and SGCN cannot be quantified. However, nearshore recreational, and subsistence catch is likely at similar catch levels of non-aquarium commercial fishing (Walsh et al. 2003).

The impacts of non-aquarium commercial and non-commercial fishing on biological resources cannot be fully quantified. However, as discussed above, data presented by DAR (2019a) for West Hawai'i indicate that some species are declining in various management areas (i.e., both within areas open to commercial aquarium collection as well as within areas closed to collection) due to factors other than commercial aquarium collecting, which include non-aquarium commercial and non-commercial fishing. This may be the case on O'ahu as well. However, there is no way to fully quantify the cumulative effects of past and ongoing non-aquarium commercial and non-commercial fishing on biological resources. Given the assumed past and present impacts of non-aquarium commercial and non-commercial fishing on biological resources, foreseeable future actions would likely result in some impacts to biological resources.

The No Action Alternative would not add cumulatively to the impacts on any of the species shown in Table 5-10. Collection of all the species in Table 5-10 may occur under the CML-only, Pre-Aquarium Collection Ban, Expanded Waikiki and Flame Wrasse, or Limited Permit Issuance Alternatives, and thus may add cumulatively to biological impacts. Cumulative impacts from commercial aquarium collection would be limited to the species on the proposed White List for the Preferred Alternative, and would thus not add cumulatively to collection of any species not on the White List.

5.4.3.3 Commercial Aquarium Collection

As noted in Section 1.0, the commercial aquarium collection fishery has existed in Hawai'i since the late 1940s. Commercial aquarium collection pursuant to permits issued by DLNR was only recently halted after the Supreme Court of Hawai'i's determination that DLNR's issuance of the permits required compliance with HEPA

Given the long history of commercial aquarium collection in Hawai'i and O'ahu, it is reasonably foreseeable that commercial aquarium collection will continue if allowed. Based on available data regarding species abundance and yearly commercial aquarium catch over the past 18 years, it is expected that in the reasonably foreseeable future, commercial aquarium collection will proceed generally at the same rate and have the same impacts as in the past 18 years. To the extent new data regarding the impacts of commercial

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

aquarium collection on biological resources becomes available in the future, DLNR may consider those data and, to the extent necessary, supplement this impacts analysis.

As noted in Section 5.4.1.2:

- Reef fish have high fecundity and are long lived, and as such produce a large number of young each year over many years;
- Commercial aquarium collection targets juvenile fish leaving behind the adult brood stock; and,
- A low percentage of the overall population of each of the targeted species would be collected annually by commercial aquarium fishers, and this collection would be spread throughout the year and across multiple areas.

It is not anticipated that losses would accumulate over time due to the low percentage collected each year and the high fecundity of reef fishes.

5.4.3.4 Tourism

Hawai'i is a major tourist destination, and the tourism industry contributes the most to the state's economy. Over time this industry has grown and reshaped the native landscapes and sensitive ecosystems through major coastal development, increased energy consumption, and tourism based recreational activities. Major coastal development for tourism (i.e., hotels, resorts, restaurants, recreational outfitters) and associated point source pollution (e.g., petroleum hydrocarbons, pharmaceuticals, heavy metals, and sediment from agriculture and development) threaten the quality of coral reef ecosystems (State of Hawai'i 2010). When coral reefs are damaged, it could potentially expose reef dependent organisms and leave them vulnerable to other threats such as disease, predation, and climate change (State of Hawai'i 2010), including the reef fishes and other aquatic animals targeted by both commercial and recreational aquarium fishers.

Human interaction with native flora and fauna is also a growing concern. Damage to sensitive ecosystems (i.e., coral reefs, tide pools, shorelines) through tourism-based recreation overuse (e.g., SCUBA diving, snorkeling, etc.) has been attributed to killing many aquatic organisms that in turn may affect many more species that rely on such organisms as a food source. Damage to coral reef habitat in association with tourism (through coastal development, point source pollution, and recreational activities) threatens most reef fish and invertebrate species that are dependent on reefs for habitat and foraging in the foreseeable future (State of Hawai'i 2010).

5.4.3.5 Climate Change

Warming of the planet and rising average temperatures may produce variations in precipitation and temperature patterns, sea levels, and storm severity. This process is commonly referred to as "climate change." Increased temperatures and acidity will reduce the health and resilience of coral reefs and other ocean resources (Hawai'i Climate Change Mitigation and Adaptation Commission 2017). Changes in sea surface temperatures have been documented, with temperatures warmer than normal in recent years

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

(increase of 0.22 °F per decade), and even reaching record levels of thermal stress in September 2015 (Casey and Cornillon 2001; Gove et al. 2016).

Several reef fish and invertebrate species are endemic to the Hawaiian Archipelago (including Johnston Atoll) and therefore may be at greater risk when faced with changes in climate over time (e.g., warming temperatures, habitat loss due coral bleaching, etc.). The extent and severity of impacts to reef species from climate change has been ongoing for decades and are expected to increase in the foreseeable future. If environmental fluctuations resulting from climate change (e.g., tropical storms, coral bleaching episodes, acidification, etc.), or other natural or human factors, change habitat conditions, fishing mortality may present a higher risk to some reef fish and invertebrate species and SGCN. Reefs greater than 25 meters deep may provide a refuge for some species (Pereira et al. 2018), including deep-water species such as the Bandit Angelfish.

Climate change will impact fish both directly (e.g., the effect of temperature on physiological processes) and indirectly (e.g., impact of coral bleaching on habitat). These different impacts will interact to influence the life history, population dynamics, community structure and fish distribution (Munday et al. 2007).

Managing the impacts of climate change on coral reefs is difficult, since the reef managers themselves cannot prevent the increases in sea temperatures or other climate change impacts (e.g., increased storms; Pratchett et al. 2006). Yet Pratchett et al. (2006) noted that reducing other stressors on the reef environment, including potential overfishing, can potentially increase the resilience of reefs to handle climate-induced bleaching events.

The Preferred Alternative is the only action alternative which includes catch quotas (i.e., a hard upper limit), limits collection to just 31 species (i.e., the proposed White List), and limits the collection of each the species on the White List to 4.5% or less of the estimated population size, thereby reducing the likelihood of overfishing and stress on the reef, and increasing reef resilience.

Coral Bleaching

Warmer water temperatures can result in coral bleaching. When water is too warm, corals will expel the algae living in their tissues causing the coral to turn completely white. When coral bleaches, it is not dead; corals can survive a bleaching event, but they are under more stress and are subject to mortality. The first documented large-scale coral bleaching event in Hawaii occurred on O'ahu during the summer of 1996 (Friedlander et al. 2008). In 1998, global coral bleaching and die-off was unprecedented in geographic extent, depth, and severity. Researchers predict that coral bleaching events would occur when the average sea temperatures are 33.8 °F or more above average (DLNR 2015). In the fall of 2015, leeward reefs of Hawai'i Island suffered catastrophic coral mortality due to widespread and severe coral bleaching. Survey results indicated that overall coral bleaching prevalence averaged 53.3% and resulted in an average coral cover loss of 49.7%. Regional differences in bleaching prevalence and subsequent coral mortality were not detected. High post-bleaching mortality was detected for the coral species, *Pocillopora meandrina*, *Porites evermanni*, and *Porites lobata* (Kramer et al. 2016). In the Northwestern Hawaiian Islands, the 2014 bleaching event led to up to 91% bleaching in shallow habitats (Couch et al. 2017). A study on coral bleaching and mortality was conducted in Kane'ohe Bay, O'ahu, which concluded that the duration and magnitude of the high temperature event were the primary drivers for coral bleaching and mortality (Bahr

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

et al. 2017). Following the 2014 and 2015 bleaching events, a third bleaching event occurred in 2019, where an average of 42.8% of the live coral was bleached on O'ahu, though the bleaching was not as severe as seen on other islands (Winston et al. 2020). Winston et al. (2020) also documented that bleaching varied highly among taxa.

Based on studies in the Great Barrier Reef, fishing pressure had minimal effect on the onset of coral bleaching (Hughes et al. 2017). On the island of Hawai'i, the total cover of hard coral decreased in all areas, but the decline was not more severe in areas open to commercial aquarium collection compared to areas closed to collection (DAR 2019a). Commercial aquarium collection on O'ahu, which uses the same methods as those used on the island of Hawai'i, is anticipated to have a similar effect on coral cover.

Whether a coral reef recovers from a bleaching event or shifts to algal dominance is difficult to predict, and the conditions which dictate the direction a coral reef goes after a bleaching event are largely unknown (Graham et al. 2015). A study of 21 reefs in the Indo-Pacific found that, following loss of >90% live coral cover, 12 of the reefs recovered towards pre-disturbance live coral states, while 9 reefs shifted to fleshy macroalgae (Graham et al. 2015). These shifts also influenced the reef fish communities, with recovering reefs returned to pre-disturbance structure, while communities became progressively altered on reefs shifting towards macroalgae (Graham et al. 2015). Recovery of reefs was favored for structurally complex reefs in deeper water with high density of juvenile corals, high density of herbivorous fish, and low nutrient loads (Graham et al. 2015). The trajectory of a reef was not influenced by whether it was located within a no-take marine reserve, and a relatively low biomass of herbivores reduced the risk of a regime shift occurring (Graham et al. 2015).

Currently, it is projected that with warming of approximately 5°F per decade, coral reefs will experience annual bleaching beginning by about 2040 in the Hawaiian Islands, though this may be delayed by approximately 11 years if the warming reductions in the 2015 Paris Agreement are met (U.S. Global Change Research Program [USGCRP] 2018). Bleaching and acidification will result in a loss of reef structure and lead to declines in fishery yields and loss of habitat (USGCRP 2018). Bleaching events in Hawai'i are tracked by NOAA, the DLNR, DAR, and other partners (found online at www.hawaiicoral.org). Changes in climate currently impact the physical resources of Hawai'i (including O'ahu). Warming sea temperatures and acidification could result in damage, disease outbreaks, and ultimately death of coral reefs. The weakening or loss of coral reef ecosystems may threaten entire marine ecosystems in the region as many organisms, including numerous fish species, are not only dependent on these ecosystems for suitable habitat, but due to the isolation of the islands in the central pacific, are unable to move to new environments that provide suitable conditions for survival (EPA 2016).

Coral cover and topographic complexity are key factors in coral reef habitats that help to determine the fish assemblage (Pratchett et al. 2008). Therefore, while coral loss will directly impact the fish species which rely on coral for food or shelter, it can also lead to indirect impacts due to the loss of topographic complexity needed by other species, creating potential imbalances in predator-prey relationships or leading to decreases in diversity (Pratchett et al. 2008). Pratchett et al. (2008) compiled data from six independent studies which documented changes in 116 species of coral reef fish following mass bleaching events. Densities of fish 1-3 years post-bleaching were compared to pre-bleaching densities. They found:

- Densities of 71 species did not significantly change (61%)

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

- Densities of 13 species significantly increased (11%)
- Densities of 32 species significantly decreased (28%)

Fishes that increased in abundance tended to be dietary and habitat generalists (e.g., “roving herbivores”) that appeared to have moved into areas vacated by competitively dominant specialist species, while fishes that exhibited declines tended to be species that depend directly on corals for food or shelter, and likely died as a direct result of coral loss (Pratchett et al. 2008). However, the authors also noted that long-term impacts may also occur and decreases in physiological condition can lead to reduced survival and eventual population declines (e.g., Pratchett et al. 2006). Likewise, reductions in live coral may limit settlement and recruitment for fishes that are otherwise unaffected by coral depletion (as cited in Pratchett et al. 2008).

However, it is important to note that this study was focusing on the short-term impacts of a mass bleaching event, and that longer term (>3 years) impacts have been documented in other studies. For example, Garpe et al. (2006) found long-term habitat alteration due to a 1998 bleaching event resulted in significant changes in the fish assemblage, including both lower fish abundance and lower taxonomic richness six years after a major coral bleaching event. This study also highlighted the importance of long-term monitoring, as many of the impacts of the bleaching were not seen short-term, or had the opposite impact immediately following the bleaching event (e.g., herbivore abundance originally increased). Wilson et al. (2006) also documented that the long-term impacts of coral bleaching may be much more substantial than the short-term effects which had been previously documented.

Graham et al. (2006) documented reductions in species richness, reduced taxonomic distinctness, and loss of species within key functional groups of reef fish following the 1998 coral bleaching event in the Seychelles, where over 90% of live coral was lost. Dramatic declines in fish abundance and diversity may not occur until coral cover is reduced to <10% (Holbrook et al. 2006, as cited in Pratchett et al. 2006). Yet Wilson et al. (2006) found that >10% decline in coral cover led to declines in 62% of fish species within 3 years based on a meta-analysis of 17 independent studies.

Coral reef fish species with smaller geographic ranges may be more susceptible to impacts from mass bleaching events, since geographically-restricted disturbances can impact more of their range (Pratchett et al. 2008). However, Pratchett et al. (2008) also noted that, given the larger scale of many recent bleaching events, even species with larger ranges may be at risk. Another factor that can influence a fish species' susceptibility to impacts from mass bleaching events is population size, as smaller populations are more likely to become unviable (Pratchett et al. 2008). Ongoing impacts from climate change are predicted to result in recurrent disturbances, which are likely to have successive and cumulative effects on all susceptible species (S.V. Smith & Buddemeier 1992, as cited in Pratchett et al. 2006), irrespective of their geographic range.

Ocean Acidification

Acidification can also damage corals and marine life that depend on minerals for shell/skeletal development. The acidity of the Pacific Ocean has increased by about 25% over the last 300 years and is predicted to increase 40-50% by 2100 (EPA 2016). As cited in Munday et al. (2007), ocean pH is predicted to drop by 0.4 to 0.5 points by 2100, which would make the ocean more acidic than at any time in the past 400,000 years. It is largely unknown how sensitive tropical marine fish are to changes in pH, though snapper are

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

sensitive to pH changes only slightly beyond those predicted to occur by 2100. In lakes, acidification has led to significant reductions in growth rates, reproductive activity and survival of freshwater fishes, all of which has led to population declines. While ocean pH is not predicted to change as drastically as lake pH has, some impacts may still occur, likely on reproductive performance (Munday et al. 2007).

Rising Ocean Temperatures

A study on temperature impacts on *Acanthochromis polyacanthus* (a common coral reef fish in the Great Barrier Reef) concluded that high temperatures can severely restrict growth (Munday et al. 2008), an impact which may occur with coral reef species on O'ahu as temperatures increase due to climate change.

Munday et al. (2007) stated that elevated sea temperature would be the primary driver for changes in life history patterns of fish, and that they expect increased sea temperature to generally shift life histories towards: i) smaller maximum size; ii) reduced maximum longevity; iii) earlier maturation; and iv) longer breeding season. However, they also noted that for fish in the Great Barrier Reef, the life history changes expected to occur from climate change (1-3 degrees) are not anticipated to be large compared to natural variation that already exists among populations (e.g., different parts of the reef, or between fished and unfished populations).

While fish species all have thermal tolerance limits, the thermal range of peak performance is narrower, and therefore even slight changes in ocean temperature may influence their physiological condition, developmental rate, growth rate, swimming ability, reproductive performance, and/or behavior (Munday et al. 2007). However, the authors note that the magnitude of the effects are difficult to predict. For example, growth rate and temperature tend to be positively correlated up to an optimal temperature before declining rapidly, but this is also dependent upon food availability (Munday et al. 2007). Furthermore, ocean temperature can influence sex determination for some marine fishes, though studies of Great Barrier Reef fishes have shown little evidence for that in reef fish.

Sea Level Rise

Sea level is predicted to rise by 0.1 to 0.9 meter by 2100 (Munday et al. 2007). This will have direct impacts to the relative area and proximity of various habitat types.

Increased Severity and Frequency of Tropical Storms

Increased tropical storms and increased intensity of tropical storms is predicted to occur, although there is uncertainty in the magnitude of these changes (Munday et al. 2007). More frequent and larger storms will increase the disturbance regime experienced by reef communities.

5.4.3.6 Poaching and Underreporting

It is acknowledged that poaching of aquarium fish could occur under any of the alternatives under consideration. For example, two fishers were cited in February 2020 on the island of Hawai'i for illegal harvesting of aquarium fish offshore of Kawaihae⁹. An inspection of the vessel allegedly turned up aquarium

⁹ <https://www.hawaiitribune-herald.com/2020/02/22/hawaii-news/kona-men-cited-for-illegal-aquarium-fish-gear/>

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

fishing gear, including a small mesh net, and the hold contained 550 live tropical fish of various species. The two fishers were cited by DOCARE officers for violation of HAR 13-60.4.4(3). The boat, trailer, and various fishing gear were seized as evidence. While poaching does occur, there are no available data on the number of aquarium fish taken by poachers in a given year. However, we assume the impact of poaching would be the same under all alternatives under consideration.

Analysis by the DAR (2014a) has shown that actual underreporting of catch is small, with a 3.5% difference between the number of animals reported caught and sold in 2010 and a 0.4% difference in 2014, which likely represent live releases and mortality. Therefore, it is anticipated that actual collection may be 0.4% to 3.5% higher than what had been reported prior to the October 2017 ban on fine-mesh nets, or 288 to 2,519 additional reef fish from O'ahu (based on 0.4% to 3.5% of the 71,983 average fish collected in a year). It is assumed that this rate of underreporting could occur under any of the alternatives under consideration (i.e., up to a 3.5% additional collection of any species).

5.4.3.7 Cumulative Impact Conclusion

Cumulatively, all of the factors discussed above likely effect the 35 fish species analyzed in this EIS, as well as invertebrates and reef habitat. Aquarium collection under any of the action alternatives would be an additive impact when combined with these other factors, and the impact of collection by species would vary by alternative, as described in Section 5.4.1. A cumulative impact would be considered significant if it led to population declines.

Measures included in the Preferred Alternative (e.g., limited permit issuance, establishment of a White List, and creation of catch limits) may mitigate potential impacts to species by limiting collection to 31 species and creating a hard upper limit on collection of those species. As described above, commercial aquarium collection is not the only stressor on these species, and therefore, it is anticipated that additional conservation measures designed to address the other stressors (e.g., commercial and recreational fisheries) will need to be implemented in order to sustain the populations. In addition, as Aquarium Permits for the 15 fishers who would be issued Aquarium Permits under the Proposed Action come up for renewal each year, DLNR should evaluate whether there are significant new circumstances or information relevant to environmental concerns and bearing on the commercial aquarium fishery or its impacts requiring a supplemental HEPA review (e.g., changing climate).

5.4.4 Mitigation

No mitigation is proposed. Nevertheless, the Preferred Alternative includes mitigative measures (see Section 5.0) such as the establishment of a White List, a reduction in the number of Aquarium Permits and CMLs that would be issued, and catch quotas for all species on the White List, all of which would minimize impacts to biological resources.

5.5 SUMMARY OF IMPACTS

Table 5-11 summarizes the environmental consequences by alternative during the 5-year analysis period.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

Table 5-11. Summary of direct and indirect impacts by alternative over the 5-year analysis period.

Alternative	Socioeconomics			Cultural Resources	Biological Resources		
	Direct	Indirect	Tourism	Direct and Indirect	Collection of Fish	Collection of invertebrates	Coral Reefs and Herbivores
No Action	\$0 added to the economy	\$0 added to the economy	No interactions between collectors and tourists	No impact	None	None	No impact
CML-only	\$2.1 million added to the economy, unknown number of jobs	\$10.6 million added to the economy, unknown number of indirect jobs	No known quantifiable impact on the tourism industry	Some Hawaiians believe any collection impacts cultural practices	Collection of 230,870 to 503,310 fish; bag and size limits under HAR §13-77 not in effect	Collection of 825,280 to 2,099,020 invertebrates	No direct impact on coral anticipated. Minimal impact on herbivore numbers.
Pre-Aquarium Collection Ban	\$2.9 million added to the economy and 126 jobs	\$14.7 million added to the economy, unknown number of indirect jobs	No known quantifiable impact on the tourism industry	Some Hawaiians believe any collection impacts cultural practices	Collection of 359,915 to 503,310 fish		
Expanded Waikiki MLCD and Flame Wrasse Conservation	\$2.8 million added to the economy and 126 jobs	\$14 million added to the economy, unknown number of indirect jobs	No known quantifiable impact on the tourism industry, may increase viewing opportunities in the Expanded Waikiki MLCD or of Flame Wrasse	Some Hawaiians believe any collection impacts cultural practices, no impacts would occur within the expanded Waikiki MLCD, reduced Flame Wrasse impacts	Collection of 359,915 to 503,310 fish; collection of Flame Wrasse reduced by 60%	Collection of 25,840 to 63,215 invertebrates	No direct impact on coral anticipated. Minimal impact on herbivore numbers. No impacts within the expanded Waikiki MLCD.
Limited Permit Issuance	\$1.5 million to \$2.6 million added to the economy and at least 20 jobs	\$7.5 million to \$15 million added to the economy, unknown number of indirect jobs			Collection of 179,580 to 267,090 fish; collection of Flame Wrasse by 20 fishers reduced by 60%		
Establishment of a White List and Limited Collection (Preferred)	Up to \$4.3 million added to the economy and at least 15 jobs	\$21.5 million added to the economy, unknown number of indirect jobs	No known quantifiable impact on the tourism industry, may increase viewing opportunities for species not on the proposed White List	Some Hawaiians believe any collection impacts cultural practices, impacts would be limited to the species on the White List	Collection of up to 461,190 fish (limited to 31 species on the White List), hard upper limit on collection	Collection of up to 1,002,975 invertebrates, limited to the 4 species on the proposed White List	No direct impact on coral anticipated. Minimal impact on herbivore numbers. Limits the herbivores which can be collected to those on the proposed White List

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

Alternative	Socioeconomics			Cultural Resources	Biological Resources		
	Direct	Indirect	Tourism	Direct and Indirect	Collection of Fish	Collection of invertebrates	Coral Reefs and Herbivores
							and provides hard upper limits on collection.

5.5.1 Summary of Impacts on Fish Species Analyzed

Table 5-12 below summarizes the population impacts (based on the percent of the population collected annually) of the six alternatives on each of the 35 fish species analyzed in this EIS which had PIFSC-ESD (2020) population estimates available. The CML-only Alternative uses the collection data from 2018 and 2019; the Pre-Aquarium Collection Ban Alternative and the Expanded Waikiki MLCD and Flame Wrasse Conservation Alternative are based on the historic average and maximum collection for the island of O’ahu, but with a decreased Flame Wrasse collection for the Expanded Waikiki MLCD and Flame Wrasse Conservation Alternative; the Limited Permit Issuance Alternative is based on the historic average and maximum collection of the 20 fishers, with a decreased Flame Wrasse collection; and the Preferred Alternative is based on the proposed White List and the proposed collection limits under that alternative.

Table 5-12. Summary of the annual impact (percent collected by commercial aquarium collectors) on populations of 35 fish species analyzed in this EIS based on PIFSC-ESD (2020) population estimates and the projected annual collection under each alternative (see Section 5.4.1 for additional details). n/a indicates no population estimate available.

Common Name	No Action Alternative	CML-only Alternative	Pre-Aquarium Collection Ban Alternative	Expanded Waikiki MLCD and Flame Wrasse Conservation Alternative	Limited Permit Issuance Alternative	Preferred Alternative
Yellow Tang	0%; No collection	3.8% - 8.2%	3.2%		1.1% - 1.5%	3.2%
Kole		0.6% - 1.3%	0.7%		0.5%	0.7%
Potter’s Angelfish		0.4% - 0.9%	1.3% - 1.4%		0.9%	1.4%
Orangespine Unicornfish		0.1% - 0.2%	0.3%		<0.1%	0.3%
Ornate Wrasse		<0.1%	0.1% - 0.2%		0.1%	0.2%
Flame Wrasse		n/a	n/a	n/a (reduced bag limit)	n/a (reduced bag limit)	n/a (catch quota imposed)
Fourline Wrasse		0.1% - 0.2%	1.2% - 2.0%		0.9% - 1.8%	2.0%

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

Common Name	No Action Alternative	CML-only Alternative	Pre-Aquarium Collection Ban Alternative	Expanded Waikiki MLCD and Flame Wrasse Conservation Alternative	Limited Permit Issuance Alternative	Preferred Alternative
Hawaiian Whitespotted Toby		<0.1%	0.1%		<0.1% - 0.1%	0.1%
Forcepsfish		0.1% - 0.2%	0.5% - 0.8%		0.3% - 0.4%	0.8%
Milletseed Butterflyfish		<0.1%	0.1% - 0.2%		<0.1% - 0.1%	0.2%
Shortnose (Geoffroy's) Wrasse		0.1% - 0.2%	0.3% - 0.5%		0.2% - 0.4%	0.5%
Bicolor Anthias		0.6% - 1.3%	1.9% - 4.9%		1.5% - 3.9%	4.5%
Orangeband Surgeonfish		<0.1%	0.1% - 0.3%		<0.1% - 0.1%	0.3%
Moorish Idol		0.1% - 0.3%	0.4%		0.1%	0.4%
Multiband Butterflyfish		<0.1% - 0.2%	0.2% - 0.6%		0.1% - 0.3%	0%; No collection
Psychedelic Wrasse		0.4% - 0.9%	1.3% - 1.7%		0.7% - 0.9%	0%; No collection
Eightline Wrasse		0.1% - 0.2%	1.5% - 3.2%		1.0% - 2.3%	3.2%
Crowned Puffer		<0.1%	0.3% - 0.6%		0.1% - 0.3%	0.6%
Saddle Wrasse		<0.1%	<0.1%		<0.1%	<0.1%
Fisher's Angelfish		0.2% - 0.3%	0.6% - 1.4%		0.4% - 0.8%	1.4%
Bandit Angelfish		n/a	n/a (existing bag limits)		n/a (existing bag limits)	n/a (catch quota imposed and existing bag limits)
Brown Surgeonfish (Lavender, Forktail Tang)		<0.1%	<0.1%		<0.1%	<0.1%
Crosshatch Trigger		n/a	n/a		n/a	n/a (catch quota imposed)
Dragon Wrasse		<0.1%	0.3% - 0.9%		0.1% - 0.3%	0.9%
Gilded Triggerfish		0.1% - 0.2%	0.3% - 0.9%		0.2% - 0.3%	0.9%
Golden Dwarf Moray		0.9% - 1.9%	1.4% - 5.2%		3.3% - 4.2%	4.5%
Henicopus Butterfly		<0.1%	0.2% - 0.4%		0.1% - 0.2%	0.4%

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

Common Name	No Action Alternative	CML-only Alternative	Pre-Aquarium Collection Ban Alternative	Expanded Waikiki MLCD and Flame Wrasse Conservation Alternative	Limited Permit Issuance Alternative	Preferred Alternative
Raccoon Butterfly		<0.1%	0.2% - 0.3%		<0.1%	0.3%
Spotted Boxfish		<0.1% - 0.1%	0.5% - 1.8%		<0.1%	1.1%
Threadfin Butterfly		0.2% - 0.5%	0.8% - 1.8%		<0.1% - 0.2%	1.2%
Whitemouth Moray		<0.1%	0.1% - 0.2%		<0.1% - 0.1%	0.2%
Yellowtail Coris		<0.1%	0.2% - 0.4%		0.1%	0%; No collection
Zebra Moray		<0.1% - 0.1%	1.0% - 2.2%		0.6% - 1.1%	2.2%
Hawaiian Cleaner Wrasse		0.1%	0.2% - 0.4%		0.1% - 0.2%	0%; No collection
Achilles Tang		<0.1% - 0.1%	0.6% - 1.7%		0.2% - 0.9%	0%; No collection

5.5.2 Identification of Preferred Alternative

Of the five action alternatives which meet the Applicant's purpose and need, the Establishment of a White List and Limited Collection Alternative is the Preferred Alternative, as it addresses the concerns of the public and the DLNR regarding overcollection by (1) reducing the number of species that can be collected (i.e., proposed White List) and (2) imposing a hard upper limit on the collection (i.e., catch quotas).

5.6 APPLICANT'S EVALUATION OF HEPA SIGNIFICANCE CRITERIA

Below is a summary of the Applicant's evaluation of the significance criteria described in Title II, Chapter 200, Hawai'i Administrative Rules, with the five criteria where the DLNR requested further analysis after the FEA shown in bold. It is understood that the DLNR and the BLNR will conduct their own independent evaluations of the HEPA significance criteria.

- **Significance Criteria #1:** The Preferred Alternative (i.e., Establishment of a White List and Limited Collection Alternative) does not involve an irrevocable commitment or loss or destruction of any natural or cultural resource.

Fish Populations: Collection of the fish species analyzed in this EIS would impact less than 1% of the estimated populations of 18 fish species, less than 2% of the estimated populations of 5 fish species, less than 4% of the estimated populations of 3 fish species, and 4.5% of the estimated populations of 2 fish species. The impacts to three species without population estimates would be capped at the maximum historic annual collection, and no impacts to any species not on the proposed White List would occur.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

Reef Habitat: Tissot and Hallacher (2003) concluded that there were no significant differences in damaged coral between control and collected sites (i.e., sites where aquarium collection occurs) to indicate the presence of destructive fishing practices. In addition, they found no increases in the abundance of macroalgae where the abundance of herbivores was reduced by aquarium collecting. Fifteen years of data collected and analyzed by the DAR (2018c) also showed no significant direct impacts to reef habitat due to commercial aquarium fishing. Multiple studies have documented the importance of the protection of herbivorous fish for reef recovery (e.g., Bellwood et al. 2004, Mumby and Steneck 2008, Hughes et al. 2010). Annual collection limits on herbivorous fish species (11 of the 31 species on the proposed White List) would be in place under the Preferred Alternative, and only species on the proposed White List would be collected.

Cultural Resources: As concluded in the CIA, cultural impacts would occur if issuance of Aquarium Permits under an alternative would cause a significant decline in the population of a fish species considered to be a cultural resource, either directly through the collection of fish or indirectly through habitat impacts. Table 4-4 lists the species analyzed in this FEIS, and Section 4.4 includes a brief summary of known cultural significance by species for these 35 species. While not all species have a known Hawaiian cultural significance, for this analysis, it was assumed that any species identified as having a cultural use for food, medicinal, religious or ceremonial purposes could have a cultural impact if populations of those species were impacted. As detailed in Section 5.4, populations of the fish species analyzed in this EIS would be collected at less than 4.5% of their estimated population sizes under the Preferred Alternative, including 18 species which would be collected at less than 1% of their estimated population size. However, given the belief of some Hawaiians that any collection for aquarium use is a cultural impact, cultural impacts would occur under any of the action alternatives under consideration. The Preferred Alternative limits the impact to cultural resources by limiting collection to the species on the proposed White List and imposing a hard upper limit on the number of individuals of White List species which can be collected each year.

Other Resources: Aside from reducing the number of Aquarium Permits issued, creating a White List of species which can be collected (with no collection of other species occurring), and imposing catch quotas, the Preferred Alternative does not include any activities different from, or in addition to, those that have occurred in the past. There would be no construction of permanent or semi-permanent infrastructure, no discharges into coastal, surface or ground waters, and no dredging, and no significant use of hazardous materials that could be released into the environment. The Preferred Alternative would not result in significant beneficial or adverse impacts to water and air quality, geology and soil resources, aesthetics, noise, vegetation, terrestrial wildlife, and avian species, threatened and endangered species, land use, public health and safety, communications, transportation, utilities, or population and demographics from the current baseline condition.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

- **Significance Criteria #2:** The Preferred Alternative does not curtail the range of beneficial uses of the environment. Act 306 has created a platform on which the public can learn about and participate in the management of the fishery. Since the Act's implementation, the DAR has created FRAs in the state and conducts annual monitoring and research on the fish and coral, ensuring that the full range of beneficial uses of the environment remain now and into the future.

Aquatic Invasive Algae Control: Tissot and Hallacher (2003) found no increases in the abundance of macroalgae where the abundance of herbivores was reduced by aquarium collecting. The pressures from commercial aquarium collection under the Preferred Alternative are anticipated to be at or below the rates seen prior to the October 2017 ban on commercial aquarium collection using fine mesh nets.

Tourism: Available data do not suggest that the commercial aquarium collection has impacted the tourism industry in Hawai'i or on O'ahu. The Hawai'i tourism industry achieved new records in total visitor spending and visitor arrivals in 2017, marking the sixth consecutive year of record growth in both categories. Total spending by visitors to the Hawaiian Islands increased 5.6% to a new high of \$16.81 billion (HTA 2018). When adjusted for inflation, total visitor spending was up 3.5% from 2016. A total of 9,404,346 visitors came by air or by cruise ship to the state, up 5.3% from the previous record of 8,934,277 visitors in 2016. Total visitor days rose 4.8% compared to 2016. The average spending per day by these visitors (\$198 per person) was also higher than 2016 (\$197 per person; HTA 2018). Additionally, as described in Section 5.4, populations of fish species collected by commercial aquarium collectors are not anticipated to significantly decline, therefore not significantly impacting viewing opportunities. The Preferred Alternative would limit the number of Aquarium Permits, the number of species which would be collected, and impose annual catch limits on those species.

Integrity of Diverse Aquatic Ecosystems: As described in Section 5.4, populations of the 35 fish species analyzed in this EIS are not anticipated to significantly decline. Additionally, Tissot and Hallacher (2003) concluded that there were no significant differences in damaged coral between control and collected sites (i.e., sites where aquarium collection occurs) to indicate the presence of destructive fishing practices. Tissot and Hallacher (2003) further found no increases in the abundance of macroalgae where the abundance of herbivores was reduced by aquarium collecting. Fifteen years of data collected and analyzed by the DAR (2018c) also showed no significant direct impacts to reef habitat due to commercial aquarium fishing. The pressures from commercial aquarium collection under the Preferred Alternative are anticipated to be at or below the rates seen prior to the October 2017 ban on commercial aquarium collection using fine mesh nets.

- **Significance Criteria #3:** The Preferred Alternative does not conflict with the State's long-term environmental policies, goals, or guidelines as expressed in chapter 344 HRS. As described in Section 5.4, populations of the 35 fish species analyzed in this EIS are not anticipated to significantly decline under the Preferred Alternative. In addition, impacts to coral reefs and herbivores would be minimized through the establishment of a White List (11 of 31 are herbivorous,

FINAL ENVIRONMENTAL IMPACT STATEMENT

Environmental Consequences

and no collection of other species would occur) and catch quotas providing a hard upper limit on collection. Therefore the Preferred Alternative is not in conflict with the conservation of natural resources or the flora and fauna. There would be a minor, beneficial impact to the economy under the Preferred Alternative. There would be no impact on human population, threatened and endangered species, parks, recreation, and open spaces, transportation, energy use, community life and housing, or education and culture. As described in Section 1.1.2, citizen participation has occurred, including public comment periods during the DEA and FEA (see Section 1.1.2), and as part of the DEIS.

- **Significance Criteria #4:** The Preferred Alternative does not substantially affect the economic welfare, social welfare, and cultural practices of the community or State, but plays an important role as a nearshore fishery in the state. According to DAR (2019a), the marine aquarium fishery is the most economically valuable commercial inshore fishery in the State of Hawai'i. Under the Preferred Alternative, it is anticipated that up to \$4.3 million would be added to the state's economy over the 5-year analysis period, and a minimum of 15 jobs would be created. Loss of the fishery would result in the loss of income, tax revenue, and jobs.

Cultural Practices: As concluded in the CIA, cultural impacts would occur if issuance of Aquarium Permits under an alternative would cause a significant decline in the population of a fish species considered to be a cultural resource, either directly through the collection of fish or indirectly through habitat impacts. Section 4.4 includes a brief summary of known cultural significance by species. While not all species have a known Hawaiian cultural significance, for this analysis, it was assumed that the species identified as having a cultural use for food, medicinal, religious or ceremonial purposes could have a cultural impact if populations of those species were impacted. As detailed in Section 5.4, populations of the 35 species analyzed in this EIS are not anticipated to significantly decline under the Preferred Alternative. Nevertheless, given that some Hawaiians believe any collection for aquarium purposes is contrary to cultural practices, the Preferred Alternative would impact cultural practices, but the extent of the impact is unknown.

- **Significance Criteria #5:** The Preferred Alternative would not affect public health.
- **Significance Criteria #6:** The Preferred Alternative does not involve substantial secondary impacts, such as population changes or effects on public facilities. There is no expectation that populations or the public would be negatively impacted by continuing the fishery.
- **Significance Criteria #7:** The Preferred Alternative does not involve a substantial degradation of environmental quality. Two studies have concluded that the fishery has no significant impact on coral or the reef ecosystem (Tissot and Hallacher 2003; DAR 2019a).
- **Significance Criteria #8:** The Preferred Alternative does not involve a commitment for larger actions. When the full range of impacts to the fish species analyzed in this EIS are considered (e.g., recreational aquarium collection, non-aquarium commercial fishing, recreational fishing, tourism, climate change), there may be a significant cumulative impact to some species. However, the Preferred Alternative includes measures (e.g., limited permit issuance, establishment of a White

FINAL ENVIRONMENTAL IMPACT STATEMENT

Agencies, organizations, and individuals Consulted

List, and creation of catch limits) which may mitigate potential impacts to species by limiting collection to 31 species and creating a hard upper limit on collection of those species. Commercial aquarium collection is not the only stressor on these species, and therefore, it is anticipated that additional conservation measures designed to address the other stressors (e.g., commercial and recreational fisheries, climate change) will need to be implemented in order to sustain the populations.

- Significance Criteria #9: The Preferred Alternative does not affect threatened or endangered species or their habitats nor does it have a significant impact on rare species.
- Significance Criteria #10: The Preferred Alternative does not detrimentally affect air or water quality or ambient noise levels. At most, 15 boats would be involved in the island of O’ahu’s aquarium fishery under the Preferred Alternative as compared to the thousands of other boats on the waters of Hawai’i.
- Significance Criteria #11: The Preferred Alternative would not significantly affect or suffer damage by being located in environmentally sensitive areas, geologically hazardous land, estuaries, freshwater, or coastal water. As noted earlier, the fishery has been active since the late 1940s. Regulations have been implemented restricting the fishery from sensitive areas.
- Significance Criteria #12: The Preferred Alternative does not substantially affect scenic vistas and viewplanes identified in county or state plans or studies.
- Significance Criteria #13: The Preferred Alternative does not require substantial energy consumption.

6.0 AGENCIES, ORGANIZATIONS, AND INDIVIDUALS CONSULTED

See the FEA for a list of agencies, organizations, and individuals consulted during development of the FEA, which was used as the basis for development of this FEIS.

6.1 CONSULTED PARTIES

The following individuals requested to be a Consulted Party during development of the DEIS:

- Keith Dane, Hawai’i Policy Advisor, The Humane Society of the United States
- Rene Umberger, Executive Director, For the Fishes
- Laura Friend, Litigation Fellow, The Humane Society of the United States
- Miyoko Sakashita, Oceans Director, Center for Biological Diversity
- Mike Nakachi, President, Moana Ohana

FINAL ENVIRONMENTAL IMPACT STATEMENT

Draft EIS Public Review

- Teresa E. Kaneakua, 'Aho Hui Kia'i Kānāwai Lead Compliance Specialist, Office of Hawaiian Affairs
- Inga Gibson, Policy Director, Pono Advocacy, LLC
- Kealoha Pisciotta, Mauna Kea Anaina Hou and Kai Palaoa

Each of these individuals was contacted on September 16, 2019 via email and/or mail, seeking advice and input for DEIS development. The Applicant requested any information or advice concerning the fishery and other potentially impacted environmental, cultural, or other resources. Consulted Parties were asked to respond within 30 days. Comments received and responses to those comments are provided in Appendix C of the DEIS (http://oeqc2.doh.hawaii.gov/EA_EIS_Library/2020-05-08-OA-DEIS-Oahu-Commercial-Aquarium-Permits.pdf). The consultation process for cultural resources is described in depth in Section 4 of Appendix A.

6.2 FEDERAL AGENCIES

The following federal agencies were consulted during the development of this FEIS

- National Marine Fisheries Service
- Coral Reef Ecosystem Program

6.3 STATE AGENCIES

The following state agencies were consulted during the development of this FEIS

- Hawai'i Department of Land and Natural Resources, Division of Aquatic Resources
- Hawai'i State Department of Health, Office of Environmental Quality Control

7.0 DRAFT EIS PUBLIC REVIEW

The distribution list for the FEIS is included in Appendix D.

8.0 LIST OF PREPARERS

Pet Industry Joint Advisory Council	Stantec Consulting Services Inc.
Bob Likins	Terry VanDeWalle Senior Ecologist
	Molly Stephenson Wildlife Biologist

9.0 LITERATURE CITED

- Adam, T.C., Burkepile, D.E., Ruttenberg, B.I. and Paddock, M.J., 2015. Herbivory and the resilience of Caribbean coral reefs: knowledge gaps and implications for management. *Marine Ecology Progress Series*, 520, pp.1-20.
- Ahti, A.P., R.R. Coleman, J.D. DiBattista, M.L. Berumen, L.A. Rocha, and B.W. Bowen. 2016. Phylogeography of Indo-Pacific reef fishes: Sister wrasses *Coris gaimard* and *C. cuvieri* in the Red Sea, Indian Ocean, and Pacific Ocean. *Journal of Biogeography* 43:1103-1115
- Allen, G.R., Craig, M., Pollard, D., Rocha, L. & Sadovy, Y.J. 2010. *Labroides phthirophagus*. *The IUCN Red List of Threatened Species 2010*: e.T155017A4698430. <http://dx.doi.org/10.2305/IUCN.UK.2010-4.RLTS.T155017A4698430.en>
- Akira Asakura. 2002. Hermit crabs of the genus *Calcinus* Dana 1851 (Crustacea Decapoda Anomura Diogenidae) with a brush of setae on the third pereopods, from Japanese and adjacent waters, *Tropical Zoology*, 15:1, 27-70, <https://doi.org/10.1080/03946975.2002.10531165>
- Aquarium of the Pacific. 2021. Pacific cleaner shrimp. Retrieved March 19, 2021, from https://www.aquariumofpacific.org/onlinelearningcenter/species/pacific_cleaner_shrimp
- Bahr, K. D., Rodgers, K. S., & Jokiel, P. L. (2017). Impact of three bleaching events on the reef resiliency of Kāneʻohe Bay, Hawaiʻi. *Frontiers in Marine Science*, 4(DEC).
- Bailey-Brock, J.H. 1976. Habitats of *tubicolous polychaetes* from the Hawaiian Islands. *Pacific Science*. 30:69-81.
- Beckwith, M.W. 1951. *The Kumulipo A Hawaiian Creation Chant*. University of Hawaii Press, Honolulu.
- Bellwood, D.R., T.P. Hughes, C. Folke and M. Nystrom. 2004. Confronting the coral reef crisis. *Nature*. 429(6994): 827-833.
- Birkeland, C. and P.K. Dayton. 2005. The importance in fishery management of leaving the big ones. *Trends in Ecology and Evolution* 20: 356-358.
- Bobko, S.J. and S.A. Berkeley. 2004. Maturity, ovarian cycle, fecundity, and age-specific parturition of black rockfish (*Sebastes melanops*). *Fisheries Bulletin* 102: 418-429.
- Breder, C.M. and D.E. Rosen. 1966. *Modes of reproduction in fishes*. T.F.H. Publications, Neptune City, New Jersey. 941 p. Description available at: <https://www.fishbase.de/References/FBRefSummary.php?id=205>.
- Brock, R.E. 1981. Colonization of Marine Fishes in a Newly Created Harbor, Honokohau, Hawaiʻi! *Pacific Science* 34(3): 313-326.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Literature Cited

- Burkepile, D.E. and Hay, M.E., 2010. Impact of herbivore identity on algal succession and coral growth on a Caribbean reef. *PLoS one*, 5(1), p.e8963.
- Bushnell, M.E., J.T. Claisse, and C.W. Laidley. 2010. Lunar and seasonal patterns in fecundity of an indeterminate, multiple-spawning surgeonfish, the yellow tang *Zebrasoma flavescens*. *Journal of Fish Biology*. 76:1343–1361. 19pp.
- Carassou, L., Léopold, M., Guillemot, N., Wantiez, L. and Kulbicki, M., 2013. Does herbivorous fish protection really improve coral reef resilience? A case study from New Caledonia (South Pacific). *PLoS One*, 8(4), p.e60564.
- Carlson, B., Pyle, R., Myers, R., Rocha, L.A. & Craig, M.T. 2010. *Chaetodon tinker*. The IUCN Red List of Threatened Species 2010: e.T165698A6095139. <http://dx.doi.org/10.2305/IUCN.UK.2010-4.RLTS.T165698A6095139.en>. Downloaded on 17 December 2019.
- Carpenter, K.E., Lawrence, A. & Myers, R. 2016. *Zanclus cornutus*. *The IUCN Red List of Threatened Species 2016*: e.T69741115A69742744. <http://dx.doi.org/10.2305/IUCN.UK.2016-3.RLTS.T69741115A69742744.en>
- Cartwright, C, S. Horrii, N. Mazaroli, A. Nelson, K. Nixon and A. Reynolds. 2012. Saving Nemo: Mariculture and market-based solutions to reform the marine ornamental trade. Bren School of Environmental Science & Management, UCSB.
- Cesar, H., P. van Beukering, S. Pintz, J. Dierking. 2002. Economic valuation of the coral reefs of Hawaii; Final report. Available at: <https://www.coris.noaa.gov/portals/pdfs/hicesar.pdf>. Accessed May 10, 2018.
- Cesar, H., Burke, L. & Pet-Soede, L. 2003. The economics of worldwide coral reef degradation. Arnhem, Netherlands: Cesar Environmental Economics Consulting.
- Claisse J.T., M. Kienzle, M.E. Bushnell, D.J. Shafer, and J.D. Parrish. 2009. Habitat- and sex-specific life history patterns of yellow tang *Zebrasoma flavescens* in Hawai'i, USA. *Marine Ecology Progress Series*. 389:245-255.
- Casey K.S. and P. Cornillon. 2001. Global and Regional Sea Surface Temperature Trends *Journal of Climate* 14.18: 3801-3818.
- Choat, J.H. and L.M. Axe. 1996. Growth and longevity in acanthurid fishes; an analysis of otoliths increments. *Marine Ecology Progress Series* 134: 15-26.
- Choat, J.H., Russell, B., Stockwell, B., Rocha, L.A., Myers, R., Clements, K.D., McIlwain, J., Abesamis, R. & Nanola, C. 2012. *Acanthurus achilles*. *The IUCN Red List of Threatened Species 2012*: e.T177960A1503262. <http://dx.doi.org/10.2305/IUCN.UK.2012.RLTS.T177960A1503262.en>
- Choat, J.H., Samoily, M., Liu, M. & Robinson, J. 2018. *Cephalopholis argus*. The IUCN Red List of Threatened Species 2018: e.T132781A100453441. <http://dx.doi.org/10.2305/IUCN.UK.2018-2.RLTS.T132781A100453441.en>

FINAL ENVIRONMENTAL IMPACT STATEMENT

Literature Cited

- Christie, M.R., B.N. Tissot, M.A. Albins, J.P. Beets, Y. Jia, D.M. Ortiz, S.E. Thompson, and M.A. Hixon. 2010. Larval Connectivity in an Effective Network of Marine Protected Areas. *PLoS ONE*. 5(12): 1-8.
- Coral Reef Ecosystem Program (CREP); Pacific Islands Fisheries Science Center. 2018. National Coral Reef Monitoring Program: Stratified Random surveys (StRS) of Reef Fish, including Benthic Estimate Data of the U.S. Pacific Reefs since 2007. Metadata available at: <https://inport.nmfs.noaa.gov/inport/item/24447> (accessed 12 February 2018).
- Couch, C.S., Burns, J.H., Liu, G., Steward, K., Gutlay, T.N., Kenyon, J., Eakin, C.M. and Kosaki, R.K., 2017. Mass coral bleaching due to unprecedented marine heatwave in Papahānaumokuākea Marine National Monument (Northwestern Hawaiian Islands). *PloS one*, 12(9), p.e0185121.
- Cracknell, D., M.P. White, S. Pahl, W. J. Nichols, and M. H. Depledge. 2016. Marine Biota and Psychological Well-Being: A Preliminary Examination of Dose-Response Effects in an Aquarium Setting. *Environment and Behavior* 40(10): 1242-1269.
- Craig, M.T. 2010. *Macropharyngodon geoffroy*. The IUCN Red List of Threatened Species 2010. Available at: <http://dx.doi.org/10.2305/IUCN.UK.20104.RLTS.T187680A8599138.en>. Accessed on January 3, 2018.
- Craig, M., Rocha, L. & Sadovy, Y.J. 2010. *Halichoeres ornatissimus*. *The IUCN Red List of Threatened Species 2010*: e.T154904A4663615. <http://dx.doi.org/10.2305/IUCN.UK.2010-4.RLTS.T154904A4663615.en>
- Division of Aquatic Resources, Hawai'i (DAR). 1998. Hawaiian Tidepool and Shallow Reef Identification. <https://dlnr.hawaii.gov/dar/files/2014/04/tidepool.pdf>
- DAR. 2004. Report to the twenty-third legislature regular session of 2005 on a report on the findings and recommendations of effectiveness of the West Hawai'i Regional Fishery Management Area. State of Hawai'i. 38pp.
- DAR. 2010. Report on the Findings and Recommendations of Effectiveness of the West Hawai'i Regional Fishery Management Area. Department of Land and Natural Resources State of Hawai'i, State of Hawai'i.
- DAR. 2014a. Report to the thirtieth legislature regular session of 2015 on a report on the findings and recommendations of effectiveness of the West Hawai'i Regional Fishery Management Area. State of Hawai'i. 51pp.
- DAR. 2014b. Coral and Live Rock Rules of Hawai'i. Available at <http://dlnr.hawaii.gov/dar/habitat/coral-reefs/coral-and-live-rock-laws-of-hawaii/>. Accessed January 12, 2018.
- DAR. 2017. Update of court rulings regarding aquarium fishing, including FAQs. Available at: <http://dlnr.hawaii.gov/dar/announcements/update-of-supreme-court-ruling-regarding-aquarium-fishing/>. Accessed on January 29, 2018.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Literature Cited

- DAR. 2018a. Permit, value, level of effort, and catch data from 1976-2017 provided by DAR per preparers request in reference to this report.
- DAR. 2018b. 2017 summary statistics on the yellow tang, goldring surgeonfish, and Achille tang. 4pp.
- DAR. 2018c. Impact of Commercial Aquarium Collecting on West Hawai'i Coral Cover. DAR Report. 4pp.
- DAR. 2019a. Background and Status of the West Hawai'i Aquarium Fishery and Associated Coral Reef monitoring. September 2019.
- DAR. 2019b. Permit, value, level of effort, and catch data from 2000-2017 for the 20 fishers, and for 2018 and 2019 for all fishers provided by DAR per preparers request in reference to this report.
- DAR. 2020. CML Catch Data provided by DAR.
- Deardorff, T.L., Stanton, F.G. 1983. Nematode-induced abdominal distention in the Hawaiian Puffer Fish, *Canthigaster jactator* (Jenkins) Pacific Science 37(1): 45-47.
- DeFelice, R.C., L.G. Eldredge, and J.T. Carlton (L.G. Eldredge and C.M. Smith eds.). 2001. A Guidebook of Introduced Marine Species in Hawai'i. Bishop Museum Technical Report 21, August 2001. Sponsored by grants from the Packard Foundation, U.S. Fish and Wildlife Service, and National Marine Fisheries Service to B.P. Bishop Museum and the University of Hawai'i. 70pp.
- Dierking, J. 2002. Socioeconomics of the aquarium fish industry in West Hawai'i in 'Economic Valuation of the Coral Reefs of Hawai'i' (Cesar, van Beukering, Pintz, Dierking 2002). That publication is a result of research funded by the National Oceanic and Atmospheric Administration, Coastal Ocean Program, under awards NA870A0381, NA960P0187, NA060A0388, and NA160A1449 to the University of Hawai'i for the Hawai'i Coral Reef Initiative Research Program. Cesar Environmental Economics Consulting (CEEC). 22pp.
- Dierking J., I.D. Williams, and W. Walsh. 2009. Diet composition and prey selection of *Cephalopholis argus* in Hawai'i. Fishery Bulletin. 107(4):464-476.
- Domeier, M.L. and P.L. Colin. 1997. Tropical reef fish spawning and aggregations: defined and reviewed. Bull. Mar. Sci. 60(3):698-726.
- Earthjustice. 2012. Citizens And Conservation Groups File Suit to Protect Hawai'i's Reef Ecosystems. State issuance of aquarium collection permits without environmental review poses danger to already-stressed coral reefs. Available at: <https://earthjustice.org/news/press/2012/citizens-and-conservation-groups-file-suit-to-protect-hawai-i-s-reef-ecosystems>. Accessed January 5, 2018.
- Eble. J.A., R. Langston, and B.W. Bowen. 2009. Growth and Reproduction of Hawaiian Kala, *Naso unicornis*. Report prepared for Fisheries Local Action Strategy, Division of Aquatic Resources. 15pp
- Eble, J.A., L.A. Rocha, M.T. Craig, and B.W. Bowen. 2011. Not all larvae stay close to home: Long-distance dispersal in Indo-Pacific reef fishes, with a focus on the Brown Surgeonfish (*Acanthurus nigrofuscus*). Journal of Marine Biology, Article ID 518516.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Literature Cited

- Environmental Protection Agency (EPA). 2016. What Climate Change Means for Hawai'i. Available at: <https://19january2017snapshot.epa.gov/sites/production/files/2016-09/documents/climate-change-hi.pdf>. Accessed on January 30, 2018. 2pp.
- Foo, S.A., W.J. Walsh, J. Lecky, S. Marcoux, and G.P. Asner. 2021. Impacts of pollution, fishing pressure, and reef rugosity on resource fish biomass in West Hawaii. *Ecological Applications* 31(1) e2213.
- Fornander, A. 1916. Fornander Collection of Hawaiian Antiquities and Folk-lore. *Memoirs of the Bernice Pauahi Bishop Museum Volume IV*. Bishop Museum Press, Honolulu, HI.
- Friedlander, A. M., Brown, E. K., & Monaco, M. E. 2007. Coupling ecology and GIS to evaluate efficacy of marine protected areas in Hawaii. *Ecological Applications*, 17(3), 715-730.
- Friedlander, A., Aeby, G., Brainard, R., Brown, E., Chaston, K., Clark, A., McGowan, P., Montgomery, T., Walsh, W., Williams, I. and Wiltse, W., 2008. The state of coral reef ecosystems of the main Hawaiian Islands. *The state of coral reef ecosystems of the United States and Pacific freely associated states*, 17.
- Froese, R. and D. Pauly. Editors. 2020. FishBase. World Wide Web electronic publication. www.fishbase.org, (12/2020)
- Gaither, M.R., G. Aeby, M. Vignon, Y. Meguro, M. Rigby, C. Runion, R.J. Toonen, C.L. Wood, and B.W. Bowen. 2013. An invasive fish and the time-lagged spread of its parasite across the Hawaiian archipelago. *PLoS One* 8: e56940.
- Garpe, K.C., Yahya, S.A.S., Lindahl, U. & Öhman, M.C. 2006. Long-term effects of the 1998 coral bleaching event on reef fish assemblages. *Marine Ecology Progress Series* 315, 237–247.
- Gove, J.M., J.J. Polovina, W.J. Walsh, A. Heenan, I.D. Williams, L.M. Wedding, R.J. Ingram, J. Lecky, K.L.L. Oleson, H. Walecka, S.F. Heron, C.S. Couch and E.A. Howell. PIFSC. 2016. West Hawai'i Integrated Ecosystem Assessment: Ecosystem Trends and Status Report. NOAA Fisheries Pacific Science Center, PIFSC Special Publication, SP-16-004, 46p. doi:10.7289/V5/SP-PIFSC-16-004.
- Graham, N.A.J., Wilson, S.K., Jennings, S., Polunin, N.V.C., Bijoux, J.P. & Robinson, J. 2006. Dynamic fragility of oceanic coral reef ecosystems. *Proceedings of the National Academy of Sciences of the United States of America* 103, 8425–8429.
- Graham, N.A., McClanahan, T.R., MacNeil, M.A., Wilson, S.K., Polunin, N.V., Jennings, S., Chabanet, P., Clark, S., Spalding, M.D., Letourneur, Y. and Bigot, L., 2008. Climate warming, marine protected areas and the ocean-scale integrity of coral reef ecosystems. *PLoS one*, 3(8), p.e3039.
- Graham, N.A., Jennings, S., MacNeil, M.A., Mouillot, D. and Wilson, S.K., 2015. Predicting climate-driven regime shifts versus rebound potential in coral reefs. *Nature*, 518(7537), pp.94-97.
- Gusset, M. and G. Dick. 2011. The Global Reach of Zoos and Aquariums in Visitor Numbers and Conservation Expenditures. *Zoo Biology* 30: 566-569.
- Harding, K. 2017. DAR Recreational Aquarium Permittee Survey. October 2017.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Literature Cited

- Hawai'i Biological Survey. 2001. A Guidebook of Introduced Marine Species in Hawaii: Nonindigenous Marine Invertebrates. Bishop Museum Technical Report 21, August 2001. L.G. Eldredge and C.M. Smith, editors. Contribution No. 2001-005 to the Hawai'i Biological Survey
- Hawai'i Department of Land and Natural Resources (DLNR). 2015. Hawai'i's State Wildlife Action Plan. Prepared by H. T. Harvey and Associates, Honolulu, Hawai'i. 1055pp.
- Hawai'i Climate Change Mitigation and Adaptation Commission. 2017. Hawai'i Sea Level Rise Vulnerability and Adaptation Report. Prepared by Tetra Tech, Inc. and the State of Hawai'i Department of Land and Natural Resources, Office of Conservation and Coastal Lands, under the State of Hawai'i Department of Land and Natural Resources Contract No: 64064.
- Hawai'i Department of Land and Natural Resources (DLNR). 2018. Species of Greatest Conservation Need. Available at: <http://dlnr.hawaii.gov/wildlife/hswap/cwcs/hawaii/species/>. Accessed on January 22, 2018.
- Hawai'i Department of Business, Economic Development & Tourism (HDBEDT). 2016. Residential Home Sales in Hawai'i; Trends and Characteristics: 2008-2015. Available at: http://files.hawaii.gov/dbedt/economic/data_reports/homesale/Residential_Home_Sales_in_Hawaii_May2016.pdf. Accessed on May 10, 2018.
- HDBEDT. 2019. Annual Estimates of the Resident Population for Selected Age Groups by Sex for the United States, States, Counties, and Puerto Rico Commonwealth and Municipios: April 1, 2010 to July 1, 2018. Geography: Hawaii. http://files.hawaii.gov/dbedt/census/popestimate/2018_county_char_hi_file/PEP_2018_PEPAGESEX_Hlcounties.pdf. June 19, 2019.
- Hawai'i Department of Agriculture (HDA). 2013. How Important is Agriculture Today? Available at: <http://hdoa.hawaii.gov/blog/ag-resources/how-important-is-agriculture-today/>. Accessed on January 29, 2018.
- Hawai'i, The State of. 2010. Hawai'i Coral Reef Strategy: Priorities for Management in the Main Hawaiian Islands 2010-2020. Honolulu, HI.
- Hawai'i Tourism Authority (HTA). 2018. 2017 Annual Visitor Research Report. Available at: www.hawaiitourismauthority.org/research/annual-visitor-research-reports/
- Heenan, A., I.D. Williams, T. Acoba, A. DesRochers, R.K. Kosaki, T. Kanemura, M.O. Nadon, and R.E. Brainard. 2017. Long-term monitoring of coral reef fish assemblages in the western Central Pacific. Scientific data. 2017;4:170176.
- Hoover, J.P. 2007. *Hawai'i's Fishes: A Guide for Snorkelers and Divers*. Second. Mutual Publishing, Honolulu.
- Hoover, J.P. 2008. Ultimate Guide to Hawaiian Reef Fishes. Mutual Publishing. Description available at: <http://eol.org/pages/212559/details>.
- Hughes, T.P., Baird, A.H., Bellwood, D.R., Card, M., Connolly, S.R., Folke, C., Grosberg, R., Hoegh-Guldberg, O., Jackson, J.B.C., Kleypas, J., Lough, J.M., Marshall, P., Nystrom, M., Palumbi, S.R.,

FINAL ENVIRONMENTAL IMPACT STATEMENT

Literature Cited

- Pandolfi, J.M., Rosen, B. & Roughgarden, J. 2003. Climate change, human impacts and the resilience of coral reefs. *Science* 301, 929–933.
- Hughes, T.P., Rodrigues, M.J., Bellwood, D.R., Ceccarelli, D., Hoegh-Guldberg, O., McCook, L., Moltschaniwskyj, N., Pratchett, M.S., Steneck, R.S. and Willis, B., 2007. Phase shifts, herbivory, and the resilience of coral reefs to climate change. *Current biology*, 17(4), pp.360-365.
- Hughes, T. P., N.A. Graham, J.B, Jackson, P.J. Mumby, and R.S. Steneck. 2010. Rising to the challenge of sustaining coral reef resilience. *Trends in ecology & evolution*, 25(11), 633-642.
- Hughes, T.P., Kerry, J.T., Álvarez-Noriega, M., Álvarez-Romero, J.G., Anderson, K.D., Baird, A.H., Babcock, R.C., Beger, M., Bellwood, D.R., Berkemans, R. and Bridge, T.C., 2017. Global warming and recurrent mass bleaching of corals. *Nature*, 543(7645), p.373.
- Jessen, C., Roder, C., Villa Lizcano, J. F., Voolstra, C. R., & Wild, C. (2013). In-Situ Effects of Simulated Overfishing and Eutrophication on Benthic Coral Reef Algae Growth, Succession, and Composition in the Central Red Sea. *PLoS ONE*, 8(6), e66992.
- Johannes, R.E. 1982. Traditional conservation methods and protected marine areas in Oceania. *Ambio* (11) 5: 258– 261.
- Jokiel, P. L., K.S. Rogers, W.J. Walsh, D.A. Polhemus, and T.A. Wilhelm. 2011. Marine resource management in the Hawaiian Archipelago: The traditional Hawaiian system in relation to the western approach. *Journal of Marine Biology*. Article ID 151682.
- Kane, C.N. and B.N. Tissot. 2017. Trophic designation and live coral cover predict changes in reef-fish community structure along a shallow to mesophotic gradient in Hawaii. *Coral Reefs*. 36(3): 891-901. <https://doi.org/10.1007/s00338-017-1581-x>.
- Kramer, K.L. and Heck Jr, K.L., 2007. Top-down trophic shifts in Florida Keys patch reef marine protected areas. *Marine Ecology Progress Series*, 349, pp.111-123
- Kramer, K.L., S.P. Cotton, M.R. Lamson, and W.J. Walsh. 2016. Bleaching and catastrophic mortality of reef-building corals along west Hawai'i island: findings and future directions. *Proceedings of the 13th International Coral Reef Symposium*, Honolulu: 229-241.
- Kuiter, R.H. and T. Tonozuka, 2001. Pictorial guide to Indonesian reef fishes. Part 3. Jawfishes - Sunfishes, Opistognathidae - Molidae. *Zoonetics*, Australia. p. 623-893. Description provided at: <http://www.fishbase.org/references/FBRefSummary.php?ID=48637>.
- Lieske, E. and R. Myers, 1994. *Collins Pocket Guide. Coral reef fishes. Indo-Pacific & Caribbean including the Red Sea*. Haper Collins Publishers, 400 p. Description provided at: <http://www.fishbase.org/References/FBRefSummary.php?id=9710>.
- Liliuokalani. 1978. *An Account of the Creation of the World According to Hawaiian Tradition, Translated from Original Manuscript Preserved Exclusively in Her Majesty's Family*. Pueo Press, Kentfield.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Literature Cited

- Lilley, T. 2020. Meet the Bandit Angelfish. The Garden Island, March 1, 2020.
<https://www.thegardenisland.com/2020/03/01/lifestyles/meet-the-bandit-angelfish/>
- Lindfield, S.J., E.S. Harvey, J.L. McIlwain, and A.R. Halford. 2014. Silent fish surveys: bubble-free diving highlights inaccuracies associated with SCUBA-based surveys in heavily fished areas. *Methods in Ecology and Evolution*, 2014(5):1061-2069.
- Lobel, P. S. 2003. Reef Fish Courtship and Mating Sounds: unique signals for acoustic monitoring. Listening to Fish: Proceedings of the International Workshop on the Applications of Passive Acoustics to Fisheries. MIT SeaGrant publication, Cambridge, MA.
- Loke M., C. Geslani, B. Takenaka, and P.S. Leung. 2012. An overview of seafood consumption and supply sources: Hawai'i versus U.S. CTAHR, University of Hawai'i at Mānoa Economic Issues EI-22. 9 pp.
- Maly, K and O Maly. 2003. Volume 1: KA HANA LAWAI'A A ME NA Ko'A O NA KAI 'EWALU: A History of Fishing Practices and Marine Fisheries of the Hawaiian Islands vi, 113-115 (2003).
- Manu, M., S.M. Kamakau, and E.M. Nakuina. 2006. *Hawaiian Fishing Traditions*. Kalamaku Press, Honolulu, HI.
- Marine Resources Council (MRC). 2017. Maui Coral Reef Ecology. Available at: <https://www.mauireefs.org/maui-coral-reef-ecology/>. Accessed on January 22, 2018.
- McIlwain, J., Choat, J.H., Abesamis, R., Clements, K.D., Myers, R., Nanola, C., Rocha, L.A., Russell, B. & Stockwell, B. 2012a. *Zebrasoma flavescens*. *The IUCN Red List of Threatened Species 2012*: e.T178015A1521949. <http://dx.doi.org/10.2305/IUCN.UK.2012.RLTS.T178015A1521949.en>
- McIlwain, J., Clements, K.D., Abesamis, R., Choat, J.H., Myers, R., Nanola, C., Rocha, L.A., Russell, B. & Stockwell, B. 2012b. *Ctenochaetus strigosus*. *The IUCN Red List of Threatened Species 2012*: e.T177949A1500072. <http://dx.doi.org/10.2305/IUCN.UK.2012.RLTS.T177949A1500072.en>
- McIlwain, J., Choat, J.H., Abesamis, R., Clements, K.D., Myers, R., Nanola, C., Rocha, L.A., Russell, B. & Stockwell, B. 2012c. *Naso lituratus*. *The IUCN Red List of Threatened Species 2012*: e.T177950A1500256. <http://dx.doi.org/10.2305/IUCN.UK.2012.RLTS.T177950A1500256.en>
- McClanahan, T.R., 2008. Response of the coral reef benthos and herbivory to fishery closure management and the 1998 ENSO disturbance. *Oecologia*, 155(1), pp.169-177.
- McCoy, K.S., I.D. Williams, A.M Friedlander, H. Ma, L. Teneva, J.N. Kittinger. 2018. Estimating nearshore coral reef-associated fisheries production from the main Hawaiian Islands. *PLoS ONE* 13(4): e0195840. <https://doi.org/10.1371/journal.pone.0195840>
- Mora, C., 2008. A clear human footprint in the coral reefs of the Caribbean. *Proceedings of the Royal Society B: Biological Sciences*, 275(1636), pp.767-773.
- Mumby, P.J. and Harborne, A.R., 2010. Marine reserves enhance the recovery of corals on Caribbean reefs. *Plos one*, 5(1), p.e8657.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Literature Cited

- Mumby, P. J., and R.S. Steneck. 2008. Coral reef management and conservation in light of rapidly evolving ecological paradigms. *Trends in ecology & evolution*, 23(10), 555-563.
- Mitchell, C., C. Ogura, D.W. Meadows, A. Kane, L. Strommer, S. Fretz, D. Leonard, and A. McClung. October 2005. Hawai'i's Comprehensive Wildlife Conservation Strategy. Department of Land and Natural Resources. Honolulu, Hawai'i. 722 pp.
- Munday, P.L., Jones, G.P., Sheaves, M., Williams, A.J. & Goby, G. 2007. Vulnerability of fishes on the Great Barrier Reef to climate change. In *Climate change and the Great Barrier Reef*, J. Johnson & P. Marshall (eds). Townsville, Australia: Great Barrier Reef Marine Park Authority, in press
- Munday, P., Kingsford, M., O'callaghan, M., and Donelson, J. (2008). Elevated temperature restricts growth potential of the coral reef fish *Acanthochromis polyacanthus*. *Coral Reefs* 27, 927–931. doi: 10.1007/s00338-008-0393-4
- Munday, E.S., B.N. Tissot, J.R. Heidel, and T. Miller-Morgan. 2015. The effects of venting and decompression on Yellow Tang (*Zebrasoma flavescens*) in the marine ornamental aquarium fish trade. *PeerJ* 3:e756 <https://doi.org/10.7717/peerj.756>
- Myers, R.F. 1991. Micronesian reef fishes. Second Ed. Coral Graphics, Barrigada, Guam. 298pp. Description provided at: <http://www.fishbase.org/References/FBRefSummary.php?id=1602>.
- Myers, R.F. 1999. Micronesian reef fishes: a comprehensive guide to the coral reef fishes of Micronesia, 3rd revised and expanded edition. Coral Graphics, Barrigada, Guam. 330pp. Description provided at: <http://www.fishbase.org/References/FBRefSummary.php?id=1602>.
- Myers, R. & Pratchett, M. 2010. *Forcipiger flavissimus*. *The IUCN Red List of Threatened Species 2010*: e.T165716A6099950. <http://dx.doi.org/10.2305/IUCN.UK.2010-4.RLTS.T165716A6099950.en>
- Mundy, B.C. 2005. Checklist of the fishes of the Hawaiian Archipelago. *Bishop Mus. Bull. Zool.* (6):1-704.
- National Oceanic and Atmospheric Administration (NOAA), Office for Coastal Management. 2019. NOAA Report on the U.S. Ocean and Great Lakes Economy: Regional and State Profiles. Charleston, SC: Office for Coastal Management. Available at: coast.noaa.gov. Accessed on May 7, 2018.
- Ocean Biodiversity Information System (OBIS). 2021. Ocean Biodiversity Information System. Intergovernmental Oceanographic Commission of UNESCO. www.obis.org
- Ochavillo, D. and G. Hodgson. 2006. MAQTRAC marine aquarium trade coral reef monitoring protocol data analysis and interpretation manual. Reef Check Foundation. California, USA. 39 pp.
- Office of Environmental Quality Control (OEQC). 2012. Guide to the Implementation and Practice of the Hawai'i Environmental Policy Act. State of Hawai'i. 96pp.
- OEQC. 2014. Hawai'i Environmental Policy Act Citizen's Guide. October 2014. 30 pp.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Literature Cited

- Pacific Islands Fisheries Science Center (PIFSC-ESD). 2020. National Coral Reef Monitoring Program: Stratified Random surveys (StRS) of Reef Fish, including Benthic Estimate Data of the Hawaiian Archipelago from 2013 to 2019. Metadata available at: <https://inport.nmfs.noaa.gov/inport/item/24447>. Accessed throughout EIS development.
- Pereira, P.H.C., Macedo, C.H., Nunes, J.D.A.C., Marangoni, L.F.D.B. and Bianchini, A., 2018. Effects of depth on reef fish communities: insights of a “deep refuge hypothesis” from Southwestern Atlantic reefs. *PloS one*, 13(9), p.e0203072.
- Pollard, D., Craig, M. & Rocha, L. 2010. *Anampses chrysocephalus*. *The IUCN Red List of Threatened Species 2010*: e.T187555A8567064. <http://dx.doi.org/10.2305/IUCN.UK.2010-4.RLTS.T187555A8567064.en>
- Price, S. 1983. Climate, in Armstrong, R. W. (ed.), *Atlas of Hawai'i*, 2nd ed., Univ. Hawai'i Press., Honolulu, HI, pp. 59-63.
- Pukui, M.K. 1983. 'Olelo No'eau: Hawaiian proverbs & poetical sayings. B. P. Bishop Museum Special Publication. Bishop Museum Press, Honolulu, Hawai'i.
- Pukui, M.K. and S.H. Elbert. 1986. *Hawaiian Dictionary: Hawaiian-English, English-Hawaiian*. Rev. and enl. ed ed. University of Hawaii Press, Honolulu.
- Pyle, R. 2001. Chaetodontidae. Butterflyfishes. In: K.E. Carpenter and V.H. Niem (eds), *FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Volume 5. Bony fishes part 3 (Menidae to Pomacentridae)*, pp. 3224-3265. FAO, Rome.
- Pyle, R., Myers, R., Craig, M.T. & Pratchett, M. 2010a. *Chaetodon multicinctus*. *The IUCN Red List of Threatened Species 2010*: e.T165655A6082463. <http://dx.doi.org/10.2305/IUCN.UK.2010-4.RLTS.T165655A6082463.en>
- Pyle, R., Myers, R. & Craig, M.T. 2010b. *Apolemichthys arcuatus*. *The IUCN Red List of Threatened Species 2010*: e.T165834A6144376. <http://dx.doi.org/10.2305/IUCN.UK.2010-4.RLTS.T165834A6144376.en>
- Pyle, R. & Craig, M.T. 2010. *Chaetodon miliaris*. *The IUCN Red List of Threatened Species 2010*: e.T165721A6101795. <http://dx.doi.org/10.2305/IUCN.UK.2010-4.RLTS.T165721A6101795.en>. Downloaded on 17 December 2019.
- Pyle, R. & Myers, R. 2010a. *Centropyge potteri*. *The IUCN Red List of Threatened Species 2010*: e.T165899A6160601. <http://dx.doi.org/10.2305/IUCN.UK.2010-4.RLTS.T165899A6160601.en>
- Pyle, R. & Myers, R. 2010b. *Centropyge fisheri*. *The IUCN Red List of Threatened Species 2010*: e.T165828A6142661. <http://dx.doi.org/10.2305/IUCN.UK.2010-4.RLTS.T165828A6142661.en>
- Rahayu, D.L. 2000 Hermit crabs from the South China Sea (Crustacea: Decapoda: Anomura: Diogenidae, Paguridae, Parapaguridae). *The Raffles Bulletin of Zoology* 8:377-404
- Randall, J.E. 1985. *Guide to Hawaiian reef fishes*. Harrowood Books, Newtown Square, PA 19073, USA. 74 p.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Literature Cited

- Randall, J. 1987. Introductions of Marine Fishes to the Hawaiian Islands. *Bulletin of Marine Science* 41(2): 490-502.
- Randall, J.E. 2005. Reef and Shore Fishes of the South Pacific. New Caledonia to Tahiti and the Pitcairn Islands. University of Hawai'i Press, Honolulu.
- Randall, J. E. 2007. Reef and Shore Fishes of the Hawaiian Islands. Sea Grant College Program, University of Hawai'i, Honolulu. 560pp.
- Randall, J.E and K.D. Clements. 2001. Second revision of the surgeonfish genus *Ctenochaetus* (Perciformes: Acanthuridae), with descriptions of two new species. *Indo-Pacific Fishes* 32: 33.
- Rocha, L. 2010. *Cirrhilabrus jordani*. *The IUCN Red List of Threatened Species 2010*: e.T187447A8538083. <http://dx.doi.org/10.2305/IUCN.UK.2010-4.RLTS.T187447A8538083.en>
- Rodgers, K. S., Bahr, K. D., Jokiel, P. L., and D.A. Richards. 2017. Patterns of bleaching and mortality following widespread warming events in 2014 and 2015 at the Hanauma Bay Nature Preserve, Hawai'i. *PeerJ*, 5, e3355.
- Rubec, P.J., F. Cruz, V. Pratt, R. Oellers, B. McCullough, and F. Lallo. 2001. Cyanide-free net-caught fish for the marine aquarium trade. *Aquarium Sciences and Conservation*. 3: 37-51.
- Russell, B., Lawrence, A., Myers, R., Carpenter, K.E. & Smith-Vaniz, W.F. 2016a. *Lutjanus kasmira*. *The IUCN Red List of Threatened Species 2016*: e.T194337A2314753. <http://dx.doi.org/10.2305/IUCN.UK.2016-3.RLTS.T194337A2314753.en>
- Russell, B., Smith-Vaniz, W.F., Lawrence, A., Carpenter, K.E. & Myers, R. 2016b. *Lutjanus fulvus*. *The IUCN Red List of Threatened Species 2016*: e.T194377A2325959. <http://dx.doi.org/10.2305/IUCN.UK.2016-3.RLTS.T194377A2325959.en>
- Russell, B., McIlwain, J., Choat, J.H., Abesamis, R., Clements, K.D., Myers, R., Nanola, C., Rocha, L.A. & Stockwell, B. 2012. *Acanthurus olivaceus*. *The IUCN Red List of Threatened Species 2012*: e.T177991A1514102. <http://dx.doi.org/10.2305/IUCN.UK.2012.RLTS.T177991A1514102.en>
- Sadovy, Y. 2010. *Pseudocheilinus tetrataenia*. *The IUCN Red List of Threatened Species 2010*: e.T187740A8617677. <http://dx.doi.org/10.2305/IUCN.UK.2010-4.RLTS.T187740A8617677.en>
- Sadovy, Y. & Rocha, L.A. 2010. *Pseudocheilinus octotaenia*. *The IUCN Red List of Threatened Species 2010*: e.T187621A8582849. <http://dx.doi.org/10.2305/IUCN.UK.2010-4.RLTS.T187621A8582849.en>
- Shao, K., Matsuura, K., Leis, J.L., Hardy, G., Jing, L. & Liu, M. 2014a. *Canthigaster jactator*. *The IUCN Red List of Threatened Species 2014*: e.T193663A2256343. <http://dx.doi.org/10.2305/IUCN.UK.2014-3.RLTS.T193663A2256343.en>

FINAL ENVIRONMENTAL IMPACT STATEMENT

Literature Cited

- Shao, K., Liu, M., Linardich, C., Hardy, G., Jing, L., Leis, J.L. & Matsuura, K. 2014b. *Canthigaster coronata*. *The IUCN Red List of Threatened Species 2014*: e.T193749A2271212. <http://dx.doi.org/10.2305/IUCN.UK.2014-3.RLTS.T193749A2271212.en>
- Shea, S., Liu, M. & Sadovy, Y. 2010. *Thalassoma duperrey*. *The IUCN Red List of Threatened Species 2010*: e.T187711A8608670. <http://dx.doi.org/10.2305/IUCN.UK.2010-4.RLTS.T187711A8608670.en>
- Smith, D.G., McCosker, J. & Tighe, K. 2019a. *Gymnothorax melatremus*. *The IUCN Red List of Threatened Species 2019*: e.T195753A2412691. <https://dx.doi.org/10.2305/IUCN.UK.2019-1.RLTS.T195753A2412691.en>. Downloaded on 26 March 2021.
- Smith, D.G., McCosker, J. & Tighe, K. 2019b. *Gymnothorax meleagris*. *The IUCN Red List of Threatened Species 2019*: e.T195754A2412930. <https://dx.doi.org/10.2305/IUCN.UK.2019-1.RLTS.T195754A2412930.en>. Downloaded on 13 May 2021.
- Smith, D.G., McCosker, J. & Tighe, K. 2019. *Gymnomuraena zebra*. *The IUCN Red List of Threatened Species 2019*: e.T195700A2404907. <https://dx.doi.org/10.2305/IUCN.UK.2019-1.RLTS.T195700A2404907.en>. Downloaded on 13 May 2021.
- Stevenson, T.C., B.N. Tissot, and J. Dierking. 2011. Fisher behaviour influences catch productivity and selectivity in West Hawai'i's aquarium fishery. *ICES J. Mar. Sci.* 68, 813–822.
- Swierts, T., & Vermeij, M. J. (2016). Competitive interactions between corals and turf algae depend on coral colony form. *PeerJ*, 4, e1984. <https://doi.org/10.7717/peerj.1984>
- Thresher R.E. 1984. *Reproduction in Reef Fishes*. TFH Publications, Inc. Neptune City, New Jersey. 399pp. Hardcopy available at Stantec.
- Tinker, S.W. 1978. *Fishes of Hawai'i, a handbook of the marine fishes of Hawai'i and the Central Pacific Ocean*. Hawaiian Service Inc., Honolulu. 568 p.
- Tissot, B.N. and L.E. Hallacher. 2003. Effects of aquarium collectors on coral reef fishes in Kona, Hawai'i. *Conservation Biology*. 17 (6):1759-1768.
- Titcomb, M. 1972, *Native Use of Fish in Hawaii*. University of Hawaii Press, Honolulu.
- Toonen, R.J., K. R. Andrews, I. B. Baums, C. E. Bird, G.T. Concepcion, T.S. Daly-Engel, J.A. Eble, A. Faucci, M.R. Gaither, M. Iacchei, J. B. Puritz, J.K. Schultz, D.J. Skillings, M.A. Timmers and B.W. Bowen. 2011. Defining Boundaries for Ecosystem-Based Management: A Multispecies Case Study of Marine Connectivity across the Hawaiian Archipelago. *Journal of Marine Biology*, Volume 2011, Article ID 460173, 13 pg. doi:10.1155/2011/460173.
- University of Hawai'i, Waikiki Aquarium. 2016. Potter's Angelfish. Available at: <http://www.waikikiaquarium.org/experience/animal-guide/fishes/angelfishes/potters-angelfish/>. Accessed on 3 January 2018.

FINAL ENVIRONMENTAL IMPACT STATEMENT

Literature Cited

- Waikiki Aquarium. 2018. The Hawaiian cleaner wrasse. Available at: <http://www.waikikiaquarium.org/experience/animal-guide/fishes/wrasses/hawaiian-cleaner-wrasse/>. Accessed on February 20, 2018.
- Walsh, W.J., S.P. Cotton, J. Dierking, and I.D. Williams. 2003. The Commercial Marine Aquarium Fishery in Hawai'i 1976-2003. In: Friedlander A.M. (ed.) Status of Hawai'i's Coastal Fisheries in the New Millennium. Proceedings of a Symposium sponsored by the American Fisheries Society, Hawai'i Chapter. pp. 132-159.
- Western Pacific Regional Fishery Management Council (WPRFMC). 2005. Essential Fish Habitat Descriptions for Western Pacific Archipelagic and Remote Island Areas Fishery Ecosystem Plan Management Unit Species (Crustacean, Bottomfish, Precious Coral, Coral Reef Ecosystem). Appendix A. Available at: <http://www.wpcouncil.org/wp-content/uploads/2013/03/Appendix-Demersal-FEP-EFH-descriptions-FINAL.pdf>. Accessed on May 14, 2018.
- Western Pacific Regional Fishery Management Council (WPRFMC). 2017. Hawaiian Archipelago. Available at: <http://www.wpcouncil.org/managed-fishery-ecosystems/hawaii-archipelago/>. Accessed on February 5, 2018.
- Williams, J.T., Carpenter, K.E., Lawrence, A. & Myers, R. 2016. *Pseudanthias bicolor*. *The IUCN Red List of Threatened Species 2016*: e.T69590149A69592507. <http://dx.doi.org/10.2305/IUCN.UK.2016-3.RLTS.T69590149A69592507.en>
- Wilson, S.K., Graham, N.A.J., Pratchett, M.S., Jones, G.P. & Polunin, N.V.C. 2006. Multiple disturbances and the global degradation of coral reefs: are reef fishes at risk or resilient? *Global Change Biology* 12, 2220–2234.
- Work, TM; Aeby, GS. 2014. Skin pathology in Hawaiian goldring surgeonfish, *Ctenochaetus strigosus* (Bennett). *J. Fish Dis.* 37: 357–62.

APPENDIX A

Cultural Impact Assessment

A Cultural Impact Assessment for the Proposed Issuance of Twenty Commercial Aquarium Permits for the Island of O‘ahu

‘Ewa District and Portions of Waialua, Wai‘anae, Honolulu (Kona)
Ko‘olauloa, and Ko‘olaupoko Districts
Island of O‘ahu



Prepared By:

Teresa Gotay, M.A.
and
Nicole Ishihara, B.A.

Prepared For:

Pet Industry Joint
Advisory Council
1615 Duke Street, Suite 100
Alexandria, VA 22314

December 2019



Archaeology • History • Anthropology • Architectural History

Hilo Office: (808) 969-6066 Fax: (808) 443-0065
507-A E. Lanikaula Street, Hilo, HI 96720

Honolulu Office: (808) 439-8089 Fax: (808) 439-8087
820 Milliani Street, Suite 700, Honolulu, HI 96813

A Cultural Impact Assessment for the Proposed Issuance of Twenty Commercial Aquarium Permits for the Island of O‘ahu

‘Ewa District and Portions of Waialua, Wai‘anae, Honolulu (Kona),
Ko‘olauloa, and Ko‘olaupoko Districts
Island of O‘ahu

CHAPTERS

	Page
1. INTRODUCTION	1
A BRIEF HISTORY OF AQUARIUM FISHING AND RELEVANT REGULATORY AND MARINE CONSERVATION MEASURES IN HAWAI‘I	2
Marine Managed Areas	4
THE PROPOSED ACTION.....	5
2. STUDY AREA DESCRIPTION	7
THE NORTHWEST PORTION OF THE STUDY AREA	8
THE SOUTHWEST PORTION OF THE STUDY AREA.....	10
THE SOUTHEAST PORTION OF THE STUDY AREA	14
THE NORTHEAST PORTION OF THE STUDY AREA	19
THE TOP 20 COLLECTED AQUARIUM FISH SPECIES LIST	21
3. BACKGROUND	22
CULTURE-HISTORICAL CONTEXT	22
SETTLEMENT OF THE HAWAIIAN ISLANDS.....	22
DEVELOPMENT OF THE <i>AHUPUA‘A</i> SYSTEM AND ACCESS TO NATURAL RESOURCES	24
<i>Nā Papakū O Ka Moana: Marine Extension of the Ahupua‘a</i>	26
OCEANIC ORIGINS	28
The Great Fishermen, Kapūhe‘euanui.....	28
Kanaloa, Deity of the Ocean	28
Māui Uses Manaiakalani to Fish the Hawaiian Islands Out of the Sea	29
The <i>Kumulipo</i>	30
TRADITIONAL RESOURCE MANAGEMENT PRACTICES.....	33
<i>Ho‘okupu & Pule: Reciprocity as a Means to Maintaining Spiritual Balance and Abundance</i>	34
<i>Kilo: Astute Observation of the Natural World</i>	34
<i>Kapu and Noa: Harvest Restrictions</i>	34
<i>Ko‘a</i>	36
<i>Kū‘ula</i>	38
<i>Loko I‘a: Fishponds</i>	42
TRADITIONAL HAWAIIAN NEARSHORE FISHING TECHNIQUES	45
Collecting Fish by Hand.....	48
Fishing with Hook and Line.....	49
Fishing with Lures.....	49
Fishing with Nets.....	51
Fishing with Poison	59

Spearing Fish.....	60
HAWAIIAN FISH NOMENCLATURE	61
SPECIES-SPECIFIC TRADITIONAL CULTURAL KNOWLEDGE AND PRACTICES PERTAINING TO THE TOP 20 COLLECTED AQUARIUM FISH SPECIES	62
<i>Acanthurus olivaceus</i> (na ‘ena ‘e).....	63
<i>Anampses chrysocephalus</i> , <i>Cirrhilabris Jordani</i> , <i>Macropharyngodon Geoffroy</i> , <i>Pseudocheilinus octotaenia</i> , and <i>Pseudocheilinus tetrataenia</i> (hīnālea).....	63
<i>Canthigaster Coronata</i> (pu ‘u ‘ōla ‘i) and <i>Canthigaster jactator</i> (‘o ‘opu hue)	68
<i>Centropyge fisheri</i> ; <i>Centropyge potteri</i>	69
<i>Chaetodon miliaris</i> (Lau/Lauhau wiliwili) and <i>Chaetodon multicintus</i> (kīkākapu)	70
<i>Ctenochaetus strigosus</i> (kole, kole makaonaona)	73
<i>Forcipiger Flavissimus</i> (lauwiliwili nukunuku ‘oi ‘oi)	73
<i>Halichoeres ornatissimus</i> (lā ‘ō).....	74
<i>Naso lituratus</i> (kala, umaumalei).....	74
<i>Pseudanthias bicolor</i>	76
<i>Thalassoma duperrey</i> (hīnālea lauwili)	77
<i>Zanclus cornutus</i> (kihikihi).....	77
<i>Zebrasoma flavescens</i> (lā ‘ī pala, lau ‘īpala).....	78
THE ARRIVAL OF WESTERNERS AND THE TRANSFORMATION OF MARINE RESOURCE MANAGEMENT PRACTICES IN HAWAI‘I	79
Fishing Rights Codified in the Hawaiian Kingdom Government Constitutional Laws of 1839 and 1846.....	80
THE LEGACY OF THE <i>MĀHELE ‘ĀINA</i> OF 1848.....	84
COMMERCIAL FISHING AFTER THE <i>MĀHELE</i> AND INTO THE TWENTIETH CENTURY	86
Commercial Aquarium Fishing in O‘ahu.....	88
4. CONSULTATION.....	89
WILLIAM J. AILA, JR.....	91
MAKANI CHRISTENSEN	95
CHRIS CRAMER	98
DEAN CROWELL.....	102
NOELANI PUNIWAI.....	103
ROSALYN “ROZ” DIAS CONCEPCION.....	106
5. IDENTIFICATION AND MITIGATION OF POTENTIAL CULTURAL IMPACTS	109
REFERENCES CITED.....	113
APPENDIX A.....	121
<i>KA WAI OLA</i> PUBLIC NOTICE	121

FIGURES

	Page
1. Study area location plotted on ESRI StreetMap World 2D map of O‘ahu.	2
2. Overview of the study area depicting those portions of that are included and excluded from the proposed action plotted on a Hillshade Surface map.....	7
3. Detail of the northwest portion of the current study area.....	8
4. Waialua coastline as seen from Keālia Trail in Keālia Ahupua‘a, view to the north.	9
5. Aerial view of Anahulu River and Hale‘iwa Harbor with Loko ‘Ea fishpond to the right (USACE n.d.).....	9
6. Keawa‘ula Beach with view of Wai‘anae coastline; view to southeast.....	10
7. Detail of the southwest portion of the current study area.	11
8. A portion of the Wai‘anae coastline from Mā‘ili Point, view to northeast (UHM SOEST 2005).....	11
9. Aerial of Wai‘anae Boat Harbor (left) and a portion of Pōka‘ī Bay (right), view to the northeast (UHM SOEST 2005).	12
10. A portion of the ‘Ewa coastline with Ke-awa-lau-o-Pu‘uloa in the background, view to the north (UHM SOEST 2005).....	12
11. Man-made lagoons and Ko ‘Olina harbor in the western portion of Honouliuli Ahupua‘a (UHM SOEST 2005).....	13
12. Honouliuli shoreline near Kalaeloa in ‘Ewa Moku; view to southeast (Lee 2017).	13
13. Detail of southeast portion of study area.	15
14. Aerial of Honolulu Harbor and Sand Island (right), view to the southeast (CruiseMapper n.d.).	15
15. Ke‘ehi Lagoon in Moanalua Ahupua‘a, view to the northeast (UHM SOEST 2005).	16
16. Aerial showing Kewalo Basin (left) and Ala Moana Beach Park, and a portion of the Ala Wai Boat Harbor (right); view to the northeast (UHM SOEST 2005).....	16
17. Aerial showing the southeast portion of Waikīkī Ahupua‘a with Kūpikipiki‘ō (Black Point), view to the southeast (UHM SOEST 2005).....	17
18. Waimanalo Ahupua‘a coastline with Hanauma Bay MLCD (right), view to the east.....	17
19. Aerial showing Mokuolo‘e (Coconut Island Hawai‘i Marine Laboratory Refuge) and Kāne‘ohe Bay, view to the west (UHM SOEST 2005).....	18
20. Aerial of the <i>loko i‘a</i> of He‘eia in He‘eia Ahupua‘a, Ko‘olaupoko, view to the west (UHM SOEST 2005).....	18
21. Detail of northeast portion of the current study area.....	19
22. Aerial of the northernmost portion of Ko‘olaupoko showing Hakipu‘u, Kualoa, and Mokoli‘i (right), view to the northwest.....	20
23. Mokoli‘i Loko I‘a (foreground) and Kāne‘ohe Bay (background); view to the south.....	20
24. Hawaii Registered Map 455, showing the current study area relative to the traditional <i>moku</i> of O‘ahu, ca. 1883.....	23
25. <i>Ko‘a</i> at He‘eia State Park with Kāne‘ohe Bay and Mōkapu Peninsula in the background, view to the east.	37
26. Kū and Hina <i>ko‘a</i> stones at Kānewai Fishpond, view to the east.	38
27. <i>Kū‘ula</i> stones (Brigham 1902:94).....	39
28. He‘eia Fishpond, view to south.....	42

29. Mōli‘i Fishpond in Hakipu‘u Ahupua‘a with Kāne‘ohe Bay beyond.	43
30. He‘eia Fishpond <i>hale kia ‘i</i> and <i>mākāhā</i>	44
31. Basket traps (Source: Buck 1957).	46
32. Night fishing with a torch ca. 1948 (Photo credit: Eliot Elisofon).	48
33. Traditional Hawaiian fishhooks (Source: Young 1999).	49
34. Examples of <i>lūhe ‘e</i> (Source: Buck 1957).	50
35. Man casting <i>‘upena ho ‘olei</i> . (Hawai‘i State Archives PP-22-1-011)	51
36. Girl with gill net, late 18 th century (Hawai‘i State Archives PP-34-8-008)	52
37. <i>Hukilau</i> fishing with seine net (Hawai‘i State Archives PP-23-1-1-001).	54
38. <i>Lau</i> nets at Kualoa Ahupua‘a with Mokoli‘i in background; view to the northeast (Hawai‘i State Archives PP-59-2-008-001).	55
39. “Scoop nets: a, smallest net with pliable wood frame and crossbar; b. larger net with extended rod frame and crossbar; c. with vine frame, lacking crossbar” (Buck 1957:300).	57
40. Dip net ca. 1900 (Cobb 1902, Plate 23).	58
41. ‘ <i>Ōhua</i> bag net (Buck 1957:309).	58
42. Photo of ‘ <i>ākia</i> plant at Maunalua Fishpond Heritage Center with <i>mākāhā</i> beyond.	59
43. Fishing with spear ca. 1890 (Bishop Museum Archive).	60
44. <i>Acanthurus olivaceus</i> at Hanauma Bay, O‘ahu.	63
45. <i>Anampses chrysocephalus</i> female (left) and male (right).	64
46. <i>Cirrhilabris jordani</i> female at Kewalo Hump, O‘ahu.	64
47. <i>Macropharyngodon Geoffroy</i> at Kewalo Pipe, O‘ahu.	64
48. <i>Pseudocheilinus octotaenia</i> at Lanai lookout, O‘ahu.	65
49. <i>Pseudocheilinus tetrataenia</i> at Kahe Point, O‘ahu.	65
50. <i>Canthigaster Coronata</i> at Waimea Bay, O‘ahu.	68
51. <i>Canthigaster jactator</i> at Hale‘iwa trench, O‘ahu.	69
52. <i>Centropyge fisheri</i> at Mokulei‘a, O‘ahu.	70
53. <i>Centropyge potteri</i> female in sea cave on O‘ahu.	70
54. <i>Chaetodon miliaris</i> at Kewalo, O‘ahu.	71
55. <i>Chaetodon multicintus</i> at Mokuelia, O‘ahu.	71
56. <i>Ctenochaetus strigosus</i> at Mokapu, O‘ahu.	73
57. <i>Forcipiger flavissimus</i> pictured on O‘ahu.	74
58. <i>Halichoeres ornatissimus</i> female at Waimea Bay (left) and male at Waikīkī (right).	74
59. <i>Naso lituratus</i> at Hanauma Bay, O‘ahu.	75
60. <i>Pseudanthias bicolor</i>	77
61. <i>Thalassoma duperrey</i> male at Kewalo, O‘ahu.	77
62. <i>Zanclus cornutus</i> at Kewalo Pipe, O‘ahu.	78
63. <i>Zebrasoma flavescens</i> at Kahe Point, O‘ahu.	79
64. Fisherman using the <i>‘upena ho ‘olei</i> ca. 19 th century (Source: Hawai‘i State Archives Call No. PP-22-8-003).	88
65. Locations of fishing shrines.	94
66. Photo of Kānewai Spring that feeds into Kānewai Loko I‘a located within the Paikō Lagoon Wildlife Sanctuary, view to the southeast.	99

67. Photo of bruchid beetles and infected <i>wiliwili</i> seeds.	99
68. Photograph of Paikō Lagoon, view to southeast.	100
69. Photo of <i>wiliwili</i> leaf in Niu Valley, view to east.	100
70. Photo of <i>lauwiliwili</i> (courtesy of Waikīkī Aquarium, n.d.)	101

TABLES

	Page
1. Objectives and management strategies for FMA and MLC (DLNR/DAR 2005:15).....	5
2. Top 20 Collected Aquarium Fish Species of O‘ahu per PIJAC (2018).	21
3. List of Hawaiian anatomical terms for fish (after Titcomb 1972:54).	62
4. Hawaiian Names and Origin Status of the Top 20 Species.	62
5. <i>Ali‘i</i> awards of O‘ahu.	86
6. Persons/Organization contacted for consultation.	90

1. INTRODUCTION

At the request of K & L Gates, LLP, on behalf of the Pet Industry Joint Advisory Council (PIJAC; the applicant), ASM Affiliates (ASM) has prepared this Cultural Impact Assessment (CIA) to supplement a Hawai'i Revised Statutes (HRS) Chapter 343 Environmental Impact Statement (EIS) being prepared for the proposed issuance of twenty annual commercial aquarium permits. These permits would allow for the collection of fish species using fine mesh nets or traps from select locations around the Island of O'ahu. The current study area comprises the intended aquarium fish collection areas, which includes the nearshore waters and up to three nautical miles as measured from the shoreline of the island of O'ahu, except for previously designated Marine Managed Areas (MMAs), which are currently managed by the Department of Aquatic Resources (DAR). The MMAs, which are no-collection areas include three Marine Life Conservation Districts (MLCDs): Pūpūkea, Hanauma Bay, and Waikīkī; a Fisheries Management Area (FMA): Waikīkī-Diamond Head Shoreline; Paikō Lagoon Wildlife Sanctuary and Coconut Island – Hawai'i Marine Laboratory Refuge; Waikīkī-Diamond Head Shoreline FMA; and the regulated fishing areas of Honolulu Harbor, He'eia Kea Wharf, Waialua Bay (Hale'iwa Harbor), and Pōka'i Bay (Figure 1). In addition to the marine managed exclusion areas listed above, aquarium collecting will also be prohibited in four additional areas, currently designated as Fish Report Collection Areas (FRCAs) 405 and 406 that encompass nearly all the nearshore region of the Ko'olaupoko District and FRCA 408 and 418, which comprise the southern reaches of the Ko'olaupoko District (see Figure 1). Per the draft EIS for this project, the proposed action (and preferred alternative) reads as follows:

Alternative 3: Expanded Waikiki MLCD and Flame Wrasse Conservation Alternative (Proposed Action and Preferred Alternative) - Programmatic Issuance of Aquarium Permits for the Island of O'ahu with Additional Conservation Measures Expanding the Waikiki MLCD and Limiting Flame Wrasse Catch for the O'ahu fishery.

The DLNR would issue Aquarium Permits for the island of O'ahu under existing regulation set forth in HRS 188-31 (Section 1.2.1). These rules and regulations include restrictions on equipment, restrictions on access to various areas, bag limits on various collected fish species, and reporting requirements.

The Waikiki MLCD would be expanded northward to the southern tip of DAR's Honolulu Harbor Kapalama Canal Fish Management Area (Figure 2). Within the expanded Waikiki MLCD, no commercial aquarium fish collection would occur; however, no restrictions would be placed upon other fisheries (e.g., commercial, recreational).

A daily bag limit for Flame Wrasse would be implemented, limiting collection of Flame Wrasse to a 10 per day daily bag limit. (PIJAC 2018:15)

The Preferred Alternative is based on the best available science, supports the DLNR's purpose to ensure Applicant's Actions do not lead to degradation of fish populations and the habitats in which they occur in the context of commercial aquarium collection, and supports the Applicant's purpose and need to continue fishers' livelihoods participating in the lawful, responsible, and sustainable commercial collection of various fish species from nearshore habitats. (PIJAC 2018:15)

The current document has been prepared in accordance with the Office of Environmental Quality Control (OEQC) *Guidelines for Assessing Cultural Impacts*, adopted by the Environmental Council, State of Hawai'i, on November 19, 1997 (Office of Environmental Quality Control [OEQC] 1997) to assess the potential cultural impacts of the proposed action (the issuance of twenty commercial aquarium permits) on historic and traditional cultural properties and practices. This CIA is divided into five main sections, which include: 1) an introduction of the proposed action; 2) a description of the general geographic context of the study area; 3) a culture-historical background for the nearshore waters of the Island of O'ahu that includes a discussion of the traditional Hawaiian cultural significance of the Top 20 Collected Aquarium Fish Species on O'ahu; 4) the methods and results of the consultation process regarding ongoing and former traditional cultural practices and/or resources associated with the Top 20 Collected Aquarium Fish Species, and the proposed action's potential impacts; and 5) an analysis of potential cultural impacts that may result from the proposed action. The document concludes with recommendations for appropriate mitigation strategies that may be employed by the applicant and DLNR to help minimize the potential for cultural impacts that could result from the proposed action.

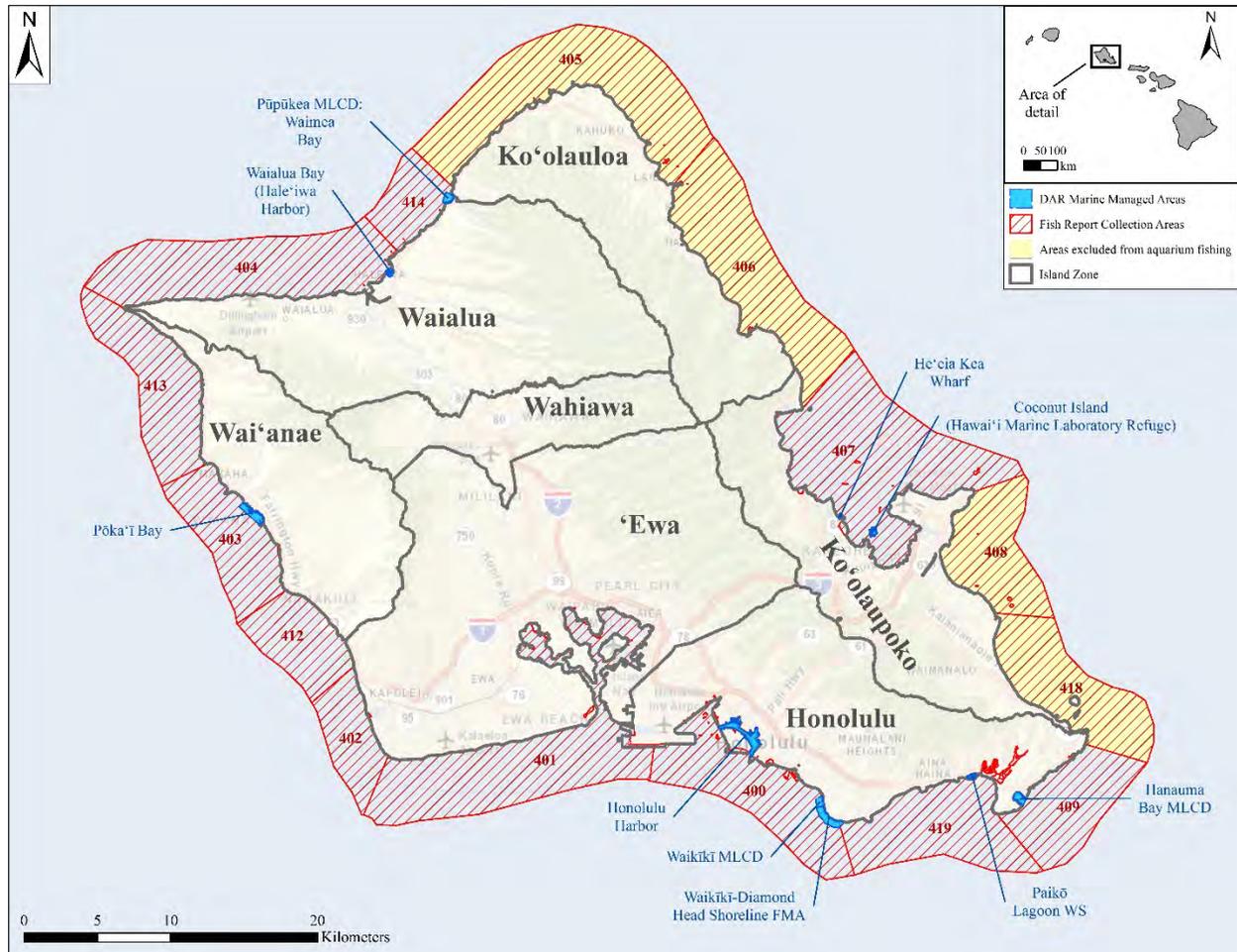


Figure 1. Study area location plotted on ESRI StreetMap World 2D map of O‘ahu.

A BRIEF HISTORY OF AQUARIUM FISHING AND RELEVANT REGULATORY AND MARINE CONSERVATION MEASURES IN HAWAI‘I

Commercial aquarium fishers have been engaged in aquarium fish collection under permits for over sixty years. The earliest known collection of marine species for aquarium purposes was linked to the establishment of the Honolulu Aquarium in Waikīkī, which opened in 1904 and showcased various marine species that had been collected by local fishermen (University of Hawai‘i n.d.; Wiegell 2008). By the 1940s the collection of reef fish and other marine species to be used in aquariums had developed into a commercial fishery. Aquarium collection began with rudimentary equipment and breath-hold diving techniques in the nearshore waters off the leeward coast of O‘ahu (Walsh et al. 2004). After World War II, the use of SCUBA gear and synthetic nets “increased the efficiency of [aquarium]collecting” (Walsh et al. 2004:130). In 1953, Act 154 was enacted by the territorial government of Hawai‘i, “which authorized the Board of Agriculture and Forestry to establish a permit system for the use of fine-mesh nets and traps for the taking of aquarium fish” (Walsh et al. 2004:130). Soon after, HRS §188-31 (Permits to take aquatic life for aquarium purposes) went into effect:

- (a) Except as prohibited by law, the department, upon receipt of a written application, may issue an aquarium fish permit, not longer than one year in duration, to use fine meshed traps, or fine meshed nets other than throw nets, for the taking of marine or freshwater nongame fish and other aquatic life for aquarium purposes.
- (b) Except as prohibited by law, the permits shall be issued only to persons who can satisfy the department that they possess facilities to and can maintain fish and other aquatic life alive and in reasonable health.

- (c) It shall be illegal to sell or offer for sale any fish and other aquatic life taken under an aquarium fish permit unless those fish and other aquatic life are sold alive for aquarium purposes.

Per Walsh et al. (2004), the early success of the aquarium fishing industry stalled due to limitations in air shipping; however, in 1959 the introduction of the commercial airline flights expedited the shipping of aquarium fish to buyers on the U.S. mainland. A decade later, the number of Aquarium Permit holders increased, including non-commercial fishers who collected for their own aquaria (Walsh et al. 2004). After 1971, the number of commercial aquarium collectors sharply increased; and by 1973, commercial aquarium collecting on O‘ahu was well established and had become a controversial issue (Calado et al. 2017; Walsh et al. 2004). As a result of growing public concern regarding the aquarium fishery, the Division of Fish and Game (DFG; the antecedent of DAR) placed a moratorium on aquarium collecting and suspended the issuance of aquarium permits (Walsh et al. 2004). In September 1973, DFG met with marine scientists who recommended the establishment of marine sanctuaries and prohibited areas for collection (Walsh 1999). According to Walsh et al. (2004), after the 1973 moratorium was lifted, commercial aquarium collectors were required to report their monthly catches on a detailed form. In 1989, the aforementioned aquarium permit statute (HRS §188-31) was amended to require DLNR to “monitor the aquarium fish catch report and fish dealer’s report for export of aquarium fish” and report “a monthly count of the quantities taken of each individual species of aquarium fish exported” to the Board of Land and Natural Resources (HRS §188-31.5). DAR reported annual summaries of catch reports until 1994; since then, catch report summaries have included up to five-years of catch data ((2004:131).

In August 2011, O‘ahu commercial aquarium fishers developed a rule proposal for the management of the O‘ahu aquarium fishery, which they presented to DAR. Subsequently, in December 2012, a public hearing was held regarding the proposed measure and HAR §13-77 was adopted in October 2014 (PIJAC 2018). This regulation is applicable to the collection of aquatic life for aquarium purposes from the nearshore waters of O‘ahu, within three nautical miles from the shore. Methods under regulation include the use of fine or small mesh traps and nets, and exclude throw nets. HAR§13-77 is intended to prevent the use of nets to harvest aquatic life for food, bait, or other consumptive purposes, and the section covering Oahu prohibited activities (HAR§13-77-6) reads as follows:

- (a) Notwithstanding the provisions of chapter 13-75, it is unlawful for any person in or on the waters of Oahu, possessing a small mesh net authorized under a commercial aquarium fish permit or recreational aquarium fish permit, to possess a small mesh net that is:
- (1) More than thirty (30) feet long; provided that two or more permittees may join two nets, each no more than thirty (30) feet long, for a total net length of no more than sixty (60) feet long; or
 - (2) More than six (6) feet in height.
 - (3) These restrictions regarding net length and height in subsection (a) shall take effect after July 1, 2015.
- (b) It is unlawful for any person, while possessing, using, or having used a small mesh net authorized under a commercial aquarium fish permit and in or on the waters of Oahu, to possess a small mesh net and take or possess a daily bag limit of more than:
- (1) One hundred (100) Yellow Tang;
 - (2) Seventy-five (75) Kole;
 - (3) Fifty (50) Potter’s angel;
 - (4) Fifty (50) naso tang;
 - (5) Twenty-five (25) moorish idol; or
 - (6) Ten (10) achilles tang.

A daily bag limit includes the cumulative number of regulated aquatic life taken or possessed by a person on any day.

- (c) It is unlawful for any person while possessing, using, or having used a small mesh net authorized under a commercial aquarium fish permit and in or on the waters of Oahu, to possess a small mesh net and to take or possess more than six (6) of any of the following per day:
- (1) Yellow Tang less than one and one-half (1.5) inches in length;
 - (2) Yellow Tang more than five (5) inches in length;
 - (3) Kole more than five (5) inches in length; or
 - (4) Cleaner Wrasse of any size.

- (d) It is unlawful for any person while possessing, using, or having used a small mesh net authorized under a commercial aquarium fish permit and in or on the waters of Oahu, to take or possess more than two (2) bandit angelfish that are longer than five and a half (5.5) inches in length, per day.
- (e) It is unlawful for any person while possessing, using, or having used a small mesh net authorized under a commercial aquarium fish permit, to operate a vessel on the waters of O‘ahu with:
 - (1) More than the daily bag limits as provided in subsections (b), (c), and (d) for the number of permittees on board the vessel; or
 - (2) More than three times the number of any daily bag limit, regardless of the number of permittees on board.
- (f) It is unlawful for any person, while possessing a small mesh net authorized under a commercial aquarium fishing permit or recreational aquarium fish permit while in or on the waters of Oahu, to take or possess any of the following species:
 - (1) Ornate butterflyfish;
 - (2) Oval butterflyfish; and
 - (3) Reticulated butterflyfish.

In addition to limited amounts of aquarium fish collection, Hawai‘i State law prohibits breaking or damaging coral with any implement. This includes if any marine life is attached to the coral. According to HRS§171-58.5 and §205A-44, the taking of sand, coral rubble, and other marine deposits are permitted depending on the circumstances; however, the material cannot exceed one gallon per person per day.

In 2012, Earthjustice filed a complaint in the First Circuit Court on behalf of four individuals and three non-governmental organizations seeking a court order to force the State of Hawai‘i to comply with the Hawai‘i Environmental Policy Act (HEPA) to examine how commercial aquarium collection affects the environment. The complaint made a formal request to halt aquarium collection under the then-existing commercial aquarium permits and for DLNR to stop issuing new permits until the environmental review process is complete (Earthjustice 2012; PIJAC 2018) Pet Industry Joint Advisory Council 2018). Regardless, as a result of subsequent litigation, the issuance of permits continued until late 2017, at which time “the Supreme Court of Hawai‘i ruled that aquarium collection using fine meshed traps or nets is subject to the environmental review procedures provided in HEPA” (FEA:2). Based on the Supreme Court ruling, the circuit court ruled on October 27, 2017, that existing permits for aquarium fish collection using fine mesh nets were invalid and illegal, and as a result, DLNR discontinued the renewal of existing permits and the issuance of new Aquarium Permits since that time (DAR 2018; PIJAC 2018).

Between 2000 and 2017, DLNR issued a minimum of 66 to a maximum of 126 commercial aquarium permits annually, and aquarium fishers collected approximately 238 fish species (1,295,700 individual fish) under said permits in O‘ahu’s nearshore waters. Some of the over 200 species were reported as a general group (e.g. squirrelfishes, wrasses, etc.) rather than as separate species due to the DAR confidentiality statute that does not publicly release “any catch data when less than three collectors report from an individual collection zone” (PIJAC 2018:30-31, 50-51). In addition to the regulatory measures outlined above, the establishment of Marine Managed Areas, discussed below, has contributed to the conservation of marine resources by regulating the types of activities conducted within those areas.

Marine Managed Areas

According to the State of Hawai‘i DAR’s website, Marine Managed Areas (MMAs) “are specific geographic areas designated by statute or administrative rule for the purpose of managing a variety of marine, estuarine, or anchialine resources and their use” (DLNR/DAR 2005). Beginning in the 1930s, federal, state, and local governments across the United States started to establish Marine Protected Areas (MPAs), a subset of MMAs (National Research Council 2001). Per the National Oceanic and Atmospheric Administration (NOAA) website, MPAs “encompass a variety of conservation and management methods in the United States” and “span a range of habitats, including the open ocean, coastal areas inter-tidal zones, estuaries, and the Great Lakes” (National Oceanic and Atmospheric Administration 2018). As MPAs are diverse, restrictions within MPAs also vary. For instance, according to DAR’s publication titled *Marine Protected Areas in Hawai‘i*, the primary goal of a Marine Reserve MPA is preservation and as such, fishing and commercial uses are heavily restricted (DLNR/DAR 2005); while the primary goal of a Marine Life Conservation District (MLCD) MPA is conservation and multiple uses—thus, MLCDs often allow fishing restricted by permit. Please refer to Table 1 below for further information. Of relevance to the current study are the DAR MMAs where

aquarium collection is not permitted: Pūpūkea MLCD, Hanauma Bay MLCD, and Waikīkī MLCD; Paikō Lagoon Wildlife Sanctuary and Coconut Island – Hawai‘i Marine Laboratory Refuge; Waikīkī-Diamond Head Shoreline FMA; and the regulated fishing areas of Honolulu Harbor, He‘eia Kea Wharf, Waialua Bay (Hale‘iwa Harbor), and Pōka‘i Bay. As aquarium collection is prohibited within these areas, the commercial aquarium fishery has had to rely on collection sites beyond these protected areas.

Table 1. Objectives and management strategies for FMA and MLCD (DLNR/DAR 2005:15).

<i>Category</i>	<i>Primary Goals</i>	<i>Conservation Objectives</i>	<i>Use Management & Objectives</i>
Fishery Management Area (FMA)	Resource Allocation/ Fishing	Sustain aquatic resources for fishing, reduce habitat damage from fishing and manage over-fishing where it occurs	Resolve fishing conflicts, allocate resources by gear type/group, recreation/subsistence fishing allowed, some non-consumptive recreation allowed and regulate commercial uses
Marine Refuge	Conservation	Protect unique habitats, conserve examples of valuable ecosystems, restore/conservate biodiversity, restore natural communities and avoid human impacts	Biological reference site for science, boats/anchoring may be restricted, all public access may require permit, extractive use/fishing extremely limited and commercial uses restricted
Marine Life Conservation District (MLCD)	Conservation/ Multiple Use	Restore populations to high levels, restore and conserve biodiversity, minimize human impacts and minimize impacts to protected species	Boats/anchoring may be restricted, no fish feeding or alteration of habitat, regulate commercial uses by permit to avoid impacts to resources or to public uses of resources, low-impact fisheries by registration, some recreational use allowed

THE PROPOSED ACTION

The objective of the proposed action is to create a program under the Department of Land and Natural Resources (DLNR) (the approving agency) that will facilitate the process for the issuance of commercial aquarium permits on the island of O‘ahu (pursuant to Aquarium Fishing Permits issued under HRS §188-31). As such, aquarium fishers will be able to continue to operate their businesses in compliance with all the applicable State of Hawai‘i laws, rules, and regulations pertaining to the industry outlined above.

As previously mentioned, because of a Supreme Court ruling in October 2017, DLNR has not renewed existing permits or issued new permits for aquarium collection using fine meshed traps or nets since September 2017 (PIJAC 2018). As a result, a Final Environmental Assessment (FEA) for the issuance of commercial aquarium permits for the Island of O‘ahu permits was prepared (by the current applicant, PIJAC) and submitted to the DLNR for review on July 26, 2018. The preferred alternative put forth in the FEA included the following conservation measures:

Under the Expanded Waikiki MLCD and Flame Wrasse Conservation (Preferred) Alternative, the DLNR would begin issuing new Aquarium Permits, thereby allowing commercial aquarium fish collection on the island of O‘ahu to resume. Permittees would abide by all existing rules and regulations set forth in HRS188-31 (Section 1.2.1), governing Commercial Aquarium Permit use. For the island of O‘ahu, these rules and regulations include restrictions on equipment, restrictions on access to various areas, bag limits on various collected fish species, and reporting requirements (Section 1.2.3).

In addition to the existing rules and regulations, a conservation measure in the Preferred Alternative would expand the Waikiki MLCD northward to the southern tip of DAR’s Honolulu Harbor Kapalama Canal Fish Management Area. The current Waikiki MLCD covers approximately 77.3 acres (31.3 hectares). The area proposed in the Preferred Alternative expands this MLCD by 740 acres (299.5 hectares) to 817.3 acres, more than 10.5 times the size of the current Waikiki MLCD. In addition, the current Waikiki MLCD is bordered to its south by the Waikiki-Diamond Head Shoreline Fisheries Management Area (WDHSFMA) covering approximately 239 acres (96.7 hectares). The WDHSFMA is open to fishing (with restrictions) in even numbered years only.

Within the expanded Waikiki MLCD, no commercial aquarium fish collection would occur; however, no restrictions would be placed upon other fisheries (e.g., commercial, recreational).

An additional conservation measure in the Preferred Alternative would limit the commercial aquarium collection of Flame Wrasse to 10 individual fish per day. (PIJAC 2018:13 and 15)

The FEA proposed a Finding of No Significant Impact (FONSI) for the issuance of commercial aquarium permits for the Island of O‘ahu. However, in July of 2018, DLNR did not concur with that finding and determined that the project could have a significant impact on the environment, and therefore required the preparation of an Environmental Impact Statement (EIS) (PIJAC 2018). In her review letter, Suzanne Case, Chair of the DLNR, specifically requested that the EIS include further analysis of several significance criteria under HAR § 11-200-12. Specifically, the take of aquarium fish as an irrevocable commitment to loss or destruction of natural or cultural resources, and the impact of the take of aquarium fish on cultural practices in the state. Regarding the assessment of potential cultural impacts of the proposed action, Case stated,

Cultural impacts of aquarium fishing need significantly more analysis than provided in the FEA. The OEQC guidelines should be followed for assessing cultural impacts, including consulting with traditional cultural practitioners and other knowledgeable informants and sources about cultural resources, cultural practices, and the proposed action’s potential impacts. Traditional Hawaiian practices and subsistence uses, local place-based and life-cycle knowledge, and traditional Hawaiian cultural significance of each type of aquarium fish taken should be reviewed. The indirect impact of modern technologies for highly efficient catch methods on traditional harvest capabilities should be included in the analysis. (DLNR Letter dated July 26, 2018)

To address the comments and concerns raised by Ms. Case and to meet the requirements of HRS Chapter 343 with respect to assessing the potential cultural impacts that may result from the proposed action, the current document was prepared following the OEQC *Guidelines for Assessing Cultural Impacts* (adopted by the Environmental Council, State of Hawai‘i, November 19, 1997). According to those guidelines:

In scoping the cultural portion of an environmental assessment, the geographical extent of the inquiry should, in most instances, be greater than the area over which the proposed action will take place. This is to ensure that cultural practices which may not occur within the boundaries of the project area, but which may nonetheless be affected, are included in the assessment. (OEQC 1997:11)

As stated in Act 50, passed as Hawai‘i State House of Representatives Bill No. 2895 and signed into law by the Governor on April 26, 2000, “environmental assessments or environmental impact statements should identify and address effects on Hawai‘i’s host culture, and traditional and customary rights” (State of Hawai‘i 2011). Furthermore,

... native Hawaiian culture plays a vital role in preserving and advancing the unique quality of life and the “aloha spirit” in Hawai‘i. Articles IX and XII of the state constitution, other state laws, and the courts of the State impose on governmental agencies a duty to promote and protect cultural beliefs, practices, and resources of native Hawaiians as well as other ethnic groups.

Moreover, the past failure to require native Hawaiian cultural impact assessments has resulted in the loss and destruction of many important cultural resources and has interfered with the exercise of native Hawaiian culture. The legislature further finds that due consideration of the effects of human activities on native Hawaiian culture and the exercise thereof is necessary to ensure the continued existence, development, and exercise of native Hawaiian culture. (State of Hawai‘i 2011)

It is the need to identify and address the effects of the proposed action (the issuance of 20 commercial aquarium permits for the island of O‘ahu) on Hawai‘i’s native culture, and traditional and customary rights, that has necessitated the preparation of this CIA. While the action proposed in the current EIS differs somewhat from the action previously proposed in the FEA—limiting the geographic extent for the issuance of permits to select locations around the island of O‘ahu (rather than the entire Island of O‘ahu) and capping the total number of annual commercial aquarium permits issued at twenty—the additional analysis requested above by the DLNR has been used to guide the scope of work presented in this CIA.

2. STUDY AREA DESCRIPTION

The current study area consists of roughly 79 percent of the O‘ahu coastline and begins at the nearshore waters and extends into the open ocean for three nautical miles but excludes all marine managed areas (Figure 2). As depicted in Figure 2 below, the study area includes all of the nearshore waters of the *moku* (district) of ‘Ewa (FRCAs 412, 402, and 401), Waialua (FRCAs 404 and 414), Wai‘anae (FRCAs 413, 403, and 412), Honolulu/Kona (FRCAs 401, 400, 419, and 409), as well as much of northern Ko‘olaupoko (the area west of Mōkapu Peninsula; FRCA 407). The remaining 21 percent of the coastline where aquarium collecting will be prohibited and is not included in this study includes southern Ko‘olaupoko, extending from the southeastern coastline of Mōkapu Peninsula to Makapu‘u (FRCAs 408 and 418), and the majority of Ko‘olauloa District (FRCAs 405 and 406). However, a small portion of the nearshore waters located in Pūpūkea Ahupua‘a at the westernmost end of Ko‘olauloa is included within FRCA 414 and is thus included in the current study area. Also excluded from the current study area are roughly 5 square kilometers of nearshore waters that comprise the aforementioned DAR Marine Managed Areas: Waialua Bay (Hale‘iwa Harbor); Pūpūkea MLCD – Waimea Bay; He‘eia Kea Wharf; Coconut Island Hawai‘i Marine Laboratory Refuge; Hanauma Bay MLCD; Paikō Lagoon Wildlife Sanctuary; Waikīkī-Diamond Head Shoreline Fisheries Management Area; Waikīkī MLCD; Honolulu Harbor; and Pōka‘ī Bay (see Figure 1). For the purposes of this study and to better understand the broad geographical range, the study area is divided into four quadrants, all of which are further described in the ensuing paragraphs.

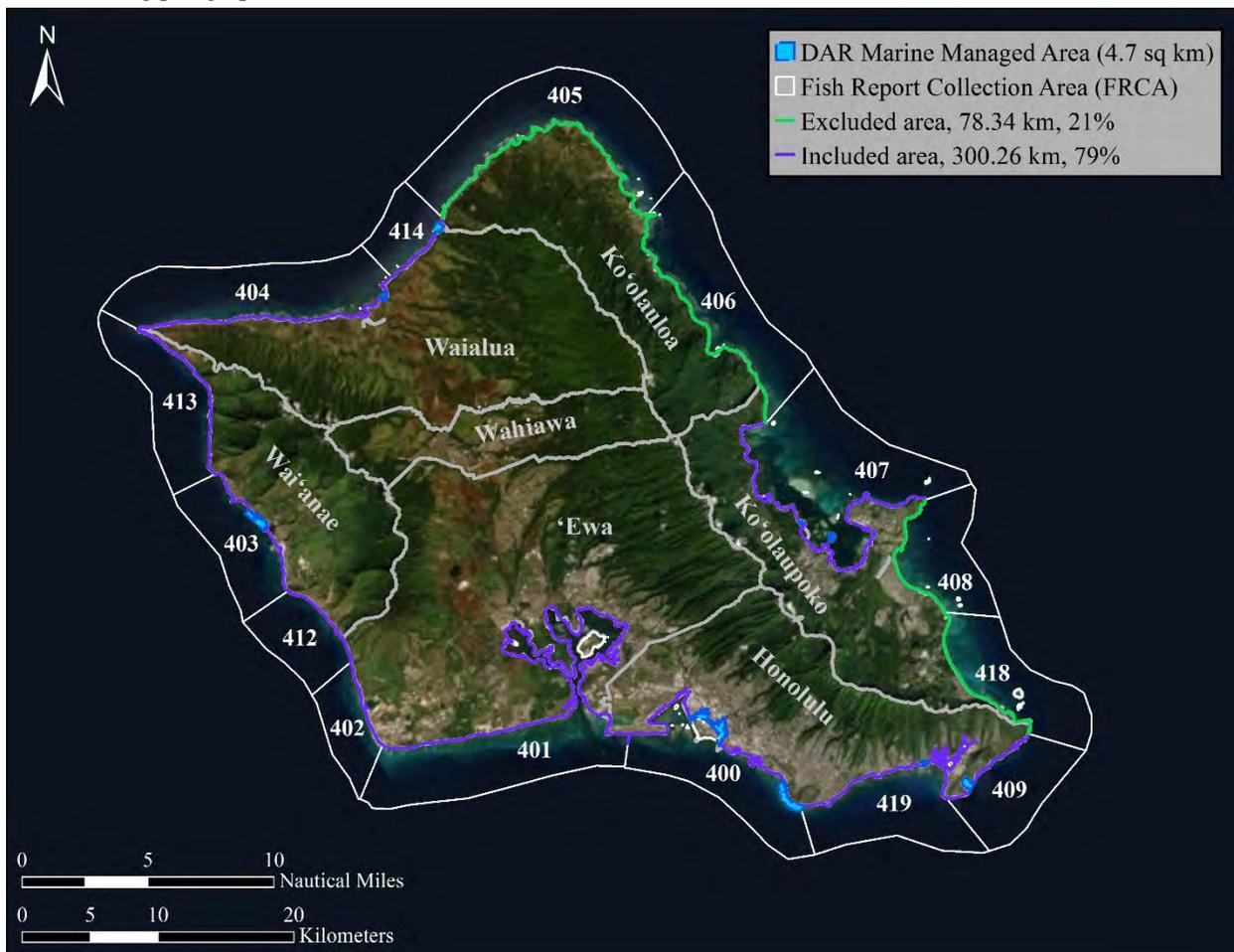


Figure 2. Overview of the study area depicting those portions of that are included and excluded from the proposed action plotted on a Hillshade Surface map.

THE NORTHWEST PORTION OF THE STUDY AREA

The northwest portion of the study area is within the traditional *moku* of Waialua and the northern portion of Wai‘anae (Figure 3). Waialua includes (from west to east) the traditional *ahupua‘a* (land division) of Ka‘ena, Keālia, Kawaihapai, Kikahi, Auku‘u, Mokulē‘ia 2, Mokulē‘ia 1, Kamananui, Pa‘ala‘a, Kawailoa, Lauhulu, Kuikuioloa, Punanue, Kapaeloā, and Waimea. The area from Ka‘ena to Kamananui extends along the northern slopes of the Wai‘anae Mountain Range, while the area from Pa‘ala‘a to Waimea encompasses the leeward portions of the Ko‘olau Mountain Range (Figure 4). There are three prominent bays within this portion of the study area: Kaiaka, Waialua, and Waimea. Kaika Bay is fed by Helemano and Poamoho streams, both of which flows through Kamananui Ahupua‘a. Waialua Bay is fed by the Anahulu River, which extends through Pa‘ala‘a Ahupua‘a (Figure 5). Polipoli and Makaleha streams meander through Kawaihapai Ahupua‘a. Commercial aquarium collection is currently and will remain prohibited under the proposed action at Waialua Bay, Waimea Bay, and Pūpūkea MLCD. Boating access within this part of the study area is limited to the marine managed Hale‘iwa Harbor located at Waialua Bay (see Figure 3). The majority of the north shore coastline consists of long stretches of white sandy beaches and areas with shallow limestone reef outcrops, such as Laniākea and the region spanning from Ka‘ena to Mokulē‘ia, the latter being popular for fishing and diving (DLNR 2019). The north shore of O‘ahu is known for its famous surf breaks and exceptionally large winter swells that attract local and visiting spectators (Hawaiian Lifeguard Association 2019).

The northern area of Wai‘anae that is within this portion of the current study area includes the *ahupua‘a* of Keawa‘ula, Kahanahaiki, and Mākua (see Figure 3). The shoreline in this area varies between long expanses of white sandy beaches (Figure 6) separated by sheer rocky cliffs. The western shoreline is prone to high surf and strong currents throughout the year (Hawaiian Lifeguard Association 2019). Streams in this portion of the study area include Kaluakauila Stream in Keawa‘ula Ahupua‘a, Punapōhaku and Mākua streams in Mākua Ahupua‘a, and Waikomo in ‘Ōhikilolo Ahupua‘a.

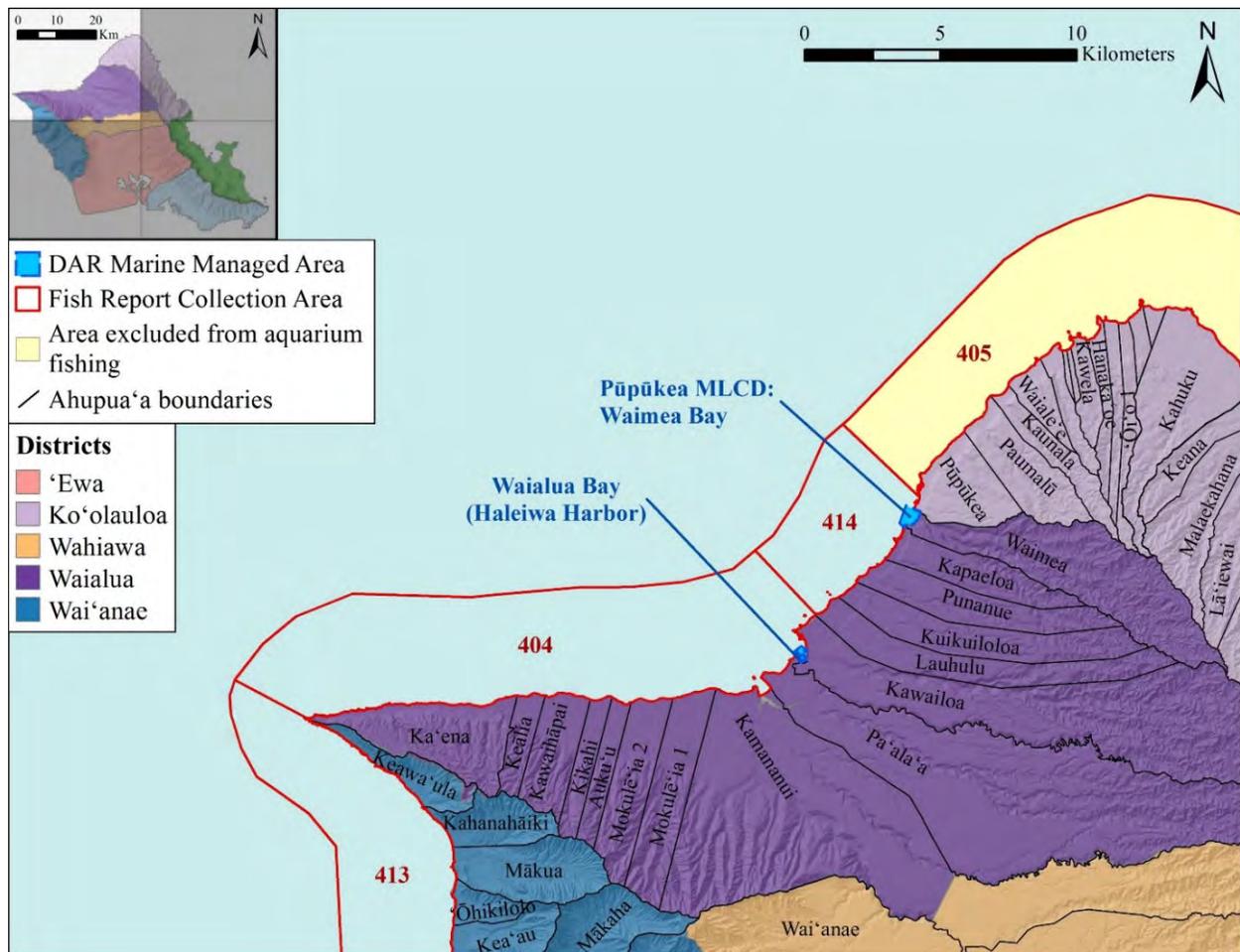


Figure 3. Detail of the northwest portion of the current study area.



Figure 4. Waialua coastline as seen from Keālia Trail in Keālia Ahupua‘a, view to the north.



Figure 5. Aerial view of Anahulu River and Hale‘iwa Harbor with Loko ‘Ea fishpond to the right (USACE n.d.).



Figure 6. Keawa'ula Beach with view of Wai'anae coastline; view to southeast.

THE SOUTHWEST PORTION OF THE STUDY AREA

The southwest portion of the study area includes portions of the Wai'anae and the entirety of 'Ewa *moku* (Figure 7). Those *ahupua'a* within Wai'anae that are included in this portion of the study area are (from north to south), 'Ōhikilolo, Kea'au, Mākaha, Wai'anae, Lualualei, and Nānākuli; all, except for 'Ōhikilolo, border the leeward side of the Wai'anae Mountain Range (see Figure 7). Wai'anae is composed of relatively rocky, arid coastal lands and is renowned for its ocean resources, particularly deep-sea fishing. The shoreline consists mostly of sandy beaches with some areas of fringing limestone reefs (i.e. Mā'ili Point; Figure 8). The waters off leeward O'ahu are known to have strong currents throughout the year (Hawaiian Lifeguard Association 2019). Pōka'i Bay within Wai'anae Ahupua'a is a marine managed area where commercial aquarium collection is and will remain prohibited under the proposed action. Boating access in this part of the study area is restricted to the Wai'anae Boat Harbor and short term anchoring is permitted at Pōka'i Bay (Figure 8). Streams in this part of the study area include Mākaha and 'Eku within Mākaha Ahupua'a; Kaupuni, Mā'ili'ili, and Ma'ipalaoa in Wai'anae Ahupua'a; and Ulehawa in Nānākuli Ahupua'a.

The *moku* of 'Ewa includes (from west to east) the *ahupua'a* of Honouliuli, Hō'ae'ae, Waikele, Waipi'o, Waiawa, Mānana, Waimano, Waiāu, Waimalu, Kalauao, 'Aiea, and Hālawa (see Figure 7). 'Ewa also encompasses Ke-awa-lau-o-Pu'uloa (Figure 10), commonly known as Pearl Harbor, and the islets of Laulaunui and Moku'ume'ume (also known as Ford Island). The name Pearl Harbor became widespread due to the prevalence of *pipi* or oysters (Pukui et al. 1974:182). In addition to its deep bays, the area was favorable for the construction of *loko i'a* (fishponds) and fish traps for deep-sea fish, many of which have since been destroyed. Honouliuli is the only *ahupua'a* in the 'Ewa *moku* where there are areas of white, sandy beaches. The area known as Ko 'Olina in the western portion of Honouliuli includes Kalaeloa Harbor (also known as Barber's Point Harbor), Malakole Harbor, and resorts with man-made lagoons (Figure 11). Additional boating access in southern 'Ewa is limited to three federally managed facilities: Iroquois Point Small Boat Harbor, Rainbow Bay Marina and Small Boat Harbor, and Hickam Harbor and Small Boat Harbor and the privately owned Ko 'Olina Marine (see Figures 7 and 11). The 12-mile coastline consists of a shallow fringing limestone reef (Figure 12) that offers a variety of marine resources. Freshwater streams in this *moku* include Honouliuli, Waikele, Waiawa, Waimalu, 'Aiea, and Hālawa, all of which flow through their namesake *ahupua'a*.

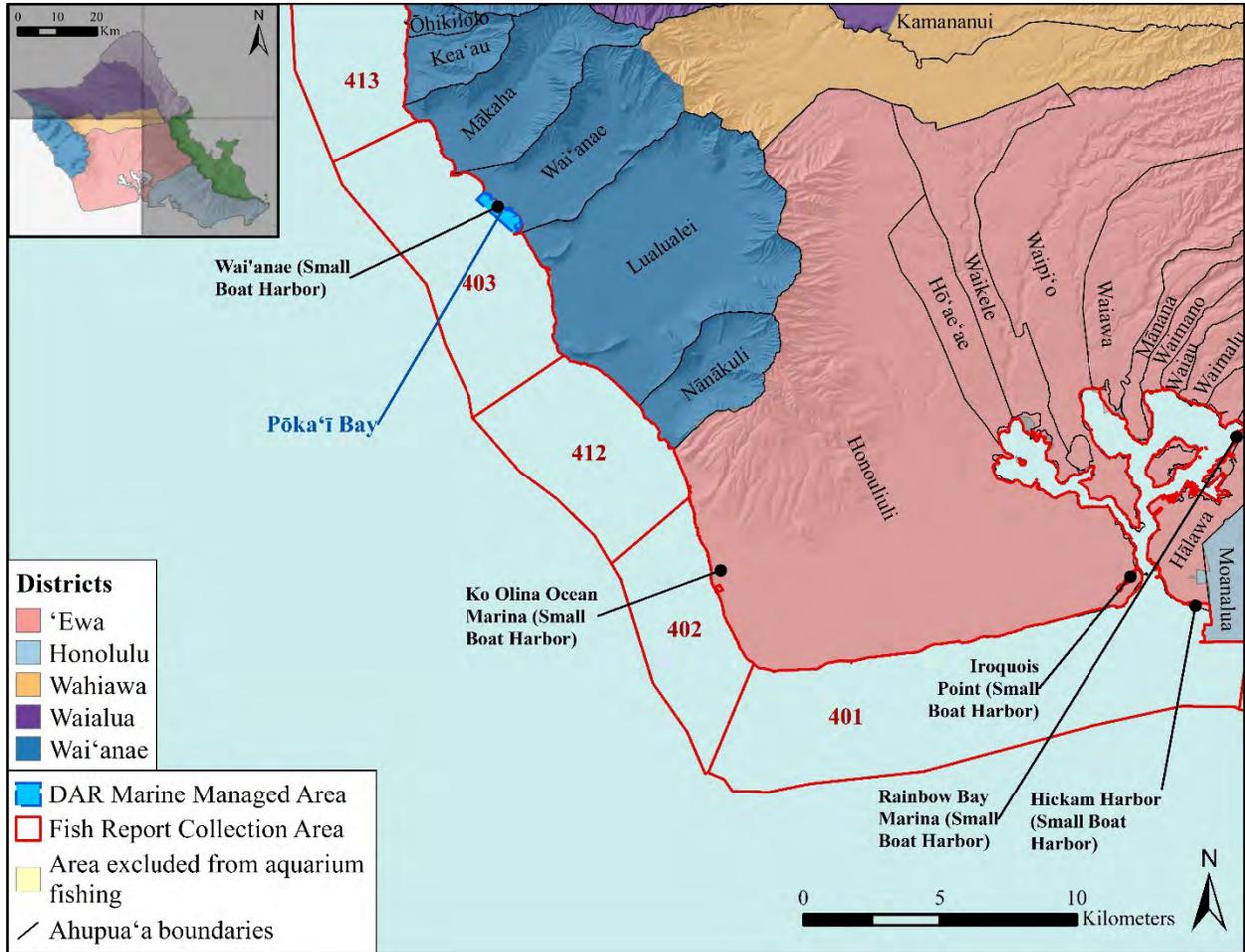


Figure 7. Detail of the southwest portion of the current study area.



Figure 8. A portion of the Wai'anae coastline from Mā'ili Point, view to northeast (UHM SOEST 2005).

2. Study Area Description



Figure 9. Aerial of Wai'anae Boat Harbor (left) and a portion of Pōka'i Bay (right), view to the northeast (UHM SOEST 2005).



Figure 10. A portion of the 'Ewa coastline with Ke-awa-lau-o-Pu'uloa in the background, view to the north (UHM SOEST 2005).



Figure 11. Man-made lagoons and Ko 'Olina harbor in the western portion of Honouliuli Ahupua'a (UHM SOEST 2005).



Figure 12. Honouliuli shoreline near Kalaeloa in 'Ewa Moku; view to southeast (Lee 2017).

THE SOUTHEAST PORTION OF THE STUDY AREA

The southeast portion of the study area includes the *moku* of Honolulu and the majority of Ko‘olaupoko. Included in the *moku* of Honolulu are the *ahupua‘a* (from west to east) of Moanalua, Kahauiki, Kalihi, Kapālama, Honolulu, Waikīkī, and Waimānalo, all of which extends along the leeward side of the Ko‘olau Mountain Range (Figure 13). The area spanning from Moanalua to Honolulu consists of industrial parks and federally protected areas such as the airport and Honolulu Harbor (Figure 14). Access to the shoreline in this area is limited and has been extensively been modified throughout the years to accommodate the industrial expansion (i.e. dredging of coral reefs and the creation of artificial islands). Within Moanalua Ahupua‘a in Ke‘ehi Lagoon—an area heavily used for canoe paddling—are several islets, including Mokuoeho, Kahaka‘aulana, and Mokauea (Figure 15). Adjacent to Mokauea and Honolulu Harbor is Sand Island (see Figure 14), which has a coarse, sandy beach on the southern shoreline that is favored by fishers. Streams in the *moku* of Honolulu include: Moanalua, Kalihi, Kapālama, which flow thru their namesake *ahupua‘a* and Waolani, Nu‘uanu, Pauoa, Mānoa, and Wai‘alae that flow through Honolulu Ahupua‘a. Boating access within this part of Honolulu is at Ke‘ehi Harbor/Lagoon, Sand Island Launch Ramp, Honolulu Harbor, Kewalo Basin Small Boat Harbor, Ala Wai Small Boat Harbor, and Waikīkī Beach Waters anchorage (see Figure 13).

To the east, in Honolulu Ahupua‘a, Kaka‘ako Waterfront Park allows access for surfers and fishers, and is comprised of a rocky shoreline and deep channels of water such as Kewalo Basin (Figure 16). Ala Moana Beach Park (see Figure 16) is located on former marshland where Honolulu Ahupua‘a borders Waikīkī Ahupua‘a. Imported fill was used to create the sandy shoreline that faces south while the eastern shoreline of the park faces Kahanamoku Lagoon and the Ala Wai Boat Harbor (see Figure 16). Today, Ala Moana Beach Park is considered one of the most popular parks in Honolulu and attracts fishers, divers, surfers, canoe paddlers, swimmers, recreationists, and visitors (Clark 2004; Department of Parks and Recreation 2019). Some of the most popular southshore surf breaks are located outside of the reef that fronts the park (Clark 2004). The majority of the iconic Waikīkī coastline consists of white sandy beaches that attract surfers, fishers, and tourists. With the exception of the rugged Kūpikipiki‘ō also known as Black Point, the southeastern portion of Waikīkī Ahupua‘a, from Lē‘ahi (Diamond Head) to Maunalua Bay Beach Park, contains pockets of sandy beaches along with sections of mud flats fronting the shoreline (Figure 8). Adjacent to Maunalua Bay in Waimānalo Ahupua‘a, Kuapā Pond was once a fully-functioning *loko i‘a*, and has since been filled to create artificial islands for residential development and a marina (Pukui et al. 1974:119). Boating access within this part of the study area is at Maunalua Bay Launch Ramp, Hawai‘i Kai Marine and Small Boat Harbor, and at Hancock Landing and Launch Ramp (see Figure 13).

Within Waimanalo Ahupua‘a, the southeastern shoreline that faces Kūi Channel consists of steep rocky terrain. Such inaccessible vertical cliffs stretch eastward from Hawai‘i Kai, around Kaihuokapua‘a to Pai‘olu‘olu Point before opening up to Hanauma Bay MLC (Figure 18). The east-facing shore of this protected bay hosts shallow reefs that are ideal for snorkeling. The remainder of the Waimānalo Ahupua‘a shoreline (to the northeast of Hanauma Bay) faces the Kaiwi Channel, which lies between O‘ahu and the island of Moloka‘i and is considered one of the toughest channels to navigate due to strong winds, currents, and large swells. (Hawaiian Lifeguard Association 2019).

The nearshore waters of the following *ahupua‘a* within Ko‘olaupoko are subject to aquarium collection and are thus included as part of the current study: Kāne‘ohe, He‘eia, Kahalu‘u, Waihe‘e, Waiāhole, Waikāne, Hakipu‘u, and the south-facing section of nearshore waters in Kualoa 1 Ahupua‘a (see Figure 13). All upper regions of these *ahupua‘a* extend along the windward side of the Ko‘olau Mountain Range while the *makai* areas touch the shoreline with the exception of He‘eia, which extends across Kāne‘ohe Bay and includes the western shores of Mōkapu Peninsula. In the middle of the semi-closed Kāne‘ohe Bay between Kahalu‘u and He‘eia *ahupua‘a* at low tide, an approximately three-acre sandbar traditionally known as Ahu O Laka or “altar of Laka” can be seen that attracts locals, visitors, fishers, and divers (Pukui et al. 1974:6). This sand bar is part of the expansive barrier reef that protects the nearshore environment of Kāne‘ohe Bay (Jokiel 1991). The sheltered conditions created by the barrier reef and the lagoon fringing reefs coupled ample freshwater input made this area an exceptional location for the construction of *loko i‘a*. As such historically, this part of O‘ahu was home to an estimated thirty *loko i‘a*, however, over the years many of these fishponds fell into disrepair or were filled in to accommodate the urban expansion (ibid.). Today, there are approximately twelve recognizable *loko i‘a* (Figure 8) within the area (ibid.). The He‘eia Kea Wharf is a DAR MMA where aquarium collection is prohibited. Streams within the *moku* of Ko‘olaupoko include Kāne‘ohe, Kahalu‘u, He‘eia, and Waiāhole, which flow through their respective *ahupua‘a*, as well as Puha and Waimānalo located in Waimānalo Ahupua‘a, and Kawa, Kea‘ahala, and Ka‘alaea in Kāne‘ohe Ahupua‘a. Boating access within this part of the study area is limited to the Kāne‘ohe Small Boat Harbor and the Makani Kai Small Boat Harbor (see Figure 13).

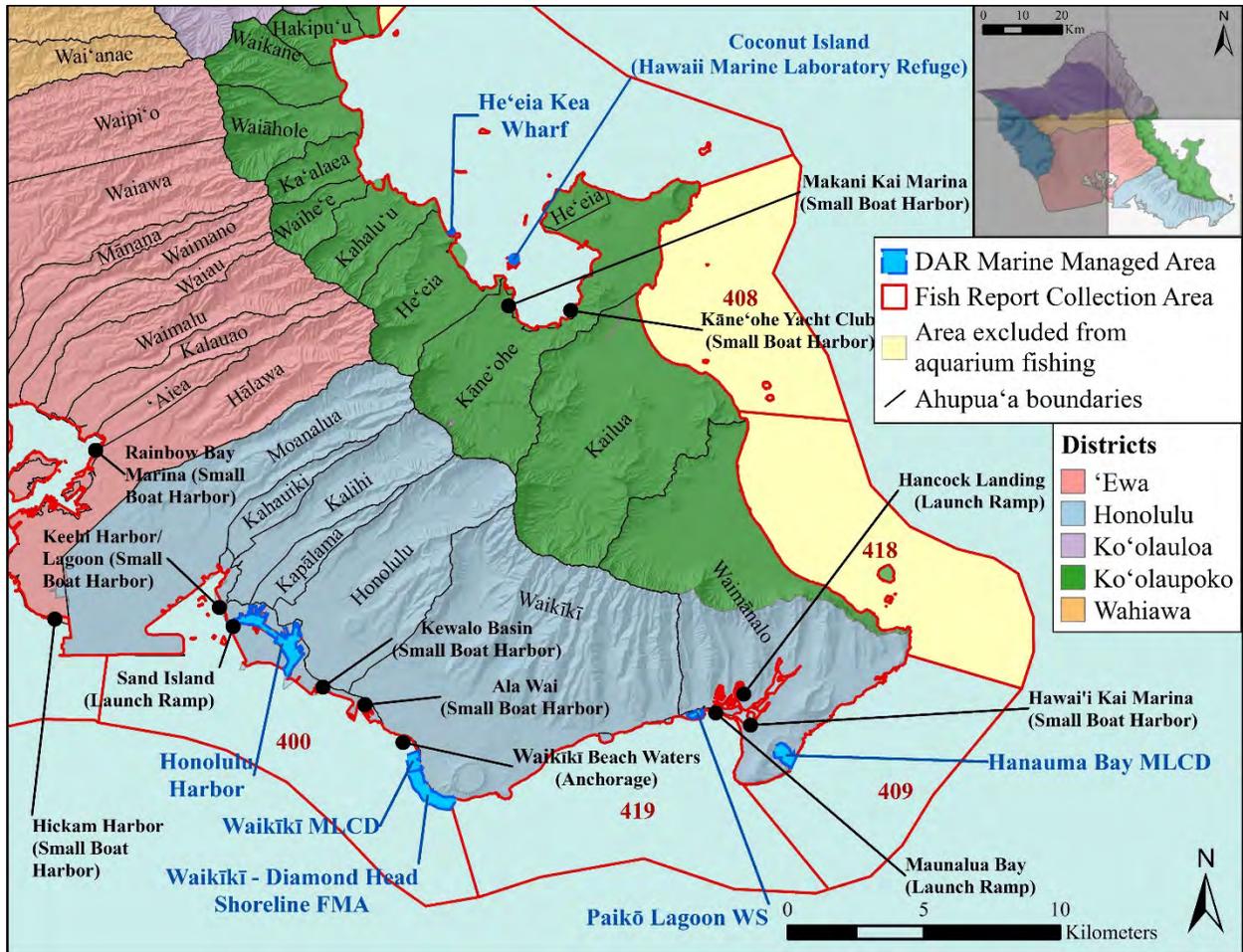


Figure 13. Detail of southeast portion of study area.



Figure 14. Aerial of Honolulu Harbor and Sand Island (right), view to the southeast (CruiseMapper n.d.).

2. Study Area Description



Figure 15. Ke'ehi Lagoon in Moanalua Ahupua'a, view to the northeast (UHM SOEST 2005).



Figure 16. Aerial showing Kewalo Basin (left) and Ala Moana Beach Park, and a portion of the Ala Wai Boat Harbor (right); view to the northeast (UHM SOEST 2005).



Figure 17. Aerial showing the southeast portion of Waikiki Ahupua'a with Kūpikipiki'ō (Black Point), view to the southeast (UHM SOEST 2005).



Figure 18. Waimanalo Ahupua'a coastline with Hanauma Bay MLCD (right), view to the east.

2. Study Area Description



Figure 19. Aerial showing Mokuolo'e (Coconut Island Hawai'i Marine Laboratory Refuge) and Kāne'ohe Bay, view to the west (UHM SOEST 2005).



Figure 20. Aerial of the *loko i'a* of He'eia in He'eia Ahupua'a, Ko'olaupoko, view to the west (UHM SOEST 2005).

THE NORTHEAST PORTION OF THE STUDY AREA

The northeast portion of the current study area is within northernmost portion of the *moku* of Ko‘olaupoko which includes the *ahupua‘a* extending from Waikāne to Kualoa (Figure 21). The area spanning from Hakipu‘u to Kualoa (Figure 22) consists of sandy beaches and coral reefs ideal for fishing, diving, swimming, and aquaculture. The majority of this shoreline is shallow, however, a portion of the shoreline fronting Hakipu‘u drops abruptly into deeper channels in Kāne‘ohe Bay (Clark 2004:79-80). The coastline is generally calm within Kāne‘ohe Bay offering protection from offshore winds and currents. The off-shore islet adjacent to Kualoa 1 Ahupua‘a within Kāne‘ohe Bay is called Mokoli‘i (“little mo‘o;” see Figure 22) but because of its conical shape, is more commonly referred to as Chinaman’s Hat (Pukui et al. 1974:154). Mokoli‘i also lends its name to a traditional fish pond located along Kāne‘ohe Bay within Kualoa Ahupua‘a (Figure 23).

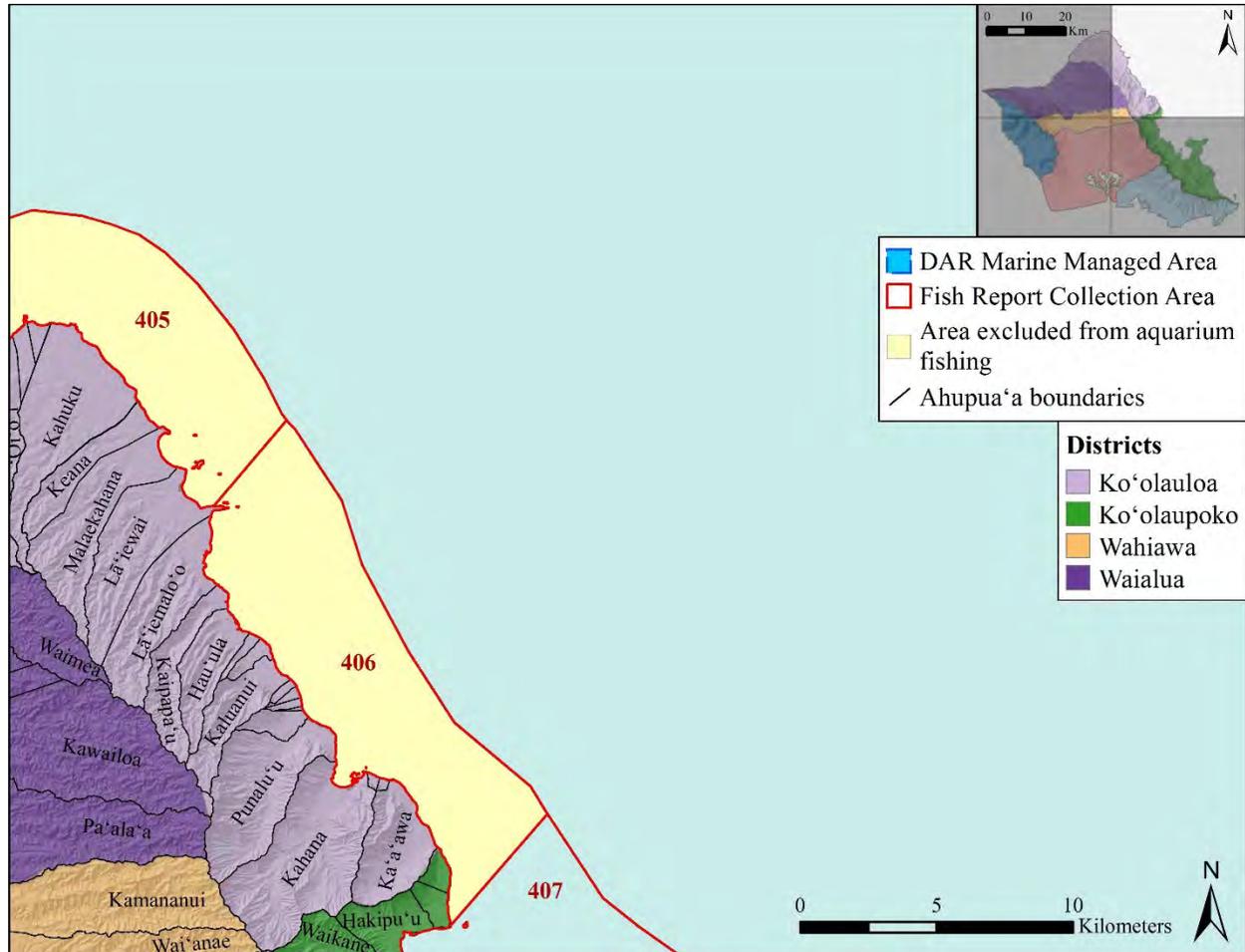


Figure 21. Detail of northeast portion of the current study area.

2. Study Area Description



Figure 22. Aerial of the northernmost portion of Ko'olaupoko showing Hakipu'u, Kualoa, and Mokoli'i (right), view to the northwest.



Figure 23. Mokoli'i Loko I'a (foreground) and Kāne'ōhe Bay (background); view to the south.

THE TOP 20 COLLECTED AQUARIUM FISH SPECIES LIST

According to the FEA prepared by PIJAC, “since 2000, approximately 238 fish species have been collected under Aquarium Permits in O‘ahu waters; however, some of these included those species reported as a general group” (PIJAC 2018:30). PIJAC continues thusly, “only 161 species were reported by enough permits (>2 permits reporting from each collection area during each year of collection) to determine total numbers of individuals collected” and add that “collection areas with less than three permits reporting fall under the DAR confidentiality statute” and do not release their counts publicly (2018:30). Since 2010, NOAA fisheries has operated the Pacific Reef Assessment and Monitoring Program (Pacific RAMP), which utilizes standardized survey methods to monitor the health of coral reef habitats and their inhabitants (Pacific Islands Fisheries Science Center 2019). The Pacific Islands Fisheries Science Center (PIFSC) has reported findings from reef fish population surveys conducted as part of the Coral Reef Ecosystem Program (CREP) in the waters of O‘ahu in 2010, 2012, 2013, 2015, and 2016 (PIJAC 2018). Despite limitations that may underestimate some aquarium fish species populations, PIJAC used the CREP data as the basis for assessing impacts in the preparation of the 2018 FEA.

The Top 20 Collected Aquarium Fish Species List (Top 20 Species, hereafter) as reported by PIJAC (2018) accounts for 80% of the fish collected from the nearshore waters of O‘ahu for the commercial aquarium trade between 2000 and 2017 (Table 2). The top three species make up 45.3% of the overall fish collection: Yellow Tang—273,356 individuals collected; Kole—175,425 individuals collected; and the Potter’s Angelfish—138,669 individuals collected.

Table 2. Top 20 Collected Aquarium Fish Species of O‘ahu per PIJAC (2018).

<i>Scientific Name</i>	<i>Common Name</i>
<i>Zebrasoma flavescens</i>	yellow tang
<i>Ctenochaetus strigosus</i>	goldring surgeonfish
<i>Centropyge potteri</i>	Potter’s angelfish
<i>Naso lituratus</i>	orangespine unicornfish
<i>Halichoeres ornatissimus</i>	ornate wrasse
<i>Cirrhilabrus jordani</i>	flame wrasse
<i>Pseudocheilinus tetrataenia</i>	fourlined wrasse
<i>Canthigaster jactator</i>	whitespotted Toby
<i>Forcipiger flavissimus</i>	forcepsfish
<i>Chaetodon miliaris</i>	milletseed butterflyfish
<i>Macropharyngodon geoffroy</i>	shortnose wrasse
<i>Pseudanthias bicolor</i>	Bicolor Anthias
<i>Acanthurus olivaceus</i>	orangeband surgeonfish
<i>Zanclus cornutus</i>	moorish idol
<i>Chaetodon multicolor</i>	multiband butterflyfish
<i>Anampses chrysocephalus</i>	psychedelic wrasse
<i>Pseudocheilinus octotaenia</i>	eightline wrasse
<i>Canthigaster coronate</i>	Crowned puffer
<i>Thalassoma duperrey</i>	saddle wrasse
<i>Centropyge fisheri</i>	Fisher’s angelfish

In 2015, DLNR prepared the Hawai‘i’s State Wildlife Action Plan or SWAP, in which various marine species were identified as Species of Greatest Conservation Need (SGCN); however, these species “are not threatened, endangered, or otherwise legislatively protected species” (PIJAC 2018:27). Per PIJAC (2018), the 2015 SWAP proposed conservation actions such as habitat restoration, fishing regulations, and education, along with population surveys, and research to ensure the SCGN species’ conservation and sustainability. In an effort to protect wildlife species endemic to Hawai‘i, DLNR and DAR added endemic aquatic fishes and invertebrates to the SCGN list and “nearly 25% of fish, 20% of mollusks, 18% of algae, and 20% of the corals are considered endemic to Hawai‘i and listed as SCGN species” (ibid.:27). Three SCGN species have been reported as being collected by commercial aquarium fishers on O‘ahu: Psychedelic Wrasse, Fisher’s Angelfish, and Tinker’s Butterflyfish. Psychedelic Wrasse and Fisher’s Angelfish are both among the Top 20 Species, ranking as the sixteenth and twentieth most collected species, respectively (see Table 2).

In addition to fish, a small portion of invertebrates are reported under Aquarium Permits (1.6%). There are approximately 4,100 species of known marine invertebrates found in Hawaiian waters. Between 2000 to 2017, an aggregate number of approximately sixty-six invertebrate species were collected under Aquarium Permits for O‘ahu. Only forty-four species were reported by enough permits in a collection area to determine individuals collected (under DAR’s confidentiality statute). The top three invertebrates collected include the hermit crab (1,505,061 individuals from 2000-2017), zebra hermit crab (694,565 individuals from 2000-2017), and the feather duster worm (465,102 individuals from 2000-2017); but are not included in the Top 20 Species list.

3. BACKGROUND

CULTURE-HISTORICAL CONTEXT

To understand the culture-historical context of the vast landscape that comprises the current study area, and the mores and traditions that developed as the Hawaiian people, or Kānaka Maoli (lit. the true people) interacted with their natural environment, the research presented below was conducted within the epistemological framework of Hawaiian culture. This was achieved by using indigenous narratives as a source, whenever possible. This chapter provides a comprehensive background discussion to inform a better understanding of the cultural significance of the area and the Top 20 Species, as well as establish an analytical basis for the assessment of any potential cultural impacts from the proposed issuance of commercial aquarium permits on O‘ahu.

The chronological summary presented below begins with the settlement of the Hawaiian Islands and a discussion on the development of the *ahupua‘a* system and its marine components. This is followed by a presentation of legendary accounts that focuses on the oceanic origins and cosmogony of Kānaka Maoli, and a discussion of traditional marine resource management strategies and fishing practices. A discussion of the customary uses of the Top 20 Species is also provided. A summary of accounts from the Historic Period, which include the arrival of westerners in 1779 and the *Māhele ‘Āina* of 1848 and their impacts upon traditional marine resource procurement and management practices is also presented. The chapter concludes with a discussion of the study area during the 20th century that includes the history of commercial aquarium fishing and a brief summary of actions that triggered the preparation of the current document.

SETTLEMENT OF THE HAWAIIAN ISLANDS

While the question of the timing of the first settlement of Hawai‘i by Polynesians remains unanswered, several theories have been offered that derive from various sources of information (i.e., archaeological, genealogical, mythological, oral-historical, and radiometric). However, none of these theories is today universally accepted because there is no archaeological evidence to support the proposed timing for the initial settlement, or colonization stage, of island occupation. More recently, with advances in palynology and radiocarbon dating techniques, Kirch (2011) and others (Athens et al. 2014; Wilmshurst et al. 2011) have convincingly argued that Polynesians arrived in the Hawaiian Islands sometime between A.D. 1000 and A.D. 1200, and expanded rapidly thereafter (c.f., Kirch 2011).

The initial settlement of Hawai‘i is believed to have originated from the southern Marquesas Islands (Emory in Tatar 1982). In these early times, Hawai‘i’s inhabitants were primarily engaged in subsistence level agriculture and fishing (Handy et al. 1991). This was a period of great exploitation and environmental modification, when early Hawaiian farmers developed new subsistence strategies by adapting their familiar patterns and traditional tools to their new environment (Kirch 1985; Pogue 1978). Their ancient and ingrained philosophy of life tied them to their environment and kept order; which was further assured by the conical clan principle of genealogical seniority (Kirch 1984). According to Fornander (1969), the Hawaiians brought from their homeland certain Polynesian customs and beliefs: the major gods Kāne, Kū, and Lono; the *kapu* system of law and order; cities of refuge; the *‘aumakua* concept; and the concept of *mana*.

Initial permanent settlements in the islands were established at sheltered bays with access to fresh water and deep-sea fisheries. The nearshore fisheries and coastal fishponds, which were enriched by nutrients carried in the fresh water, also offered opportunities for resource extraction and stewardship. Communities shared extended familial relations and there was an occupational focus on the collection of marine resources. Clusters of houses were found in these coastal areas where, over time, agricultural production first became established. Over a period of several centuries the areas with the richest natural resources became populated and perhaps even crowded, and inland elevations began to be used for agriculture and some habitation. Meanwhile, an increasing separation of the chiefly class from the common people began to emerge. As the environment reached its maximum carrying capacity, the result was social stress, hostility, and war between neighboring groups (Kirch 1985). Soon, large areas of the Hawaiian Islands were controlled by a few powerful chiefs.

As time passed, a uniquely Hawaiian culture developed. The portable artifacts found in archaeological sites of this period reflect not only an evolution of the traditional tools, but some distinctly Hawaiian inventions. The adze (*ko'i*) evolved from the typical Polynesian variations of plano-convex, trapezoidal, and reverse-triangular cross-section to a standard Hawaiian rectangular/quadrangular-tanged adze. A few areas in Hawai'i produced quality basalt for adze production, such as Mauna Kea on the island of Hawai'i. The two-piece fishhook and the octopus-lure breadloaf sinker are Hawaiian inventions of this period, as are *'ulu maika* stones and *lei niho palaoa*. The latter was a status item worn by those of high rank, indicating a trend toward greater status differentiation (Kirch 1985).

As the population continued to expand, so did social stratification. The Expansion Period is characterized by major socioeconomic changes, and intensive land modification. By this time, most of the ecologically favorable zones of the windward and coastal regions of all the major Hawaiian Islands were settled, and the more marginal leeward areas were being developed. The greatest population growth occurred during the Expansion Period; for it was during the Expansion Period that a second major migration settled in Hawai'i, this time from Tahiti in the Society Islands. Rosendahl (1972) has proposed that settlement at this time was related to seasonal, recurrent occupations in which coastal sites were occupied in the summer to exploit marine resources, and upland sites were occupied during the winter months with a focus on agriculture. An increasing reliance on agricultural products may have caused a shift in social networks as well; as Hommon (1976) argues, kinship links between coastal settlements disintegrated as those links within the *mauka-makai* settlements expanded to accommodate the exchange of agricultural products for marine resources. This shift is believed to have resulted in the establishment of the *ahupua'a* system sometime during the A.D. 1400s (Kirch 1985), which added another component to an already well-stratified society. The implications of this model include a shift in residential patterns from seasonal, temporary occupation, to permanent dispersed occupation of both coastal and upland areas.

According to Cordy (2002), during the 14th century the districts of 'Ewa, Ko'olaupoko, and Kona (present-day Honolulu District) emerged as the main political centers on O'ahu, however by the 18th century, these political centers shifted to the Kona District. By this time, the island of O'ahu was divided into six traditional districts or *moku*: 'Ewa, Wai'anae, Waialua, Ko'olaupoko and Kona (Figure 24).

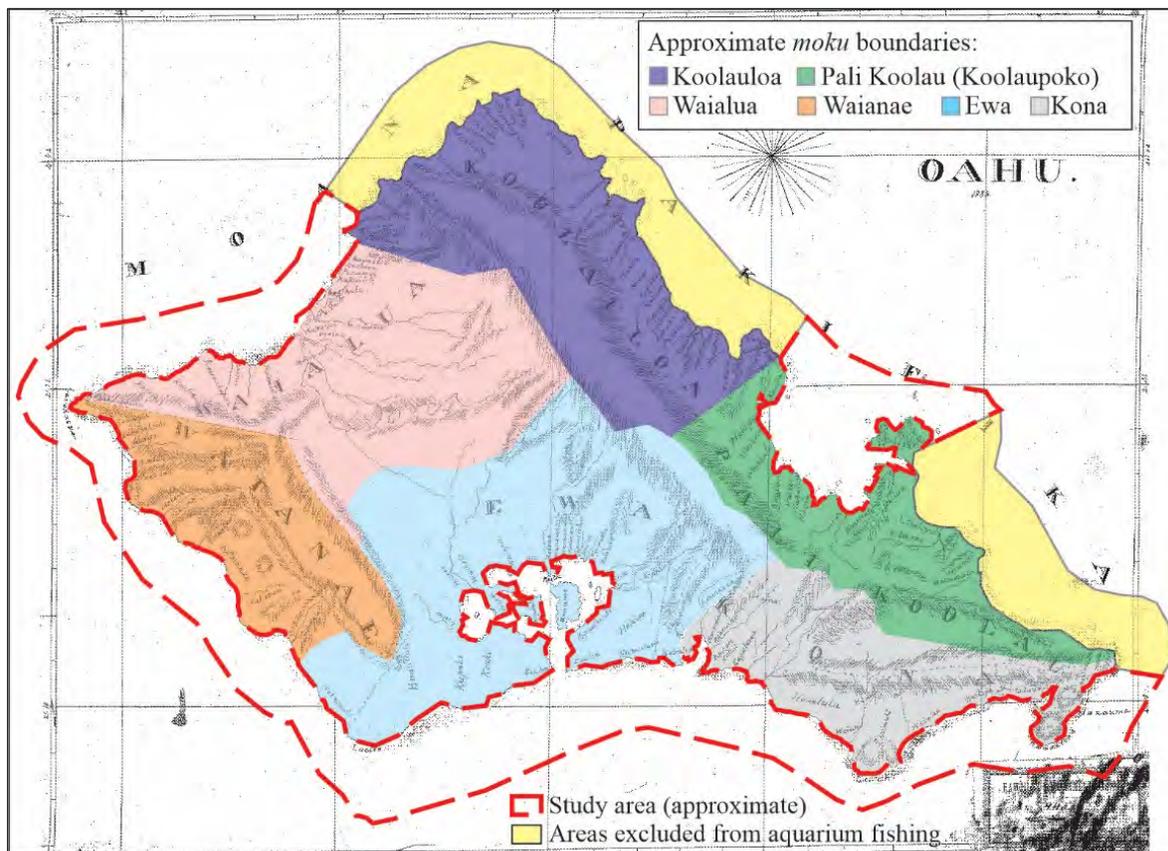


Figure 24. Hawaii Registered Map 455, showing the current study area relative to the traditional *moku* of O'ahu, ca. 1883.

As previously mentioned, the current study area comprises the coastal waters and up to three nautical miles as measured from the shores of *ahupua'a* that lie within the traditional *moku* of 'Ewa, Wai'anae, Waialua, Kona (present-day Honolulu), eastern Ko'olaupoko, and a sliver of westernmost Ko'olauloa (see Figure 24). *Moku* were further divided into distinct land units known as *ahupua'a*. The development of this vital component of traditional Hawaiian socio-economic structure and resource management is further discussed in the following section.

DEVELOPMENT OF THE *AHUPUA'A* SYSTEM AND ACCESS TO NATURAL RESOURCES

During the early 14th century, Māweke, “the nominal ruling chief of O'ahu” (Kirch 2010:84) divided the lands of O'ahu into three district-based polities whose rule he trusted to his three sons; Muli'eleali'i ruled the Kona district, Keaunui ruled the 'Ewa district (including Wai'anae, and Waialua), and Kalehenui ruled the Ko'olau district. Per Kirch, “Each of these regions was centered around an important core of irrigation lands, and each also incorporated fisheries and dryland farming areas” (2011:88). Māweke's eldest son Muli'elai'i also had three sons and upon Muli'elali'i's death, the descendants of his eldest son Kumuhonua inherited control of the 'Ewa lands, Kalehenui's descendants inherited the Ko'olau region, and Mo'ikeha's descendants ruled over Kona district (Kirch 2011). According to Cordy, the Māweke-Kumuhonua line centered in the 'Ewa polity soon dominated over the rest of the island, and “oral accounts indicate that during the A.D. 1400s, the island was unified into one polity” (2002:24); under the rule of La'akona (of the Māweke-Kumuhonua line) from whom descended the *Mō'i* (kings) of O'ahu (ibid.). Cordy reports that the unification of the island of O'ahu under a single ruler resulted in the establishment of, “at least three administrative levels of chiefs. . . the ruler, high chiefs over one or more districts (or over multiple communities), and local chiefs” (2002:25). Cordy explains the early development of the *ahupua'a* system thusly,

It is likely that junior kinsmen of the ruler and high chiefs were appointed over community lands as local chiefs to provision overlords with food, status items, weapons, etc. Most researchers believe that the appointment of such outside chiefs would have replaced local lineage chiefs, led to the breakdown of the local kin groups' corporate control of community lands, and ended commoner kin ties to the ruling chiefs (Earle 1978; Green 1980; Hommon 1976, 1986, 1992). Some suggest that the resulting land-holding and local political system, termed the *ahupua'a* system, became established in the A.D. 1400s-1500s (2002:25).

Kirch writes that between roughly AD 1410 and 1570, “O'ahu was the center of cultural innovation” (2010:88) in the Hawaiian Islands. In his summary of political developments of the 15th and 16th centuries in Hawai'i, Kirch (2010), credits the O'ahu *ali'i* Haka, of the Māweke-Kumuhonua line, who ruled between AD 1470 and 1490 as the first to unify the island under one rule; although he did so by way of aggression and was later killed by his own forces during a rebellion. After Haka, another descendent of Māweke, Mā'ilikūkahī was chosen as *ali'i nui* (paramount chief) of O'ahu and moved the seat of power from 'Ewa to Waikīkī. Kirch then goes on to quote Kamakau's account of how Mā'ilikūkahī divided the lands of O'ahu and established the *ahupua'a* system as follows:

When the kingdom passed to Mā'ilikūkahī, the land divisions were in a state of confusion; the *ahupua'a*, the *kū* [*'ili kūpono*], the *'ili āina*, the *mo'o āina*, the *pauku āina*, and the *kīhāpai* were not clearly defined, Therefore Mā'ilikūkahī ordered the chiefs, *ali'i*, the lesser chiefs, *kaukau ali'i*, and warrior chiefs, *pū'ali ali'i*, and the overssers, *lunas* to divide all of O'ahu into *moku* and *ahupua'a*, *'ili kūpono*, *'ili āina*, and *mo'o āina*. There were six districts, *moku*, and six district chiefs, *ali'i nui 'ai moku*. . . (Kirch 2010:84-90).

As previously mentioned, the six *moku*—Kona, 'Ewa, Wai'anae, Waialua, Ko'olauloa, and Ko'olaupoko—were further divided into eighty-six *ahupua'a* and smaller units.

An *ahupua'a* is a traditional land division that typically incorporated all of the eco-zones from the mountains to the sea, and for several hundred yards beyond the shore, assuring a diverse subsistence resource base for its residents, and a source of taxation (tribute) for the *ali'i* (Hommon 1986). The size and shape of *ahupua'a* varied greatly because their boundaries were generally defined by natural topography (i.e. hills, ridgelines, gulches, craters, etc.), as well as the natural resources that occurred within a given area (Cannelora 1974; Kamakau 1976; Lyons 1875). In summarizing “the way *ka po'e kahiko* [the ancient people] named the land from mountain peak to sea” found within a given *ahupua'a*, Hawaiian scholar and historian, Samuel Kamakau writes:

Here are some names for [the zones of] the mountains—the *mauna* or *kuahiwi*. A mountain is called a *kuahiwi*, but *mauna* is the overall term for the whole mountain, and there are many names applied to one, according to its delineations (*'ano*). The part directly in back and in front of the summit proper is called the *kuamauna*, mountaintop; below the *kuamauna* is the *kuahea*, and *makai* of the

kuahea is the *kuahiwi* proper. This is where small trees begin to grow; it is the *wao nahele*. *Makai* of this region the trees are tall, and this is the *wao lipo*. *Makai* of the *wao lipo* is the *wao 'eiwa*, and *makai* of that the *wao ma'ukele*. *Makai* of the *wao ma'ukele* is the *wao akua*, and *makai* of there is the *wao kanaka*, the area that people cultivate. *Makai* of the *wao kanaka* is the *'ama'u*, fern belt, and *makai* of the *'ama'u* the *'apa'a*, grasslands. A solitary group of trees is a *moku la'au* (a "stand" of trees) or an *ulu la'au*, grove. Thickets that extend to the *kuahiwi* are *ulunahēle*, wild growth. An area where *koa* trees suitable for canoes (*koa wa'a*) grow is a *wao koa* and *mauka* of there is a *wao la'au*, timber land. These are dry forest growths from the *'apa'a* up to the *kuahiwi*. The places that are "spongy" (*naele*) are found in the *wao ma'ukele*, the wet forest. *Makai* of the *'apa'a* are the *pahē'e* [pili grass] and *'ilima* growths and *makai* of them the *kula*, open country, and the *'apoho* hollows near to the habitations of men. Then comes the *kahakai*, coast, the *kahaone*, sandy beach, and the *kalawa*, the curve of the seashore—right down to the *'ae kai*, the water's edge. . . (1976:8-9)

Entire *ahupua'a* were generally under the jurisdiction of appointed *konohiki* or lesser chief landlords, who oversaw and coordinated stewardship of an area's natural resources and answered to an *ali'i-'ai-ahupua'a* (chief who controlled the *ahupua'a* resources (Lam 1985). The *ali'i-'ai-ahupua'a* in turn answered to an *ali'i 'ai moku* (chief who claimed the abundance of the entire district) (Malo 1951). Thus, *ahupua'a* resources supported not only the *maka'āinana* (*lit.* people that attend the land) and *'ohana* (families) who lived on the land, but also contributed to the support of the royal community of regional and/or island kingdoms. This form of district subdividing was integral to Hawaiian life and was the product of strictly adhered to resource management planning. In this system, the land provided fruits and vegetables and some meat in the diet, and the ocean provided a wealth of protein resources. Also, in communities with long-term royal residents, divisions of labor (with specialists in various occupations on land and in procurement of marine resources) emerged.

Although *moku* comprised multiple *ahupua'a*, they were considered geographical subdivisions with no explicit reference to rights in the land (Cannelora 1974). Collectively, *ali'i*, regardless of their rank, held a vested responsibility and were obligated to ensure "the beneficial use of the land for all of the people" (MacKenzie 1991:173). This complex system evolved well before the Western concepts of private property and codified laws were introduced to the Hawaiian Islands. Place-based knowledge developed over the centuries and detailed information of an area's natural cycles and resources was passed down intergenerationally through direct teaching and experience, and ultimately became ingrained and inherently understood. This knowledge formed the basis for decisions pertaining to the use and management of natural resources and resulted in the development of sustainable approaches that met the needs of a growing Precontact population.

Many *ahupua'a* were further divided into smaller land units termed *'ili* and *'ili kūpono* (often shortened to *'ili kū*) and cultivated patches known as *kō'ele*, *māla*, and *kīhāpai*, generally oriented in a *mauka-makai* direction, and often marked by stone alignments (*kuaiwi*) (Beamer 2014; Lyons 1875). *'Ili* were created for the convenience of the *ahupua'a* chief, and they served as the basic land unit in which the *hoa'āina* (native tenants) made a living; these land units were often retained by specific *'ohana* for long periods of time (Jokieli et al. 2011). As the *'ili* themselves were typically passed down in families, so too were the *kuleana* (responsibilities, privileges) that were associated with them. The right to use and cultivate *'ili* was maintained within the *'ohana*, regardless of any change in title of the *ahupua'a* chief (Handy et al. 1991). Malo (1951), recorded several types of *'ili*, including the *'ili pa'a*, a single intact parcel, and the *'ili lele*, a discontinuous parcel dispersed across an area. Whether dispersed or wholly intact, the *'ili* land division required a cross section of the available resources, and for the *hoa'āina*, this generally included access to agriculturally fertile lands, and the coastal fisheries. While much of these same resource principles applied to another type of *'ili*, the *'ili kūpono*, these land units were politically independent of the *ahupua'a* chief. This *'ili kūpono* designation was often applied to specific areas containing resources that were highly valued by the ruling chiefs, such as fishponds (Handy et al. 1991). As long as sufficient tribute was offered and *kapu* (restrictions) were observed, the people who lived in a given *ahupua'a* had access to most of the resources from the mountains to the ocean. These access rights were almost uniformly tied to residency of a particular land, and earned as a result of taking responsibility for stewardship of the natural environment and supplying the needs of the *ali'i* (see Malo 1951:63-67).

The *hoa'āina* and *'ohana* who lived on the land had rights to gather forest and marine resources for subsistence and for tribute (Jokieli et al. 2011; MacKenzie 1991). As part of these rights, the residents were also required to supply resources and labor to support the royal community of regional and/or island-wide kingdoms, as well as provide offerings to appease the multitude of *akua* (deities) (Malo 1951). These services were a *kuleana* (privilege and responsibility); a vital part of tenancy within a given *ahupua'a*. The *ahupua'a* thus became the equivalent of a local community, with its own social, economic, and political significance, and it also served as a taxable base for the *ali'i* during the Makahiki (Kelly 1956). During the annual Makahiki procession, the highest chief of the land sent select

members of his retinue to collect *ho'okupu* (tribute and offerings) in the form of goods from each *ahupua'a*. The *hoa'āina* who resided in the *ahupua'a* brought their share of *ho'okupu* to an *ahu* (altar) that was symbolically marked with the image of a *pua'a* (pig). Kamakau describes some of the reasons for the annual Makahiki and notes the observance of *kapu* that restricted the consumption of certain vegetables and meats including fish:

The Makahiki festival was a time to rest, and a time to make great feasts of commemoration ('*aha'aina ho'omana'o*) for life and health of the body, and for the help received from the gods. All manual labor was prohibited and there were several days of resting and feasting. Chiefs and people made many joyful Makahiki feasts at the end of each year. The custom (*malama*) of feasting came from very ancient times; and from the time that chiefs became rulers of the kingdoms...

They made *kapu* the last three months of the year. The Makahiki began (*e kauwelu ai*) in the month of Hilina, and at this time pork, coconut, and fish were placed under *kapu*; the eating of flesh foods (*i'o*) was *kapu* during these months. (Kamakau 1964:19)

In describing the intimate connection between the *ahupua'a* system and the '*ohana*, Handy and Pukui relate, "the '*Ohana* as a functioning social mechanism operates within the *milieu* of the sea, shore, coastal and inland slopes and uplands, subject to weather, sun and moon" (1998:18). *Ahupua'a* residents were not bound to the land, if the living conditions under a particular *ahupua'a* chief were deemed unsuitable, the residents could move freely in pursuit of more favorable living conditions (Lam 1985). This social structure safeguarded the well-being of the people and the overall productivity of the land, lest the chief lose the support and loyalty of his, or her, principal supporters.

Another important component of the *ahupua'a* system was access to nearshore and offshore fisheries, which is discussed in further detail in the following section. In detailing the nature of traditional Hawaiian fisheries, Lyons writes:

While the smaller *ahupuaas* had to content themselves with the immediate shore fishery extending out not further than a man could touch bottom with his toes, the larger ones swept around outside of these, taking to themselves the main fisheries much in the same way as that in which the forests were appropriated. (Lyons 1875:111)

Nā Papakū O Ka Moana: Marine Extension of the Ahupua'a

In some places, the *po'o lawai'a* (head fisherman) held the same responsibilities as the *konohiki* within the *ahupua'a* system (Jokiel et al. 2011). In such cases, the *konohiki* had the right "to regulate the taking of fish and other marine life from the reefs and fishing grounds abutting the *ahupua'a*" (MacKenzie 1991:173). *Hoa'āina* could also gather fish; however they were "subject to the right of the *konohiki* to manage and conserve the fisheries" (MacKenzie 1991). When necessary, the *konohiki* took the liberty of implementing *kapu* to protect the area's resources from physical and spiritual depletion. Thus, the *ali'i* produced lists of *kapu* fish, associated with their particular *ahupua'a* or smaller land units therein. For example, the '*anae* or mullet was *kapu* in the '*ili* of Hālekou and Waikalua in Kāne'ohe *Ahupua'a*; while *uhu* was *kapu* in Kea'ahala '*Ili* of Kāne'ohe *Ahupua'a* (Devaney et al. 1982:136). An alternative to certain species being designated as *kapu* was for the *konohiki* to consult with tenants of the land to *kapu* fishing during certain months of the year. The boundaries of the traditional fisheries extended to a certain distance out to sea; often times from the shore to a reef, but if there was no reef the fisheries typically extended one nautical mile from the shoreline (Cobb 1902:759). When a *kapu* was placed on the area, the branches of the *hau* (beach hibiscus; *Hibiscus tiliaceus*) were planted along the shore; residents of the area would notice the *kapu* and comply until the *hau* was removed, which indicated the taboo was lifted (Thrum 1907:270).

Regarding marine resource management, Kānaka Maoli carefully regulated resource extraction within distinct marine zones to ensure the preservation of the physical, biological, and ecological integrity of the *kai*, as well as the perpetuation of the '*ohana*-based socio-economic system (Jokiel et al. 2011). As related by Handy and Pukui:

... The fisherman needing *poi* or '*awa* would take fish, squid or lobster upland to a household known to have taro, and would return with his *kalo* (taro) or *pa'i'ai* (hard poi, the steamed and pounded taro corm). A woman from seaward, wanting some medicinal plant, or sugar cane perhaps, growing on the land of a relative living inland would take with her a basket of shellfish or some edible seaweed and return with her stalks of sugar cane or her medicinal plants. In other words, it was the '*ohana* that constituted the community within which the economic life moved. (Handy and Pukui 1998:6)

Kānaka Maoli organized the *kai* into distinct ecological zones along both horizontal and vertical planes known as *nā papakū o ka moana* (marine zones). Each zone bore a unique name based on location, depth, color, geographical

character, and procurable coastal and pelagic resources. These marine zones extended from where the waves gently dissolve over the sand to the distant *kahikimoe* (horizon). In his book *Hawaiian Antiquities*, Hawaiian scholar David Malo enumerated *nā papakū o ka moana* as follows:

1. The ancients applied the name *kai* to the ocean and all its parts. That strip of the beach over which the waves ran after they had broken was called *ae-kai*.
2. A little further out where the waves break was called *poina-kai*. The name *pue-one* was likewise applied to this place. But the same expressions were not used of places where shoal water extended to a great distance, and which were called *kai-kohola* (such as largely prevail for instance at Waikiki).
3. Outside of the *poina-kai* lay a belt called the *kai-hele-ku*, or *kai-papau*, that is, water in which one could stand, shoal water; another name given it was *kai-ohua*.
4. Beyond this lies a belt called *kua-au* where the shoal water ended; and outside of the *kua-au* was a belt called *kai-au*, *ho-au*, *kai-o-kilo-hee*, that is, swimming deep or sea for spearing squid, or *kai-hee-nalu*, that is, a surf-swimming region. Another name still for this belt was *kai-kohola*.
5. Outside of this was a belt called *kai-uli*, blue sea, squid-fishing sea *kai-lu-hee*, or sea-of-the-flying-fish, *kai malolo*, or sea-of-the-opelu, *kai-opelu*.
6. Beyond this lies a belt called *kai-hi-aku*, sea for trolling the *aku*, and outside of this lay a belt called *kai-kohola*, where swim the whales, monsters of the sea; beyond this lay the deep ocean, *moana*, which was variously termed *waho-lilo* (far out to sea), or *lepo* (underground), or *lewa* (floating), or *lipo* (blue-black), which reach Kahiki-moe, the utmost bounds of the ocean.
7. When the sea is tossed into billows they are termed *ale*. The breakers which roll in are termed *nalu*. The currents that move through the ocean are called *au* or *wili-au*.
8. Portions of the sea that enter into recesses of the land are *kai-hee-nalu*, that is a surf-swimming region. Another name still *kai-o-kilo-hee*, that is swimming deep, or sea for spearing squid, or called *kai-kuono*; that belt of shoal where the breakers curl is called *pu-ao*; another name for it is *ko-aka*.
9. A blow-hole where the ocean spouts up through a hole in the rocks is called a *puhi* (to blow). A place where the ocean is sucked with force down through a cavity in the rocks is called a *mimili*, whirlpool; it is also called *mimiki* or an *aaka*.
10. The rising of the ocean tide is called by such names as *kai-pii* (rising sea), *kai-nui* (big-sea), *kai-piha* (full sea), and *kai-apo* (surrounding sea).
11. When the tide remains stationary, neither rising nor falling, it is called *kai-ku*, standing sea; when it ebbs it is called *kai-moku* (the parted sea), or *kai-emi* (ebbing sea), or *kai-hoi* (retiring sea), or *kai-make* (defeated sea).
12. A violent, raging surf is called *kai-koo*. When the surf beats violently against a sharp point of land, that is a cape (*lae*), it is termed *kai-ma-ka-ka-lae*.
13. A calm in the ocean is termed a *lai* or a *malino* or a *pa-e-a-e-a* or a *pohu*. (1951:48-49)

As outlined by Malo above, Kānaka Maoli also distinguished the various moods and surface characteristics of the ocean by name. For instance, calm and peaceful seas were known as *kai malina*, *kai pohu*, or *kai paeaea*; and areas where the sea was glassy and appeared to puddle on the surface were called *kai kāhekaheka*, *kai ki'o*, or *kai hāpuna* (Kamakau 1979). There were also designations for contrasting parts of the *kai* based upon its color. Areas of the *kai* that were white were generally referred to as *kai kea*, with foamy, white seas being distinguished as *kai ke'oke'o*. The ancient people also identified parts of the *kai* which were designated for certain activities. For instance, shallow parts of the sea where one could wade out into the shoal were known as the *kai hele kū*, and places where one could submerge and bathe were referred to as *kai 'au kohana*. There were also places designated for diving—*kai lu'u*, as well as surfing—*kai he'e nalu* or *kua 'au* (Kamakau 1979).

The shoreline geography of O'ahu varies from nearly vertical sea cliffs to fine-sanded bays. Per Kamakau (1979), Hawaiians also had distinct names for the various coastal topographic features, such as *loko kai* to refer to lagoons and *kai kū'ono* to refer to bays. *Kai hāloko* or *kai puhi lala* refer to sea ponds surrounded almost entirely by land, while areas of the sea that were nearly landlocked were called *hāloko kai*, and places where seawater surged into a

pond were known as *kai hī*. There were also specific names to indicate areas where waves multiplied—*kai ko‘o*, and subsequently diverged from each other—*kai kulana*. Kamakau (1979) also mentions that in more rugged environments, places where waves crashed against points of land were known as *kai maka lae*, and places where waves crashed into the bases of cliffsides were termed *kai kuehu*.

With the complex *ahupua‘a* system, Kānaka Maoli incorporated their spiritual beliefs into the management of terrestrial and marine management resources, and a uniquely Hawaiian culture coevolved with the islands. Their relationship to the land and sea was fortified by their origin stories, which tied them to the greater cosmos. As evidenced in the subsequent section, Kānaka Maoli did not agree on a single creation story; rather, they took a pluralistic approach to explain the origin of the Hawaiian Islands, their natural environment, and themselves. Many of these origin stories feature a profound link between Kānaka Maoli and the ocean. Although ancient, these stories provide valuable insight into the deep reverence and connection Kānaka Maoli have with the land and the sea. As the current study area includes the nearshore waters of O‘ahu, the oceanic origins of the Hawaiian people are discussed below.

OCEANIC ORIGINS

Kānaka Maoli were anchored through their ingrained philosophy of life to the *‘āina* (land), *wai* (water), *Iewa* (heavens), and *kai*. These life-giving aspects of their natural environment were the foundation upon which they constructed their physical and spiritual world. Every natural element found within the Hawaiian world, whether on the land, in the sea, or in the heavens, was believed to be the physical embodiment of the *akua*. The natural wonders of the universe were the source of life for Kānaka Maoli, and were thus acknowledged, named, and deeply revered. Traditional legendary accounts describing the origins of the *Kanaka* (humans) are plentiful, and a review of these accounts reveals that the ancient people of these islands did not agree on a single creation story (Fornander 1916-1917). While Western scientists emphasize the geological formation of the Hawaiian Islands, traditional accounts feature the ocean as the origin point of the islands. The ocean is also described as the pathway of the gods and people who traveled by way of the *wa‘a* (canoe), and the very element that connected them to their ancestral homeland, Kahiki. The most relevant of these legendary accounts are summarized below.

The Great Fishermen, Kapūhe‘euanui

The following account concerns the genealogy of a Tahitian priest named Ōpu‘ukahonua (lit. the budding earth), who established the “royal parents or ancestors of these islands” as there were “ninety-five generations from him to Kamehameha the Great” (Fornander 1916–1917:20). According to this genealogical account, as told by Fornander, the islands “were found or obtained by the fishing of Kapuheeuanui,” (1916–1917:20), a great fisherman (*ka lawai‘a nui*), who fished them out of the sea, one-by-one:

When Kapuheeuanui let down his fishing line into the sea from Kapaahu [Kohala] his line caught something that he thought was a fish and drew the line onto the canoe when, behold, it was a piece of coral. The priest Lualialamakua came along as Kapuheeuanui was disentangling his line from the coral and preparing to throw it away. Then the priest spoke to him, “Eh! Don’t throw away that piece of coral, for that is a chief, a foreteller of events. Go thou and look for a pig and appease the god, and after prayer call its name Hawaiioloa, then throw it back into the sea, and it will grow up into an island.” (1916-1917:20)

Kapūhe‘euanui obeyed the commands of the priest and the next day, he went back out and again fished up another piece of coral. The priest Lualialamakua intervened and declared that this piece of coral be called Mauioloa. Then, Fornander continues,

On the third day of Kapuheeuanui’s fishing his line was again entangled on a coral, making the third piece of coral brought to the surface by his line, and, as he had done before after freeing it from his line, took it to the priest. The latter on beholding this coral exclaimed, “That is a man, a wohi, a chief from the sacred air; call his name Oahunuilaa.” . . . And thus, according to this tale, the islands of this group grew up from pieces of coral. (1916-1917:20-22)

Thus, O‘ahu (Oahunuilaa) was brought up from the depths by a great fisherman.

Kanaloa, Deity of the Ocean

Kanaloa is one of the four male gods that were worshipped by both *maka ‘āinana* and *ali‘i* in Hawai‘i and throughout Polynesia (Beckwith 1970; Malo 1951). The three other male gods—Kāne, Kū, and Lono, along with four female gods: La‘ila‘i, Haumea, Hina, and Pelehonuamea, make up the pantheon of Hawaiian gods (Kanaka‘ole Kanahale et

al. 2009). In Hawai'i, his domain extended over the ocean and many native Hawaiians today maintain the understanding that the ocean itself is Kanaloa. Kanaloa (the ocean) was considered the roadway for the navigator and served as the connection between the various islands across the vast Pacific Ocean; navigators and paddlers, who traveled at the mercy of Kanaloa often invoked prayers to him for favorable weather and ocean conditions.

Kanaloa is embodied in several ocean species including the elusive and polychromatic *he'e* (octopus) and *mūhe'e* (squid) (Handy et al. 1991). The *he'e* form of Kanaloa was also used by *kahuna lapa'au* (healing practitioners) to perform a healing ceremony called *he'e mahola* (Malo 1951). Per Malo, *he'e mahola* was performed if a patient appeared to be somewhat relieved or *maha*, said patient would be put to bed and the *kahuna* would perform the ceremony; if rain fell on that night, the patient would die for “the omens derived from the *hee mahola* ceremony were adverse” but if no rain fell, the patient would live, for “the *hee mahola* has been attended with favorable omens” (Malo 1951:109). The next morning, “a fire, called *ahi mahola*, was lighted, the squid was cooked, and the prayer called *pule hee* having been offered by the *kahuna*, the patient ate of the squid and thus ended the medical treatment and the incantations (*hoomana*)” (ibid.). Malo expounds upon this ceremony writing, that the “*hee mahola* ceremony was thought to be the thing to disperse (*hehee*) disease and bring healing to the body” (ibid.).

Other important bodily forms of Kanaloa included the *koholā* (whale), specifically the *palaoa* (sperm whale), from which was carved the *lei niho palaoa* (ivory tooth pendant) that were worn exclusively by Hawaiian *ali'i*. Kanaloa is also embodied in other large marine mammals including the *nai'a* (dolphin), *niuhi* (tiger shark), *pololia* (jellyfish), and the *hāhālua* (manta ray) (Kanaka'ole Kanahale et al. 2009; Liliuokalani 1978).

Māui Uses Manaiakalani to Fish the Hawaiian Islands Out of the Sea

There are numerous *mo'olelo* that feature the *kupua* (demi-god) Māui and his mischievous acts, and each of the Hawaiian Islands has their own version of Māui tales. Born to Akalana and Hina-kaweā, Māui had two brothers named Maui-mua and Maui-ikiiki and often got into mischief with them. In a chapter titled “Maui the Fisherman,” Westervelt writes about Māui fishing the Hawaiian Islands out of the underworld with his mother's help:

The Hawaiian myths sometimes represent Maui as trying to draw the islands together while fishing them out of the sea. . .

Maui went out from his home at Kauiki, fishing with his brothers. After they had caught some fine fish the brothers desired to return, but Maui persuaded them to go out farther. Then when they became tired and determined to go back, he made the seas stretch out and the shores recede until they could see no land. Then drawing the magic hook, he baited it with the Alae or sacred mud hen belonging to his Mother Hina. Queen Liliuokalani's family chant has the following reference to this myth:

“Maui longed for fish for Hina-akeahi (Hina of the fire, his mother),
Go hence to your father,
There you will find line and hool.
Manaiakalani is the hook.
The ancient seas are connected.
The great bird Alae is taken,
The sister bird,
Of that one of the hidden fire of Maui.”

. . . Down in the deep sea sank the hook with its struggling bait, until it was seized by “the land under the water.”

But Hina the mother saw the struggle of her sacred bird and hastened to the rescue. She caught a wing of the bird, but could not pull the Alae from the sacred hook. The wing was torn off. Then the fish gathered around the bait and tore it in pieces. If the bait could have been kept entire, then the land would have come up in a continent rather than as an island. Then the Hawaiian group would have been unbroken. But the bait broke—and the islands came up as fragments from the under world. (Westervelt 1910:26-28)

The following account, as told by Beckwith, tells how Māui used his supernatural fishhook, Manaiakalani, to fish the Hawaiian Islands from the depths of the sea. Like Westervelt before her, Beckwith mentions how Māui who resided with his mother in Mākua cave on the Wai'anae coast, desired to unite the Hawaiian Islands, but to no avail for he is fooled by a bailer that has transformed into a beautiful woman:

His mother sends him to Ka-ale-nui-a-hina, who tells him he must hook Uniho-kahi at the fishing station of Ponaha-ke-one off Ulehawa. Maui and his brothers paddle out to the fishing ground with the hook Manai-a-ka-lani. He tells his brothers to catch the bailer (kaliu) they will see floating by, and himself take it into the canoe. When they reach the fishing station the bailer has become transformed into a beautiful woman. She accompanies Maui's hook into the sea and bids Uniho-kahi open his mouth, as she and Maui have been disputing about the number of his teeth. When he obeys she hooks him fast. They brothers paddle. Maui bids them not look back; but they disobey, the hook comes loose, and the islands separate again. (Beckwith 1970:233)

The *Kumulipo*

While the above accounts attribute the origin of the Hawaiian Islands to various *akua* (deities) and great fishermen who raised the islands from the depths of the ocean, the following account is a *mele ko'i honua*, or cosmogonic chant, known as the *Kumulipo*, which explains the origins of the Hawaiian universe in a different manner. This account describes the birth of various aquatic and terrestrial organisms found in the Hawaiian Islands. Containing over 2,000 lines, this chant was uttered by the high priest Puou in Kealakekua, Kona upon the birth of the 18th-century high chief Ka'ī'imamao, as a way to recognize and fortify the depth of his royal family's divine origin (Liliuokalani 1978). Various scholars and Hawaiian royalty, including Queen Lili'uokalani and her brother King David Kalākaua, have attempted to translate this epic chant, with each translator offering their own interpretation. The *Kumulipo* anchors the Hawaiian world and its people to the ocean by way of the primal substance known to the Hawaiian people as *walewale* (slime). According to the *Kumulipo*, all animate and inanimate objects were *hānau* (born), including the '*uku ko'ako'a* (coral polyp), which was recorded as the very first organism born in the ocean. The small and simple '*uku ko'ako'a* is of vital importance to life, as it is the basic building block for all life in the sea. It is from the '*uku ko'ako'a* that the '*āko'ako'a* (coral head) was born, thus forming the broader foundation for all other marine organisms that inhabit the nearshore reefs.

This lengthy chant is broken up into sixteen *wā* (eras). The recurring theme of duality appears in the first four *wā* in which each aquatic life form is paired with a terrestrial counterpart. The first *wā* describes a time of eternal darkness (*pō*) that passes progressively through the union of male and female energies, and ultimately gives birth to light (*ao*). It is in this first *wā* that organisms of the benthic zone are born. The second *wā* of the *Kumulipo* describes the birth of the fishes and their forest counterparts; the third *wā* describes the emergence of the winged creatures of both land and sea, and the fourth *wā* describes the birth of the amphibious creatures (Beckwith 1951). In her explanation of the pairs of aquatic and terrestrial counterparts, Martha Beckwith writes:

The names are not invented for mere rhyme value...The punning of names have in some cases a practical magical function. For example, in plant medicine the first food to be taken after dosing with a special medicinal herb is the sea-growing thing whose name matches with it...Such is the nature of the language that these lists may be extended indefinitely. (1951:50-51)

It is not until the eighth *wā* of the *Kumulipo* that Kānaka Maoli are born. This birth order informs us of the Hawaiian thought process, which suggests that Kānaka Maoli derive from the same source as all other living creatures. Furthermore, the idea that Kānaka Maoli were born so long after the ocean highlights the reverence that they hold for the *kai* and all of its life forms. The *Kumulipo* also serves as a reminder that the well-being of Kānaka Maoli is dependent upon maintaining the delicate balance between all life forms, and that a symbiotic relationship exists between the land and the ocean and their inhabitants. Although this account is set in Hawai'i's distant past, the messages and meanings remain deeply embedded in the spirits and minds of Native Hawaiians today.

For the purposes of the current study, in an effort to provide a more complete understanding of the cosmogony of marine life in the Hawaiian Islands, the entirety of the second *wā* of the *Kumulipo* is provided in Hawaiian with an English translation next to it. The Hawaiian version of this chant comes from a text written by King David Kalākaua that was published by Beckwith (1951:190-194). The English translation is derived from a version of the *Kumulipo* published by King Kalākaua's sister, Queen Lili'uokalani (Liliuokalani 1978:6-11). All fish names are presented in bold print for emphasis; while the Top 20 Species have been underlined for ease of identification:

123. <i>Hanau kama a ka Powehiwehi</i>	The first child born of Powehiwehi (dusky night)
124. <i>Ho'oleilei ka lana a ka Pouliuli</i>	Tossed up land for Pouliuli (darkest night),
125. <i>O Mahiūma, o Ma'apuia</i>	For Mahiūma or Maapuia,
126. <i>O noho i ka 'aina o Pohomilūamea</i>	And lived in the land of Pohomilūamea (shoghy hill of Mea);
127. <i>Kukala mai ka Haipu-aalamea</i>	Suppressed the noise of the growth of unripe fruit,
128. <i>O naha wīlu ke au o Uliuli</i>	For fear Uliuli would cause it burst, and the stench
129. <i>O ho'ohewahewa a kumalamala</i>	To disagree and turn sour,
130. <i>O pohouli a poho'ele'ele</i>	For pits of darkness and pits of night.

131. *O na wai ehiku e lana wale*
 132. *Hanau kama a hīlu, a holo*
 133. *O ka hīlu ia pewa lala kau*
 134. *O kau[ʻ]ana a Pouliuli*
 135. *O kuemiemi a Powehiwehi*
 136. *O pouliuli ke kane*
 137. *O Powehiwehi ka wahine*
 138. *Hanau ka i'a, hanau ka Nai'a i ke kai la holo*
 139. *Hanau ka Mano, hanau ka Moana i ke kai la holo*
 140. *Hanau ka Mau, hanau ka Maumau i ke kai la holo*
 141. *Hanau ka Nana, hanau ka Mana i ke kai la holo*
 142. *Hanau ka Nake, hanau ka Make i ke kai la holo*
 143. *Hanau ka Napa, hanau ka Nala i ke kai la holo*
 144. *Hanau ka Pala, hanau ke Kala i ke kai la holo*
 145. *Hanau ka Paka, hanau ka Papa i ke kai la holo*
146. *Hanau ke Kalakala, hanau ka Huluhulu i ke kai la holo*
 147. *Hanau ka Halahala, hanau ka Palapala i ke kai la holo*
 148. *Hanau ka Pe'a, hanau ka Lupe i ke kai la holo*
 149. *Hanau ke Ao, hanau ke Awa i ke kai la holo*
 150. *Hanau ke Aku, hanau ke 'Ahi i ke kai la holo*
151. *Hanau ka Opelu, hanau ke Akule i ke kai la holo*
 152. *Hanau ka 'Ama'ama, hanau ka 'Aanae i ke kai la holo*
153. *Hanau ka Ehu, hanau ka Nehu i ke kai la holo*
 154. *Hanau ka 'Iao, hanau ka 'Ao'ao i ke kai la holo*
 155. *Hanau ka 'Ono, hanau ke Omo i ke kai la holo*
 156. *Hanau ka Pahau, hanau ka Lauhau i ke kai la holo*
157. *Hanau ka Moi, hanau ka Lo'ilo'i i ke kai la holo*
 158. *Hanau ka Mao, hanau ka Maomao i ke kai la holo*
 159. *Hanau ke Kaku, hanau ke A'ua'u i ke kai la holo*
 160. *Hanau ke Kupou, hanau ke Kupoupou i ke kai la holo*
 161. *Hanau ka Weke, hanau ka Lele i ke kai la holo*
 162. *Hanau ka Palani, hanau ka Nukumomi i ke kai la holo*
 163. *Hanau ka Ulua, hanau ka Hahalua i ke kai la holo*
 164. *Hanau ka 'Ao'aonui, hanau ka Paku'iku'i i ke kai la holo*
 165. *Hanau ka Ma'i'i'i, hanau ka Ala'ihī i ke kai la holo*
 166. *Hanau ka 'O'o, hanau ka 'Akilolo i ke kai la holo*
167. *Hanau ka Nenuē, noho i kai*
 168. *Kia'i ia e ka Lauhue noho i uka*
 169. *He po uhe'e i ka wawa*
 170. *He nuku, he kai ka 'ai a ka i'a*
 171. *O ke Akua ke momo, 'a'oe komo kanaka*
172. *O kane ia Wai'ololi, o ka wahine ia Wai'olola*
 173. *Hanau ka Pahaha no i kai*
 174. *Kia'i ia e ka Puhala noho i uka*
 175. *He po uhe'e i ka wawa*
 176. *He nuku, he kai ka 'ai a ka i'a*
 177. *O ke Akua ke momo, 'a'oe komo kanaka*
178. *O kane ia Wai'ololi, o ka wahine ia Wai'olola*
 179. *Hanau ka Pahau noho i kai*
 180. *Kia'i ia e ka Lauhau noho i uka*
 181. *He po uhe'e i ka wawa*
 182. *He nuku, he kai ka 'ai a ka i'a*
 183. *O ke Akua ke momo, 'a'oe komo kanaka*
184. *O kane ia Wai'ololi, o ka wahine ia Wai'olola*
 185. *Hanau ka He'e noho i kai*
 186. *Kia'i ia e ka Walahe'e noho i uka*
 187. *He po uhe'e i ka wawa*
 188. *He nuku, he kai ka 'ai a ka i'a*
 189. *O ke Akua ke momo, 'a'oe komo kanaka*

- Then the seven waters became calm.
 Then was born a child (kama), 'twas a **Hīlu** and swam.
 The **Hīlu** is a fish with standing fins,
 On which Pouliuli sat.
 So undecided seemed Powehiwehi,
 For Pouliuli was husband
 And Powehiwehi his wife.
 And fish was born, the **Naia** (porpoise) was born in the sea and swam.
 The **Mano** (shark) was born, the **Moana** was born in the sea and swam.
 The **Mau** was born, the **Maumau** was born in the sea and swam.
 The **Nana** was born, the **Mana** was born in the sea and swam.
 The **Nake** was born, the **Make** was born in the sea and swam.
 The **Napa** was born, the **Nala** was born in the sea and swam.
 The **Pala** was born, the **Kala** was born in the sea and swam.
 The **Paka** (an eel) was born, the **Papa** (crab) was born in the sea and swam.
 The **Kalahala** was born, the **Huluhulu** was born in the sea and swam.
 The **Halahala** was born, the **Palapala** was born in the sea and swam.
 The **Pea** (starfish) was born, the **Lupe** was born in the sea and swam.
 The **Ao** was born, the **Awa** was born in the sea and swam.
 The **Aku** (bonito) was born, the **Ahi** (same kind) was born in the sea and swam.
 The **Opelu** (same as above) was born, the **Akule** was born in the sea and swam.
 The **Amaama** (mullet) was born, the **Anae** (large kind) was born in the sea and swam.
 The **Ehu** was born, the **Nehu** was born in the sea and swam.
 The **Iao** (used for bait) was born, the **Aoao** was born in the sea and swam.
 The **Ono** (large fish) was born, the **Omo** was born in the sea and swam.
 The **Pahau** (striped flatfish) was born, the **Lauhau** was born in the sea and swam.
 The **Moi** was born, the **Loiloi** was born in the sea and swam.
 The **Mao** was born, the **Maomao** was born in the sea and swam.
 The **Kaku** was born, the **A'ua'u** was born in the sea and swam.
 The **Kupou** was born, the **Kupoupou** was born in the sea and swam.
 The **Weke** was born, the **Lele** was born in the sea and swam.
 The **Palani** was born, the **Nuku Moni** was born in the sea and swam.
 The **Ulua** was born, the **Hahalua** was born in the sea and swam.
 The **Aoanui** was born, the **Pakuikui** was born in the sea and swam.
 The **Maii** was born, the **Alaihi** was born in the sea and swam.
 The **Oo** was born, the **Akilolo** was born in the sea and swam.
 The **Nenuē** was born and lived in the sea;
 Guarded by the Lauhue that grew in the forest.
 A night of flight by noises
 Through a channel; salt water is life to fish;
 So the gods may enter, but not man.
 Man by Waiololi, woman by Waiolola,
 The **Haha** was born and lived in the sea;
 Guarded by the Puhala that grew in the forest.
 A night of flight by noises
 Through a channel; salt water is life to fish;
 So the gods may enter, but not man.
 Man by Waiololi, woman by Waiolola,
 The **Pahau** was born in the sea;
 Guarded by the Lauhau that grew in the forest.

3. Background

190. *O kane ia Wai'ololi, o ka wahine ia Wai'olola*
191. *Hanau ka 'O'opukai noho i kai*
192. *Kia'i ia e ka 'O'opuwai noho i uka*
193. *He po uhe'e i ka wawa*
194. *He nuku, he kai ka 'ai a ka i'a*
195. *O ke Akua ke momo, 'a'oe komo kanaka*
196. *O kane ia Wai'ololi, o ka wahine ia Wai'olola*
197. *Hanau ka puih Kauwila noho i kai*
198. *Kia'i ia e ka 'Ulei noho i uka*
199. *He po uhe'e i ka wawa*
200. *He nuku, he kai ka 'ai a ka i'a*
201. *O ke Akua ke momo, 'a'oe komo kanaka*
202. *O kane ia Wai'ololi, o ka wahine ia Wai'olola*
203. *Hanau ka Umaumalei noho i kai*
204. *Kia'i ia e ka 'Ulei noho i uka*
205. *He po uhe'e i ka wawa*
206. *He nuku, he kai ka 'ai a ka i'a*
207. *O ke Akua ke momo, 'a'oe komo kanaka*
208. *O kane ia Wai'ololi, o ka wahine ia Wai'olola*
209. *Hanau ka Paku'iku'i noho i kai*
210. *Kia'i ia e ka la'au Kukui noho i uka*
211. *He po uhe'e i ka wawa*
212. *He nuku, he kai ka 'ai a ka i'a*
213. *O ke Akua ke momo, 'a'oe komo kanaka*
214. *O kane ia Wai'ololi, o ka wahine ia Wai'olola*
215. *Hanau ka Laumilo noho i kai*
216. *Kia'i ia e ka [la'au] Milo noho i uka*
217. *He po uhe'e i ka wawa*
218. *He nuku, he kai ka 'ai a ka i'a*
219. *O ke Akua ke momo, 'a'oe komo kanaka*
220. *O kane ia Wai'ololi, o ka wahine ia Wai'olola*
221. *Hanau ke Kupoupou noho i kai*
222. *Kia'i ia e ka Kou noho i uka*
223. *He po uhe'e i ka wawa*
224. *He nuku, he kai ka 'ai a ka i'a*
225. *O ke Akua ke momo, 'a'oe komo kanaka*
226. *O kane ia Wai'ololi, o ka wahine ia Wai'olola*
227. *Hanau ka Hauliuli noho i kai*
228. *Kia'i ia e ka Uhi noho i uka*
229. *He po uhe'e i ka wawa*
230. *He nuku, he kai ka 'ai a ka i'a*
231. *O ke Akua ke momo, 'a'oe komo kanaka*
232. *O kane ia Wai'ololi, o ka wahine ia Wai'olola*
233. *Hanau ka Weke noho i kai*
234. *Kia'i ia e ka Wauke noho i uka*
235. *He po uhe'e i ka wawa*
236. *He nuku, he kai ka 'ai a ka i'a*
237. *O ke Akua ke momo, 'a'oe komo kanaka*
238. *O kane ia Wai'ololi, o ka wahine ia Wai'olola*
239. *Hanau ka 'A'awa noho i kai*
240. *Kia'i ia e ka 'Awa noho i uka*
241. *He po uhe'e i ka wawa*
242. *He nuku, he kai ka 'ai a ka i'a*
243. *O ke Akua ke momo, 'a'oe komo kanaka*
244. *O kane ia Wai'ololi, o ka wahine ia Wai'olola*
245. *Hanau ka Ulae noho i kai*
246. *Kia'i ia e ka Mokae noho i uka*
247. *He po uhe'e i ka wawa*
248. *He nuku, he kai ka 'ai a ka i'a*
249. *O ke Akua ke momo, 'a'oe komo kanaka*
250. *O kane ia Wai'ololi, o ka wahine ia Wai'olola*
251. *Hanau ka Palaoa noho i kai*
252. *Kia'i ia e ka Aoa noho i uka*
253. *He po uhe'e i ka wawa*
254. *He nuku, he kai ka 'ai a ka i'a*
255. *O ke Akua ke momo, 'a'oe komo kanaka*

A night of flight by noises
Through a channel; salt water is life to fish;
So the gods may enter, but not man.
Man by Waiololi, woman by Waiolola,
The **Hee** was born and lived in the sea;
Guarded by the Walahee that grew in the forest.
A night of flight by noises
Through a channel; salt water is life to fish;
So the gods may enter, but not man.
Man by Waiololi, woman by Waiolola,
The **Oopukai** was born and lived in the sea;
Guarded by the Oopuwai that lived in the forest.
A night of flight by noises
Through a channel; salt water is life to fish;
So the gods may enter, but not man.
Man by Waiololi, woman by Waiolola,
The **Puih kauwila** was born and lived in the sea;
Guarded by the Uwila that lived in the forest.
A night of flight by noises
Through a channel; salt water is life to fish;
So the gods may enter, but not man.
Man by Waiololi, woman by Waiolola,
The **Umaumalei** was born and lived in the sea;
Guarded by the Ulei that grew in the forest.
A night of flight by noises
Through a channel; salt water is life to fish;
So the gods may enter, but not man.
Man by Waiololi, woman by Waiolola,
The **Paku'iku'i** was born and lived in the sea;
Guarded by the Laukukui that grew in the forest.
A night of flight by noises
Through a channel; salt water is life to fish;
So the gods may enter, but not man.
Man by Waiololi, woman by Waiolola,
The **Laumilo** was born and lived in the sea;
Guarded by the Milo that grew in the forest.
A night of flight by noises
Through a channel; salt water is life to fish;
So the gods may enter, but not man.
Man by Waiololi, woman by Waiolola,
The **Kapouu** was born and lived in the sea;
Guarded by the Kou that grew in the forest.
A night of flight by noises
Through a channel; salt water is life to fish;
So the gods may enter, but not man.
Man by Waiololi, woman by Waiolola,
The **Hauliuli** was born and lived in the sea;
Guarded by the Uhi that grew in the forest.
A night of flight by noises
Through a channel; salt water is life to fish;
So the gods may enter, but not man.
Man by Waiololi, woman by Waiolola,
The **Weke** was born and lived in the sea;
Guarded by the Wauke that grew in the forest.
A night of flight by noises
Through a channel; salt water is life to fish;
So the gods may enter, but not man.
Man by Waiololi, woman by Waiolola,
The **Aawa** was born and lived in the sea;
Guarded by the Awa that grew in the forest.
A night of flight by noises
Through a channel; salt water is life to fish;
So the gods may enter, but not man.
Man by Waiololi, woman by Waiolola,
The **Ulae** was born and lived in the sea;
Guarded by the Mokae that grew in the forest.

256. *O ke ka'ina a palaoa e ka'i nei*
 257. *E kuwili o ha'aha'a i ka moana*
 258. *O ka opule ka'i loloa*
 259. *Manoa wale ke kai ia lakou*
 260. *O kumimi, o ka lohelohē a pa'a*
 261. *O ka'a monimoni i ke ala*
 262. *O ke ala o Kolomio o miomio i hele ai*
 263. *Loa'a Pimoe i ke polikua*
 264. *O Hikawainui, o Hikawaina*
 265. *O pulehulehu hako'ako'a*
 266. *Ka mene 'a'ahu wa'awa'a*
 267. *O holi ka poki'i i ke au ia uliuli*
 268. *Po'ele wale ka moana powehiwehi*
 269. *He kai ko'ako'a no ka uli o Paliuli*
 270. *O he'e wale ka 'aina ia lakou*
 271. *O kaha uliuli wale i ka po—la*
 272. *Po—no*

A night of flight by noises
 Through a channel; salt water is life to fish;
 So the gods may enter, but not man.
 Man by Waiololi, woman by Waiolola,
 The **Palaoa** (sea-elephant) was born and lived in the sea;
 Guarded by the Aoa that grew in the forest.
 A night of flight by noises
 Through a channel; salt water is life to fish;
 So the gods may enter, but not man.
 The train of the **Palaoa** (walrus) that swim by,
 Embracing only the deep blue waters,
 Also the **Opule** that move in schools,
 The deep is as nothing to them.
 And the **Kumimi** (a crab) and Lohelohē (a locust) cling together
 To the rolling motion of their cradle
 On their path so narrow, so slim, to move,
 Till Pimoe (a mermaid) is found in the depth of her cave,
 With Hikawainui, and Hikawaine
 Amongst piles of heated coral
 That were thrown in piles unevenly,
 So thin and scraggy in the blue tide.
 Surely it must be dismal, that unknown deep;
 'Tis a sea of coral from the depth of Paliuli,
 And when the land recedes from them
 The east is still in darkness of night,
 'Tis night

As reflected in the origin stories previously described, Kānaka Maoli organized all living things in the natural world into a distinct order. The ocean and its creatures were of divine origin and capable of living and reproducing without the aid of man. A dependence on the thriving, but finite, terrestrial and marine resources, coupled with a growing population, required Kānaka Maoli to develop traditional resource management practices that would maintain the ecological and spiritual integrity of said resources. Over time, what developed was a sophisticated and highly integrated set of stewardship practices that were codified in the sociopolitical system and interwoven with their spiritual beliefs.

TRADITIONAL RESOURCE MANAGEMENT PRACTICES

The ancient and ingrained philosophy of life of the Native Hawaiian people, or Kānaka Maoli, was reinforced through cultural norms, beliefs, values, and practices that tied them to their environment in a very intimate and profound way. Several underlying components are evident in traditional Hawaiian resource stewardship practices: a personal, reciprocal relationship with the resources; the belief that all things are interconnected; the implementation of self-control; the staunch support of a socio-political system that valued the natural resources; and uncodified laws that imposed serious consequences for violators. Traditional Hawaiian place-based cultural practices helped maintain the natural, spiritual, and social order. In his description of the intimate relationship between the Hawaiian people, the *'āina*, and the *kai*, Hawaiian historian and cultural specialist, Kepā Maly writes:

In the Hawaiian context, these values—the “sense of place”—have developed over hundreds of generations of evolving “cultural attachment” to the natural, physical, and spiritual environments. In any culturally sensitive discussion on land use in Hawai'i, one must understand that Hawaiian culture evolved in close partnership with its' natural environment. Thus, Hawaiian culture does not have a clear dividing line of where culture ends and nature begins.

In a traditional Hawaiian context, nature and culture are one in the same, there is no division between the two. The wealth and limitations of the land and ocean resources gave birth to, and shaped the Hawaiian world view. The *'āina* (land), *wai* (water), *kai* (ocean), and *lewa* (sky) were the foundation of life and the source of the spiritual relationship between people and their environs. (2001:1)

The *'ōlelo no 'eau* (proverbial saying) “*Hānau ka 'āina, hānau ke ali'i, hānau ke kanaka* Born was the land, born were the chiefs, born were the commoners” (Pukui 1983:57), conveys the belief that all things of the land, including *kānaka*, were literally born, and are thus connected through kinship links that extend beyond the immediate family. The lifeways of early Hawaiians, which depended upon the finite natural resources of these islands, necessitated the development of sustainable resource management practices. Over time, what developed was an adaptable management system that integrated the watershed, freshwater and nearshore fisheries, which are connected through the many unique

ecosystems that extend from the mountains to the sea (Jokiel et al. 2011). Kānaka Maoli were masters of exploring, utilizing, and maximizing the wide array of island resources and incorporated forms of traditional land use, such as the practice of *mālama*: “to take care of, tend, attend, care for, preserve, protect, beware, save, maintain; to keep or observe, as a taboo...” (Pukui and Elbert 1986:232). The practice of *mālama* was a shared responsibility that was reinforced at the personal, familial, and social level. In traditional Hawaiian society, all persons who exercised their right to utilize a resource were also expected to follow social and customary rules and rituals, one of which included the practice of *ho‘okupu* (giving of offerings) to the many *akua*, who in their elemental forms imparted abundance and fertility to the land and sea.

Ho‘okupu & Pule: Reciprocity as a Means to Maintaining Spiritual Balance and Abundance

While the people were responsible for tending to the land and sea, it was the prerogative of the *ali‘i* to care for the and maintain the solidarity among the people (Malo 1951). Sustaining a reciprocal relationship with the *kini akua* (multitude of gods) and *‘aumākua* (ancestral gods) however, was traditionally a task undertaken by all classes of people. This was accomplished through ritualistic processes, including *pule* (prayers), giving *ho‘okupu* in the form of physical offerings, and also performing *heiau* (temple) rituals. Maintaining balance with the gods was a practice vital to the life of Kānaka Maoli. Failure to provide an adequate tribute to the gods was believed to disrupt the solidarity of the land and people, thereby provoking the gods to unleash their elemental powers upon them.

Kilo: Astute Observation of the Natural World

Kilo or perceptive observation of the natural world was perhaps one of the most fundamental stewardship tools used by the Kānaka Maoli. The practice of *kilo* enabled them to observe and record the subtlest changes, distinctions, and correlations in their natural world and acquire specialized knowledge. Examples of their keen observations are evident in Hawaiian nomenclature, where numerous types of rains, clouds, winds, stones, terrestrial and oceanic environments, flora, and fauna—many of which are geographically unique have been given distinct names). For example, Pali Kilo is a hill located at Mōkapu Peninsula and was the location of two significant archaeological sites dedicated to fish—a large *heiau* dedicated to Kū and Hina and a *ko‘a* (fishing shrine) that contained the stones of Kāne and Kanaloa (Sterling and Summers 1978:202-203). A lookout tower once stood on the bluff that was specifically constructed to *kilo* the offshore fishery and to scan the area for intruders. Other names are recorded in centuries-old traditions such as *oli* (chants), *mele* (songs), *pule*, *inoa* *‘āina* (place names), and *‘ōlelo no‘eau*, which were transmitted orally from one generation to the next. Kānaka Maoli’s knowledge of the natural environment was further reinforced through other traditional practices and arts including, but not limited to, *lawai‘a* (fishing) and *mahi‘ai* (farming), as well as *hula* (traditional dance), and *lapa‘au* (traditional healing).

Kapu and Noa: Harvest Restrictions

As discussed above, the dependence on a finite natural resources led Kānaka Maoli to develop culturally reinforced terrestrial and marine management practices that were governed and enhanced by the concept of *kapu*, which relates directly to *mana*. Kānaka Maoli believed that all natural things, places, and people, especially those of high rank, possessed a certain degree of *mana* or “divine power” (Pukui and Elbert 1986:235; Pukui et al. 1972). The concept of *mana* is derived from the *kini akua*, who were embodied in elemental forces, including the *kai*, the land, certain material objects and individuals (Crabbe et al. 2017). Buck (1993) expands upon this concept, noting that *mana* was associated with the well-being of a community, in human knowledge and skills (canoe building, harvesting) and in nature (crop fertility, weather etc.).

To ensure the *mana* of the resources, certain places, and people remained protected from over-exploitation and defilement, *kapu* of various kinds were strictly enforced and violators faced serious consequences including death (Jokiel et al. 2011). According to Elbert and Pukui (1986:132) *kapu* are defined as “taboo, prohibitions; special privilege or exemption...” Kepelino (1932) notes that *kapu* associated with the gods applied to all social classes, while the *kapu* associated with the chiefs applied to the people. Some *kapu*—particularly those associated with maintaining social hierarchy and gender differentiation—were unremitting, while other *kapu*, such as those placed on natural resources were applied and enforced according to seasonal changes.

As the laws of *kapu* dictated social relationships, they also provided “environmental rules and controls that were essential for a subsistence economy” (Else 2004:246). The application of *kapu* to natural resources ensured that they remained unspoiled and available for future use. When the *ali‘i* or the lesser chiefs, including *konohiki* and *po‘o lawai‘a*, determined that a particular resource was to be made available to the native residents, a decree was proclaimed indicating that *kapu* had been lifted, thereby making it *noa* or “freed of taboo, released from restrictions, profane, freedom” (Pukui and Elbert 1986:268). Although the transition of a resource from *kapu* to *noa* allowed for its use,

people were still expected to practice sustainable harvesting methods and pay tribute to their ruling chief, as well as the gods and goddesses associated with that resource.

Specific details about the *kapu* system as a marine resource management tool were described by early visitors of the islands, including Scottish surgeon and naturalist Archibald Menzies, and British Missionary, William Ellis. Menzies was aboard the *H.M.S. Discovery* when he visited Hawai'i Island during the 1790s, and recorded many observations of Hawaiian culture in his journals, which were published in 1920. In the following journal entry for February 24th, 1793, Menzies provides an account in which a man had been put to death in South Kona on Hawai'i Island for breaking a fishing-related *kapu*:

Close to the foot of the marae [heiau], some of the natives pointed out to us the grave of a man that had been put to death about a fortnight before on account of breaking the *kapu*, which was simply this: The bay had been tabooed some days on account of a large shoal of fish that appeared on the coast, at which time this unfortunate man was seen going across the entrance of it in a small canoe. He was immediately pursued, and when brought on shore, they first broke the bones of his arms and legs, and afterwards put an end to his miserable existence by stabbing his body with their pahoas [daggers]. (1920:72)

Ellis too, recorded details about the traditional repercussions of breaking a *kapu* related to the consumption of fish, which he referred to as “*tabu*,” during a visit to the Hawaiian Islands in the 1820s as follows:

The flesh of hogs, fowls, turtle, and several other kinds of fish, cocoa-nuts, and almost every thing offered in sacrifice were *tabu* to the use of the gods and the men; hence the women were, except in cases of particular indulgence, restricted from using them. . . Particular fruits, animals, and the fish of certain places, were occasionally *tabu* for several months from both men and women (Ellis 1831:387).

Ellis continues, “when the fish of a certain part are tabued, a small pole is fixed in the rocks on the coast, in the centre of the place, to which is tied a bunch of bamboo leaves, or a piece of white cloth” (1831:389). In relating some of the consequences of breaking a *kapu*, Ellis tells of the wife of an *ali'i*, “who was afflicted with an affection of the spine, which prevented her walking without support,” who told them, “she had incurred the displeasure of the gods by eating a fish that was *tabu*, or sacred, and that the disease which rendered her a cripple was her punishment” (1831:375).

Violators of *kapu* who managed to escape death, either sought refuge at a *pu'uhonua* (a designated place of refuge), or were sometimes freed by the word of certain chiefs (Kamakau 1992). At the *pu'uhonua*, after completing the proper rituals, the violator was absolved of his, or her, crime and allowed to reintegrate back into society. Kamakau describes the *pu'uhonua* of O'ahu below as comprising entire land divisions in some cases:

The *pu'uhonua* in ancient times was an *ahupua'a* portion of a district (*ahupua'a 'okana*), like Kailua and Waikane for Ko'olaupoko district on Oahu, and also Kualoa, which was a very sacred land and a true *pu'uhonua*, where persons marked for death were saved if they entered it. There were such places all over Oahu. The stronghold (*pu'u kaula*) Kawiwi in Waianae was a *pu'uhonua* in time of war. (Kamakau 1964:18)

The importance of fishing-related and fish-related *kapu* in traditional Hawaiian society and the need to respect such practices in modern times is eloquently conveyed by Manuia Maunupau, a practitioner of traditional Hawaiian fishing methods who was born on O'ahu in 1872, as follows:

The ancient Hawaiian did everything he could to preserve the fishing ground. No fishing ground can be preserved unless precautions such as the Hawaiians observed are taken. This is true not only of aku and ahi fishing but of every other kind of fishing. The Hawaiians had a *kapu* on alongshore fishing in certain places when deep sea fishing was open. The *kapu* places were marked with coconut leaves. In the case of inshore fishing, one place was *kapu* for a month; then this area was opened and the next was *kapu*. At certain times of the year, certain seaweeds were *kapu*, because when fish food was preserved by this means, the shore fishing was saved for the people. There used to be plenty of fish in Hawaiian waters, but these have to a great extent disappeared because constant fishing has wiped them out. The fish are gone for good unless we have closed and open seasons for different kinds of fishing. The government is trying to place certain restrictions on fishing. If the ancient form of *kapu* used by the old-time Hawaiians could be revived in these new governmental restrictions, we should again have plenty of fish, provided the restrictions were observed as were the *kapus* in the old days.

The old Hawaiian fisherman was a skilled and selected person. He had knowledge of, and respect for, the traditions and customs of fishing. He was careful to observe these customs, because through them, fishing was preserved for the coming generations, and his children were trained in the skill they would need as they became fishermen. Fishing in those days was not a matter of getting all the fish and moving on to another fishing ground. The Hawaiian fisherman was much too clever to do this, and he respected the traditions of his people too much to do it. Laws today cannot help to preserve the fish in Hawaiian waters, unless in addition to the laws, we have a feeling of respect for them and observe them because we see that they are beneficial. (Maunupau in Handy et al. 1981)

Maunupau's sentiments are still echoed today amongst native fishing practitioners and should serve as a valued reminder of the importance of maintaining Hawai'i's precious fishing grounds. Another component of the traditional Hawaiian approach to marine resource management was maintaining designated fishing grounds, known as *ko'a*, which are discussed in detail below.

Ko'a

Ko'a were known fishing grounds where non-current swimming *i'a* (fish) congregated, fed, and slept typically located in the depths of the *kai*. The locations of these concentrations of abundant marine resource were treasured by the fishers who knew where to find them. Although *ko'a* were established underwater fish habitats, they also had a terrestrial component, for the locations of fishing *ko'a* were often identified by markers on the shore. Some of these markers were geological features, such as *pu'u* (hills) or mountain peaks, while others were natural stone outcrops, or single stones and piles of rocks intentionally placed along the shore; "Some *koa* were nothing more than piles of stones built up in the ocean by members of a fishing family. Such *koa* might be markers for a natural fishing ground or serve to attract a fish colony" (Gutmanis 1991:26). These markers were either used as a means to triangulate the location of the underwater *ko'a* or simply to coincide with the location of the *ko'a*. For instance, Malo relates the following details regarding how *kanaka* used two points on the land to triangulate the location of deep-sea *ko'a*:

These *koa-lawaia* were so deep under water that the eye failed to perceive them, nor could the fish be seen when swimming over them, nor when they seized the hook. In order to find them, it was necessary to take one's bearings from the land. Two bearings were required; and where these were found to intersect, there was the *koa*, and there the fisherman let down his hook or his net. (1951:211)

Thus, *kānaka* used their deep understanding of the Islands' terrain, both beneath the sea and on land, for their fishing pursuits. In the late 19th century publication *Hawaiian Fisheries and Methods of Fishing*, Beckley elaborates on this point as follows:

. . . Every rocky protuberance from the bottom of the sea for miles out, in the waters surrounding the islands, was well known to the ancient fishermen, and so were the different kinds of rock fish likely to be met with on each separate rock. The ordinary habitat of every known species of Hawaiian fishes was also well known to them. They often went fishing so far out from land as to be entirely out of sight of the low lands and mountain slopes and took their bearing for the purpose of ascertaining the rock which was the habitat of the particular fish they were after, from the positions of the different mountain peaks. (1883:10)

Locating underwater *ko'a* was only one part of a successful catch. In order to ensure that they would return with food, *po'e lawai'a* had to combine their knowledge of each particular *i'a* sought with their understanding of the most practical materials, methods, and *palu* (bait) for catching them. As discussed above, they also had to observe very specific *kapu* that were dependent upon their particular *akua*, and spiritually express their intent and thankfulness through rituals conducted both prior to, and after, fishing. Furthermore, the success of a *po'e lawai'a* could also be enhanced through the spiritual guidance provided by an *akua* that dwelled within a *ko'a* stone, which was sometimes associated with a *kū'ula* (discussed in the following section):

Some terrestrial *ko'a* also served as fishing shrines (Figure 25) where *Kānaka Maoli* made offerings and recited prayers either hoping to secure a good catch, or expressing gratitude for the sea's bounty. Elbert and Pukui (1986) explain that these types of structural *ko'a* were utilized in ceremonies that would cause the fish to multiply. Kamakau (1964:33) points out the *ko'a kū'ula ho'oulu i'a* was used to increase pelagic quantities, while the *ko'a ho'oulu 'o'opu* was built for the *akua* Kaneko'a and could be found along riverbanks, streams, shorelines, and inland ponds to increase 'o'opu ("fishes included in the families Eleotridae, Gobiidae, and Bennidae") quantities (Pukui and Elbert 1986:290).

At Mōkapu Peninsula in He'eia and Kāne'ohe Ahupua'a at the base of Keawanui once stood a *ko'a*. It consisted of a small platform where *pōhaku* (stone) dedicated to Kāne and Kanaloa stood upright (McAllister 1933:184). In

1952, Sterling and Summers reported that the *ko‘a* had been destroyed to create the runway for the Marine Corps Base Hawaii (1978:203). They relate the following story regarding Keawanui and Keawaiki:

Keawanui and Keawaiki were two Hawaiians living at Mokapu. One day they were visited by two men, strangers who came from across the bay, one of whom was lighter in color than the other. While they were the guests of Keawanui and Keawaiki these two men built the small fishpond known as Paohua. This is a low line of stones completely covered at high tide which only partially incloses [sic] an area not more than 30 feet across. Once the ohua, the fish usually caught here during the spring months, enter into this area, they seem unable to get out, and today this is the most famous fishing place in the region. On the beach just above Paohua is a large rock with a shallow depression in which the fish are placed after being caught. It is said that they cannot flop out of this bowl. After being hospitably entertained by Keawanui and Keawaiki, the strangers took their departure; and as the hosts watched their guest leave they saw them walk out over the water into the distance. This was their first indication that they had been entertaining the gods, Kane and Kanaloa. The fishing shrine with the two stones, one light in color (Kane) than the other, commemorates this visit.



Figure 25. *Ko‘a* at He‘eia State Park with Kāne‘ohe Bay and Mōkapu Peninsula in the background, view to the east.

In the vicinity of Pā‘ōhua, near Kāne‘ohe Bay, is another site connected to the *ko‘a* mentioned above. This site consists of two stones that represent Kū and Hina, which were approximately 75-feet from the shoreline (Sterling and Summers 1978:204). The stones were said to have been removed by George Moa who threw them into the ocean. Reportedly Moa became insane and died. However, the two stones could be seen during low tide. Due to dredging of Kāne‘ohe Bay, the stones were moved and have traveled deeper into the ocean. It should also be noted that historian Martha Beckwith noted that in discussions with David Malo, he expressed that Kū and Hina are both prayed to by fishermen while he softly recited the prayer he personally used to invoke *kū‘ula* (Beckwith 1970:11). Stones believed to embody Kū and Hina depicted in Figure 26 are still found at Kānewai Fishpond.



Figure 26. Kū and Hina *ko'a* stones at Kānewai Fishpond, view to the east.

Kū'ula

A *kū'ula*, meaning “red Kū,” is “any stone god used to attract fish, whether tiny or enormous, carved or natural, named for the god of fishermen” (Figure 27); it is also a “heiau near the sea for worship of fish gods;” and a “hut where fish gear was kept with *kū'ula* images so that gear might be impregnated with *kū'ula* mana, usually inland and very taboo” (Pukui and Elbert 1986:187). Maunupau, who was intimately familiar with various *ko'a* and their respective *kū'ula* situated along the coast of Hawai'i Island, relates that “the fishermen of old Hawaii believed that they needed some supernatural power to aid them in their undertaking, and hence religion and fishing were closely connected by ceremonies and customs” (in Handy et al. 1981:106). Maunupau provides the following details about *kū'ula*:

. . . In the olden days, every heiau or temple had in it a fish god or *kuula*. Each fisherman had his own *kuula*. Perhaps it might be a stone or image he had pulled up in the ocean, and which he regarded from then on as his *kuula*, or it might be the family god or *aumakua*. The *kuula* was supposed to bring luck and success in fishing. (Handy et al. 1981:105)

Each *kū'ula* was different in terms of what was *kapu*, because what was made *kapu* for one *akua* was not the same for another. For example, a *lawai'a* could be banned from everything that consisted of the color black in his presence, which would include everything from clothing and household items to encounters with others who might be dressed in black (Malo 1951:208). Other items considered *kapu* included the use of *'ōlena* (turmeric; *Curcuma domestica*) and *'alaea* (water-soluble colloidal ochreous earth), both of which were used for food, medicinal, and clothing dye, among other things.

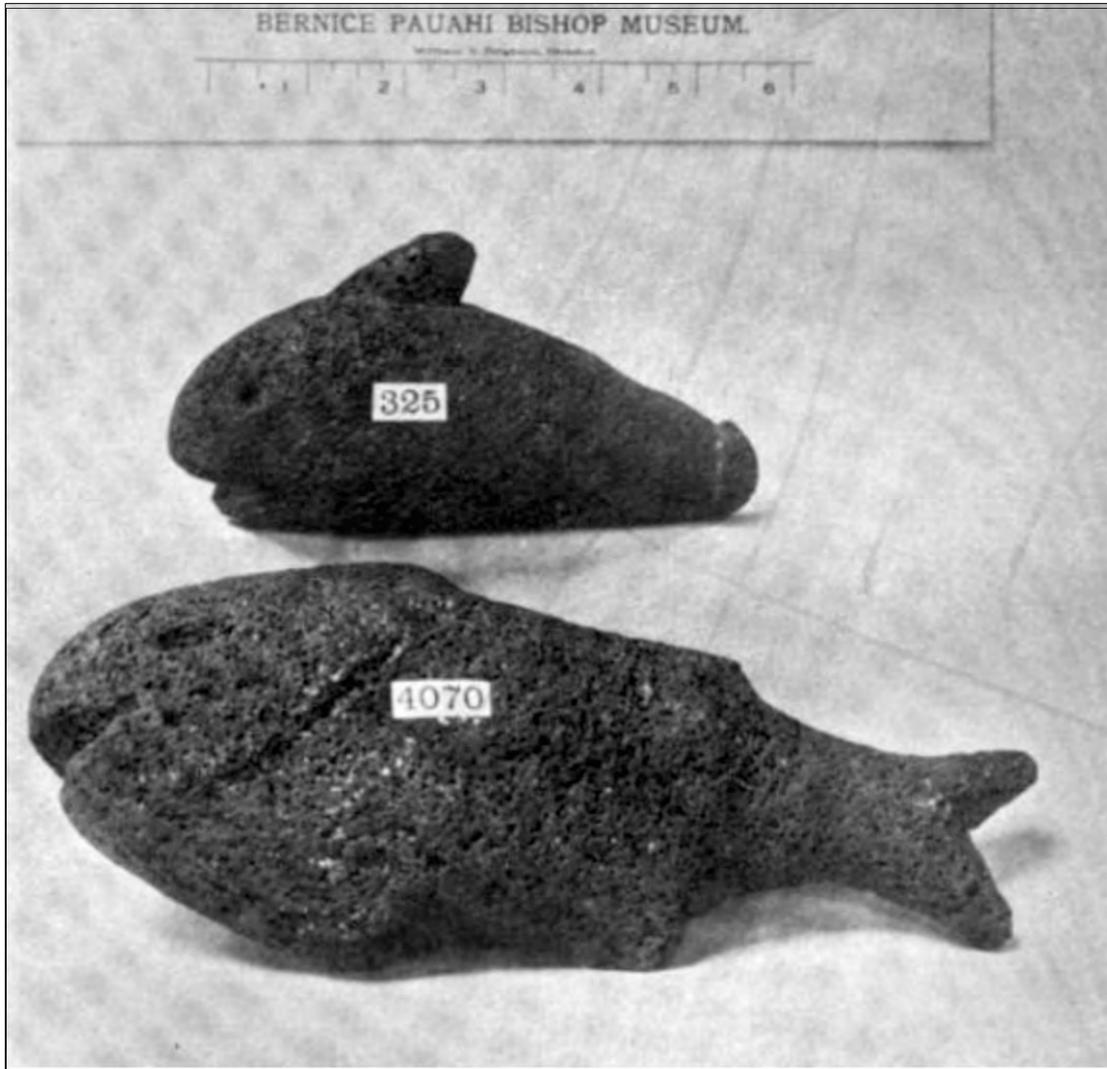


Figure 27. *Kū'ula* stones (Brigham 1902:94)

According to a legendary account, the goddess Hi'iaka mentions a *kū'ula* known as Malei, who was also believed to be a *kupua* (demigod,) in a chant (Emerson 1915). Half-way through the Kaiwi Channel, on her way to O'ahu from Moloka'i, Hi'iaka addresses Malei with the following condolences, which also mention other storied places on Oahu:

Owau e hele I n alae ino o Koolau,
I n alae maka-kai o Moe-au;
E hele ka wahine au-hula ana o ka pali,

Nana uhu ka'i o Maka-pu'u—
He i'a ai na Malei, na ka wahine
E noho ana i ka ulu o ka makani
I Koolau ke ola, i ka huaka'i malihini
Kanenae i ka we-uwe'u,
Ola i ka pua o ka mauu.
E Malei e, e uwe kaua;
A e Malei e, aloha-ino no, e.

I walk your stormy caps, Ko'olau,
The wave-beaten capes of Moe-au,
Watch-towers, where the women who brave
the sea

May the uhu coursing by—
Meat for the woman who faces the gale,
Sea-food for the woman Malei;
For her living comes from Koolau,
From the pilgrim bands that pass her way;
Yet we bless the herbs of the field,
Whose bud and flower is meat for Malei:
We pity and weep for Malei. (Emerson
1915:88)

3. Background

Additional accounts regarding Malei are reported by Sterling and Summers, such as a story in which some men attempted to dig Malei out of the ground but failed to find the *ku'ula* and fell ill after they heard a voice say, “Onia i paa” or “Move so you cannot be removed” (Sterling and Summers 1978:258). Another account describes Malei being placed at Makapu'u and how the *ku'ula* was responsible for increasing the *uhu* population from Makapu'u Point to Hanauma Bay (Sterling and Summers 1978:259). Once Malei was established on the eastern shoreline, *ali'i* and *maka'ainana* placed offerings of *limu lipoa* on the *ku'ula*.

In describing the purpose of *kū'ula*, Kihe relates that “...*aia maia wahi he kuula, oia hoi, he wahi hooulu i'a a maia wahi e hanaia ai na hana hoomana hooulu i'a, a hoolaupa'i a hoomomona hoi i ka i'a...*[located at this place was a *kū'ula*, that is, a place to increase the fish and at the place is where ritual occurred to increase the fish, and multiply and fatten the fish...]” (1924:4). In his chapter titled “Fish and Fishing” Donald Mitchell reports that large *kū'ula* were often “set up on promontories along the sea shores, or near streams and ponds” while “small *kū'ula* were carried to sea in the fishing canoes to attract fish” (Mitchell 2001:151). Per Mitchell, some *kū'ula* were contained within *heiau* and “set in circular enclosures, nearly always built of limestone or coral,” (ibid.). His description continues thusly,

Within the enclosure of the large shrine, sometimes called a *heiau ko'a*, an *imu* was kept. Here pigs were cooked and eaten, along with other feast foods, as part of the ceremony of dedicating a new fishnet. Also within the area was a *lele* altar where bananas were offered. These may be a tribute to Kanaloa who is associated with bananas. (These fruits were never carried to sea by fishermen.)

The customs seem to have differed among the fishermen as to the number of fish that would be left on the fishing shrine when they returned from a successful catch. This is understandable since the fishermen prayed to and respected their own family *'aumakua* as well as *Kū'ula*.

Upon returning from the sea some fishermen went to the *ko'a* with two fish in their right hand for the male *'aumākua* and two in their left hand for the female *'aumākua*. They addressed the gods and placed the fish on the altar. After the gods had received the “essence” (*aka*) of the offering the fishermen were free to take the fish away and add them to the catch for distribution and use.

Maunupau wrote that the first fish caught was marked by cutting off its tail. It was placed in the bow of the canoe and was *kapu*. When ashore the fishermen placed this fish on the *kū'ula* for his *'aumakua*. (2001:151-152)

The cycle of giving back to the *akua* was accomplished through regulatory tribute associated with the *kū'ula*. There are contrasting accounts as to how this was accomplished, but Maunupau relates that “the first fish caught was marked with a tail or fin mark and saved as an offering to the *kuula*” (Honolulu Star-Bulletin 1931). Similarly, Keli'ipio and Nakuina (1900:111), writing during the late 19th century, expanded upon this practice but refer to *ku'ula* as an *akua* unto itself, as follows:

The first fish caught by fishermen, or any one else, was marked and dedicated to *Kuula*. After this offering was made, *Kuula's* right therein being thus recognized, they were free from further oblations so far as that particular variety of fish offered was concerned. All fishermen, from Hawaii to Niihau, observed this custom religiously. When the fishermen caught a large supply, whether by the net, hook or shell, but one of a kind, as just stated, was reserved as an offering to *Kuula*; the remainder was then free to the people.

Another account tells of offerings made at the *heiau* dedicated to *Kū'ula* were made immediately upon the return of the canoe to the shore:

As soon as the fishing fleet reached the shore, the head fisherman stepped ashore holding an *aku* fish in each hand and went to the *heiau* of *Ku'ula* where he offered prayer; and when he had finished this worship of the god, he threw down the fishes for the male *aumakua* on one side and those for the female on the other. (Kamakau in Titcomb 1972:44)

Kū'ula bear the name of *Kūka'ilimoku* (*Kū*), an *akua* traditionally associated with war. Fishermen often prayed, and still pray, to *Kūka'ilimoku* and his wife *Hina* (Beckwith 1970:11). *Kūka'ilimoku*, as the ruler over all of the male gods, had dominion over *Kū'ulakai*, an *ali'i* and *akua* of *Hānā*, Maui, who himself controlled “all the gods of the sea” (1970:19). Valeri (1985) relates that *Kū'ulakai* married *Hinapukui'a* (“*Hina* gathering seafood”), whose dominion was over the shoreline, and to them was born their son *'Ai'ai* (“eats food”). Fishing stones dedicated to *Hina* and *'Ai'ai* were once utilized by the ancient fishers of *Hawai'i*. The *mana* of *Hina* was said to control certain fish, namely the *aku*, *akule*, *'ō'io*, *moi*, *a'u*, and the *manini* (Fornander 1919-1920). Fornander relates that things that were reddish in color were considered sacred to *Kū*. Therefore, in addition to *'aumākua*, *kū'ula* stones were imbued with the spirit of

their namesake Kū'ulakai as well as Kūka'ilimoku. The following account, compiled by June Gutmanis (from George Ai, Louis Aila, Ned Burgess, Arthur K. Cathcart, Ah Sam Cheong, Thomas Maunupau, Kalahikiola Naluelua, Henry Young, and Maryknoll Kalahikiola Sotkaeff), details how *kū'ula* stones acquired the spirits within them. This account explains the mutually beneficial relationship between *kū'ula* and their *po'e lawai'a* caretakers:

Kū'ula stones were believed to contain a spirit that attracted fish and helped fishermen. They could be either naturally shaped stones or slightly worked. According to tradition, the naturally shaped stones contained a spirit, either placed there by the gods or there of its own choice. A man-made *ku'ula* was believed to receive its spirit only after appropriate prayers and offerings had been made. The *ku'ula* could be either of black- or light-colored stone; some said that the dark stones were male and the light ones female.

A naturally formed *ku'ula* might be found by a fisherman realizing that the stone contained a spirit. Other times, it was believed, a stone chose a fisherman for its *kahu* (caretaker). It might come to him in a dream, saying, "I am cold, come and get me." The fisherman would ask, "What do you say? Where are you?" The stone would then describe just where it was and how to find it, what to bring as an offering, and when to come for it. Sometimes the stone would not reveal what it wanted the first time it appeared in a dream. It might take days, weeks, or even months before the stone revealed its whereabouts. If the stone was female and the dreamer a man, the stone might even flirt with him.

The dreamer would search for the stone, carefully following all the directions given by the *ku'ula*. When found, the stone would have the mouth of a fish. It when then be taken home and put in a *kapu* (taboo) place where nothing could disturb it. Only the guardian chosen by the stone could handle it. It was believed that if others handled it and the stone did not wish them to, it would become hot like fire.

Those who had *ku'ula* stones believed that caring for them was as serious as caring for a baby. The guardian would ask the *pohaku* (stone) what it wanted. The answer would come in a dream or vision. The *ku'ula* had to be fed three meals a day. If even one meal were missed, the guardian could be in for trouble. It also needed clothing—a *malo* (loincloth) that could be wrapped around the stone or used as a blanket. The *malo* had to be kept very clean.

According to tradition, if the stone was well cared for and all of the requirements met, its guardian would profit richly. It was said that the more you gave the stone, the more fish you would catch. Lights, laughter, and activity would bless the home of the caretaker.

Sometimes the *ku'ula* would vanish. Like a little child it would go out to play and disappear. But apparently it always knew when it was time to come home and would then reappear.

A person in need of help would traditionally make offerings to the stone and wait. It might take days or even months, but when the stone was ready, it would give the location of a school of fish. It would also tell what time of day the fish would appear and what line or net and bait to use. When caught, the fish were to be shared with everyone. Pregnant women customarily received double the share of others. (Gutmanis 1991:26-28)

Per Gutmanis, an vital aspect of the keeping of *kū'ula* was that they were transferred from one generation to the next:

A *ku'ula* could be used for generations. When the guardian had grown old, the stone would tell him who the next caretaker should be. It would know which child in the family should carry on the tradition. It was believed that the stone could "fall in love" with anyone.

Sometimes the *ku'ula* would be given to a member of the family, but the guardian would not tell the chosen person the purpose of the stone. One night the stone would come to its new caretaker and reveal its name, its work, and how to care for it. It could be within a few days or it might take years.

Belief in the *ku'ula* and *koa* stones continues. The traditions surrounding them are still practiced by some, and the recipient of such a stone must care for it. Its powers are unknown and untapped. The stone may be a source of power for good, and, if treated with respect, one that will reward its guardian richly. (Gutmanis 1991:26-28)

Thus, the continued care and worship of *kū'ula* by Hawaiian *po'e lawai'a* was a quintessential spiritual practice and heritable custom that endures as a tangible connection to the past. Drawing upon the knowledge of the ancient *po'e lawai'a*, whose spirits remain tied to the depths of the *kai* and the treasured *kai lawai'a* (fishing grounds), it is clear that Kānaka Maoli revered all marine life and holistically managed the marine resources. Since becoming a *po'e lawai'a* was a privilege,

3. Background

each fisher felt a deep respect for the ocean's cosmic connection with the heavens and the earth, and while it was their job to provide food for their *'ohana* and *ali'i* on land, they made it their *kuleana* to protect and perpetuate the ancient fishing grounds. Although the *'ike* (knowledge) of Kānaka Maoli extended from the mountain tops to the depths of the ocean, for the purposes of the current study, the remaining discussion will focus on the traditional fishing methods, beliefs, and cultural practices associated with the nearshore fisheries that are within the study area vicinity.

***Loko I'a*: Fishponds**

Another method by which Kānaka Maoli sustainably supported themselves was through the creation of a distinctly Hawaiian aquaculture system, known as *loko i'a* (fishponds). Although not used for aquarium collection, as a number of functioning *loko i'a* are still found within the coastal portion of the current study area, a discussion of these vital components of traditional Hawaiian resource management is presented below. Present-day *loko i'a* located within the study area include Waikalua Loko in Kāne'ohe Ahupua'a, He'eia Fishpond in its namesake *ahupua'a* (Figure 28), Kahouna Fishpond (also known as Kahalu'u Loko I'a also in its namesake *ahupua'a*), Mōli'i Fishpond in Hakipu'u Ahupua'a (Figure 29), Kānewai Loko I'a in Waikīkī Ahupua'a, Kalauha'iha'i Fishpond in Waimānalo Ahupua'a, and Loko Ea and 'Ukoa Pond in Kawailoa Ahupua'a. The term *loko* is used as the general term to refer to any pond, lake or pool of water and *i'a* referring to the fish that were raised therein (Pukui and Elbert 1986). While the initial origins of *loko i'a* remain largely unknown, some walls have been carbon-dated to AD 1400 (Keala et al. 2007).

Traditional lore associates this engineering feat with the god Kū'ulakai (Fornander 1919-1920; Valeri 1985). Kū'ulakai is said to have built a large fishpond next to his home that was filled with fish (ibid.). These fish were considered the bodies of Kū'ulakai, his wife Hinapukui'a, and their son 'Ai'ai, all of whom were important fishing gods (Fornander 1919-1920). A report by Surveyor John Cobb details traditional Hawaiian lore attributing the construction of *loko i'a* to the Menehune, the legendary race of small people who worked at night building fishponds, roads, and *heiau*. The *loko i'a* were typically owned by the *ali'i* who employed *konoiki* to manage and oversee the daily operations while *maka'āinana* (commoner) were principle laborers who built and repaired the pond walls. Cobb was fascinated by the fishponds and noted "this is the only place in United States territory where fish ponds are found on such an immense scale and put to such general and beneficent use" (Cobb 1902:746).



Figure 28. He'eia Fishpond, view to south.



Figure 29. Mōli'i Fishpond in Hakipu'u Ahupua'a with Kāne'ohe Bay beyond.

During the early 1900s, The United States Fish Commission conducted an in-depth report of commercial fishing throughout the Hawaiian Islands; Cobb surveyed the island of O'ahu and counted seventy-four fishponds yielding 560,283-pounds of fish with a value of \$148,850 (Cobb 1902:749-750). Cobb reported that there were probably double the amount of fishponds a mere thirty years prior to his 1900 survey. His reasons for the decline in fishponds include a diminishing native population who once tended to the ponds on a regular basis; the conversion of *loko i'a* to rice and *kalo* (taro; *Colocasia esculenta*); the introduction of invasive species that overtook *loko i'a*; and the filling in of ponds for residential development (Cobb 1902:747). In 1964, Catherine Summers of Bishop Museum reported a count of ninety-seven fishponds in the publication titled *Hawaiian Fishponds* (Summers 1964)

Loko i'a were a vital component of the total food production system in Precontact times and their primary purpose, as purported by Apple and Kikuchi was to make "fresh food, available in quantity at call..." (1975:6). Keala et al. elaborate on this theme, and note that fishponds "...were used to provide a reliable, convenient, and every-ready supply of fresh seafood for the ruling *ali'i* (chief) and the royal court" (Keala et al. 2007:7). During Precontact times, and even into the early Historic period, all *loko i'a* and their products were strictly controlled by the ruling class. Apple and Kikuchi relate the importance of *loko i'a* to Hawaiian nobility and the general populace thusly,

Access to these ponds and their products was limited to the elite minority of the native population - the chiefs and priest. Prehistoric ponds and pond products appear to have been taboo to the vast majority of Hawaiians and to have yielded them no direct benefit. However, indirect public benefit came from ownership by the chiefs of exclusive food sources. Royal fishponds and their terrestrial equivalents, the royal gardens (*Kō'ele*), insured less demand on the commoners' food production resources. Every fish taken from a royal fishpond left its counterpart in natural habitat available to lesser chiefs and commoners. Ownership of one or more fishponds was one of the ultimate, high-status symbols in the status-conscious Hawaiian culture. (1975:2)

Although fishponds and their products were closely guarded by the ruling *ali'i*, and practically off-limits to the common people, they helped reduce pressure on the nearshore resources and thus provided a sustainable supply of fish for the massive royal courts that formerly dotted the coast of O'ahu. While the construction of a fishpond was an enormous undertaking that required the labor of many individuals, fishponds did not require as much labor to maintain; unless the fishpond was impacted by severe weather or war (Apple and Kikuchi 1975). Apple and Kikuchi (1975)

3. Background

identified five primary types of fishponds: 1) *loko kuapā*, characterized by its seawall (*kuapā*) in which at least one *makahā* (sluice gate) was built; 2) *loko pu'uone* (or *loko hakuone*), identifiable by its natural elongated sand barrier that enclosed a body of water; 3) *loko wai*, a body of fresh water typically found inland from the shoreline; 4) *loko i'a kalo* (or *loko lo'i kalo*), a fishpond that utilized an irrigated taro plot; and 5) the *loko 'ume'iki*, a fish trap recognizable by its numerous stone-flanked lanes that allowed fish to move into or out of the trap with the ebb and flow of the tide. With the exception of *loko wai* and *loko i'a kalo*, which were inland freshwater ponds, all remaining fishponds were constructed within the littoral zone and were nourished from a mixture of freshwater (*wai*) and seawater (*kai*) (Keala et al. 2007). Per Kamakau, women were not allowed to walk on *kuapā* during their menses as the walls would be considered defiled (Kamakau 1976).

Guard houses or *hale kia'i* (Figure 30) were known at seven fishpond locations throughout the Hawaiian Islands. *Hale kia'i* were not considered the primary residence for keepers; instead, they functioned as a shelter for keepers while on patrol. The only *loko i'a* on O'ahu associated with a *hale kia'i* was He'eia Fishpond (Apple and Kikuchi 1975:23). Hawaiian historian Samuel Kamakau wrote in the Hawaiian Language newspaper *Ke Au 'oko'a* on Dec. 9, 1869:

On the nights when the tide was high every *kia'i* (keeper) slept by the *makahā* of which he had charge, and it was the *kia'i loko* (keeper of the pond) custom to build small *hale kia'i* from which to guard the fish from being stolen or from being killed by pigs and dogs (Apple and Kikuchi 1975:24).



Figure 30. He'eia Fishpond *hale kia'i* and *mākāhā*.

Traditionally, the primary species raised within *loko i'a* were herbivores, specifically the *'ama'ama* (mullet; *Mugil cephalus*) and *awa* (milkfish; *Chanos chanos*) were. While grown primarily for food, these two species were part of a grouping of fish that were traditionally known as *pua'a kai*, literally translated as "sea pig," which were used as a substitute for pig offerings (Pukui and Elbert 1986:345). Other species of fish that were considered *pua'a kai* included the *āhole* (*Kuhlia sandvicensis*), *humuhumunukunukuapua'a* (*Rhinocanthus* sp.), *kūmū* (*Parupeneus porphyreus*), and *pualu* (*Acanthurus* sp.). Tribute to the respective gods was an important component of maintaining a fishpond and detailed in the account concerning the great fishpond of Pā'aiea which was consumed by Pele after being denied fish from the head fisherman (Maguire 1926).

The 'o'opu hue or white-spotted puffer, which is also on the Top 20 Species list, was an integral component to loko i'a health as it helped keep the mā kāhā clean. Commonly referred to as the balloonfish, it is known in Japan as fugu and considered a deadly delicacy. A biography detailing the recollections of kia'i of Mōli'i Loko I'a, George Uyemura, recounts when it was legal to sell 'o'opu hue in the markets. Most of the customers that served this special dish were the Japanese teahouses of Honolulu until it was later banned for sale (Sato and Lee 2007:82). The 'o'opu hue was an easy fish to cultivate as it came to the mā kāhā to feed and could be harvested year-round:

At night and in the early morning hours, George could hang a light over the sluice channel and scoop up the slow-swimming balloonfish as they swam by. The market was small and very limited, but balloonfish was one of the few species George was able to harvest on demand, according to the needs of the market. (2007:82)

TRADITIONAL HAWAIIAN NEARSHORE FISHING TECHNIQUES

Kānaka Maoli were tremendously adept *po'e lawai'a* (fishers) who were intimately connected to the *kai* and its underwater environment. They were sensitive to the ocean's ever-changing conditions and developed myriad methods to harvest the ocean's bounty wherever they lived. Fishing methods varied greatly within *nā papakū o ka moana* with "a different method in shallow water, and in deep water, and a different method again in the fishing grounds midocean" (Fornander 1920:174). While smaller reef fish, *limu*, shellfish, echinoids, and crabs could be gathered from shallow nearshore waters and along the rocky shoreline of the study area, to access the *kai lawai'a* within the open ocean, *kanaka* used *wa'a* (canoes) and specific fishing techniques designed for deep-sea fish. Although the harvesting of nearshore marine resources was a year-round endeavor, offshore fishing was typically done during the summer months when the sea was calm and particular types of *i'a* were more plentiful. (Handy and Pukui 1998). The larger deep-water fish species that were "treasured most for subsistence" included 'ahi, aku, a'u, mahimahi, nai'a, kumu, 'ōpelu, pānuhunuhu, hala hala, uhu, and ulua (Handy and Pukui 1998:223). Handy and Pukui also describe the gender-based division of labor associated with the different harvest zones of the ocean, noting that "offshore, reef and along-shore fishing was the function of men, while the collecting of shellfish, sea urchins, crabs and the like, and seaweed was done by women and children" (1998:176).

Traditional nearshore and intertidal marine zones identified by Malo (1951) and elaborated on by Fornander (1920) and Kamakau (1979) included the 'ae kai, also referred to as *lihi kai* (water's edge), the *pāhola*, also known as the *hohola* or *pālaha* (where the water spread about), the *pu'eone*, (sand dunes), also the *po'ina nalu*, *po'ina a kai*, or *po'ina kai* (where the waves break). There were also places specifically designated for the catching of small black crabs known as the *kai 'elemihi* and *kai haha pāpā'i*, and for the gathering of cowry, or *leho* known as *kai 'o leho*. Similarly, *uhu* (parrotfish) were gathered in the shallow waters known as *kai kākā uhu* with dip nets such as the 'upena pōuouo, 'upena kākā uhu, or 'upena kākā 'ōpule often lured by another *pākali* (decoy) *uhu* (Kahā'ulelio 2006). Pole fishing (*kā mākoī*) was conducted in shallower waters when the *kai paeaea* (calm seas) occurred (Kamakau 1979).

The methods used for fishing were dependent upon the type of marine species that were sought. Some methods required nothing more than a gentle, but swift hand and a watchful eye, while other methods required specialized fishing apparatus that were crafted from a blend of natural materials including, but not limited to, processed plant fibers, shell, bone, wood, stone, and foliage. Thus, fishing required careful preparation of not only the fishing tools, but also deliberate composure of the mind, body, and spirit to properly attune with nature (Handy et al. 1981). According to Handy et al. (1981), careful protocol was observed in each step of the preparation for fishing from the shaping and lashing of *makau* (hooks) and *pā* (lures), and the weaving of 'upena (nets) and *hīna'i* (baskets) to the shaping of 'ō (spears), the storing of the different fishing apparatus, the observation of *kapu* by members of the 'ohana, and the silence required prior to an expedition.

Some fishing was done on an individual basis, but as demonstrated below, the traditional practice of nearshore fishing at times involved all able-bodied persons regardless of age or gender. Some of these methods are described by the honorable Daniel Kahā'ulelio, who recognized the immeasurable value of preserving, sustaining, and sharing generational knowledge of ancient Hawaiian fishing practices passed down from his *mākua* (parents) and *kūpuna* (elders). After being approached by the editor of *Ka Nūpepa Kū'oko'a*, Kahā'ulelio consented to pen a series of columns detailing traditional Hawaiian fishing methodology, the first of which was published on February 24th, 1902. Subsequent to his passing, Kahā'ulelio's articles, originally written in Hawaiian, were translated into English by Mary Kawena Pukui. Kahā'ulelio's comprehensive narratives offer precious insight into traditional methods of marine resource procurement, many of which are filled with personal recollections.

3. Background

Twentieth-century scholar and *limu* expert, Isabella Abbott, in drawing from an assortment of manuscripts from early works of J. F. G. Stokes, W. T. Brigham, and Hawaiian scholars like Kamakau, also compiled a great deal of information on traditional fishing methods. Abbott's work focused on the ethnobotanical uses of plants in Hawaiian culture, and was published in her book, *Lā'au Hawai'i Traditional Hawaiian Uses of Plants*; her descriptions of nearshore fishing methods are presented below. In the late 1960s, Thomas S. Newman (1970) compiled information about nearshore fishing methods, which he published in his dissertation titled *Makai—Mauka: Fishing and Farming on the Island of Hawaii in A.D. 1778*. Newman, who attempted to "reconstruct sea exploitation practices for specific time periods" (1970:49) compiled information from late 18th and 19th century accounts. Newman relied almost exclusively on the works of Emma Metcalf Beckley (1883) and John Cobb (1902). Accordingly, 20th century sources were omitted from his synopsis as, according to Newman, these sources failed to provide "(1) demonstratable authority on the subject and (2) a careful delineation of the time period reflected in their descriptions" (1970:49).

Emma Metcalf Beckley Nakuina was a Hawaiian judge who presided over water rights cases. She also wrote extensively about Hawaiian culture and folklore (Hopkins 2012). In 1901, John N. Cobb who was the Agent of the United States Fish Commission conducted an investigation of the fishes and fisheries of the Hawaiian Islands to cover "not only the present condition of the commercial fisheries of the islands, but also of their past history and the changes in the methods, extent, and character of the fisheries in historic times, as shown by records or traditions..." since the arrival of foreigners (Cobb 1902:717). Cobb's work included observational research, interviews with local fisherman, and analysis of government documents, newspapers, and other pertinent records, as well as recommendations on possible improvements to the laws in place at that time. Cobbs study detailed ethnic groups who were employed by the fishing industry (further broken down by fishing methods including type of boats used, specific nets, etc.); market values of species and products, and the weight and value by island. The nearshore fishing methods compiled by Newman for Hawai'i Island also apply to O'ahu and are thus presented in the ensuing discussion, which is organized by method.

Fishing with Basket Traps

Broadly known as *hīna* ʻī, basket traps were most often woven using the roots of the climbing *'ie'ie* (*Freycinetia arborea*) plants; while crude versions of *hīna* ʻī were sometimes made from the vines of the *'āwikiwiki* (*Canavalia galeata*) plant (Abbott 1992). Abbott also relates that both "men and women alike laid traps in the reef shallows for small-to medium-sized fish such as *hīnālea*" (1992:84). *Hīna* ʻi varied in shape and size, some were baited while others were weighted down with a sinker (Figure 31).

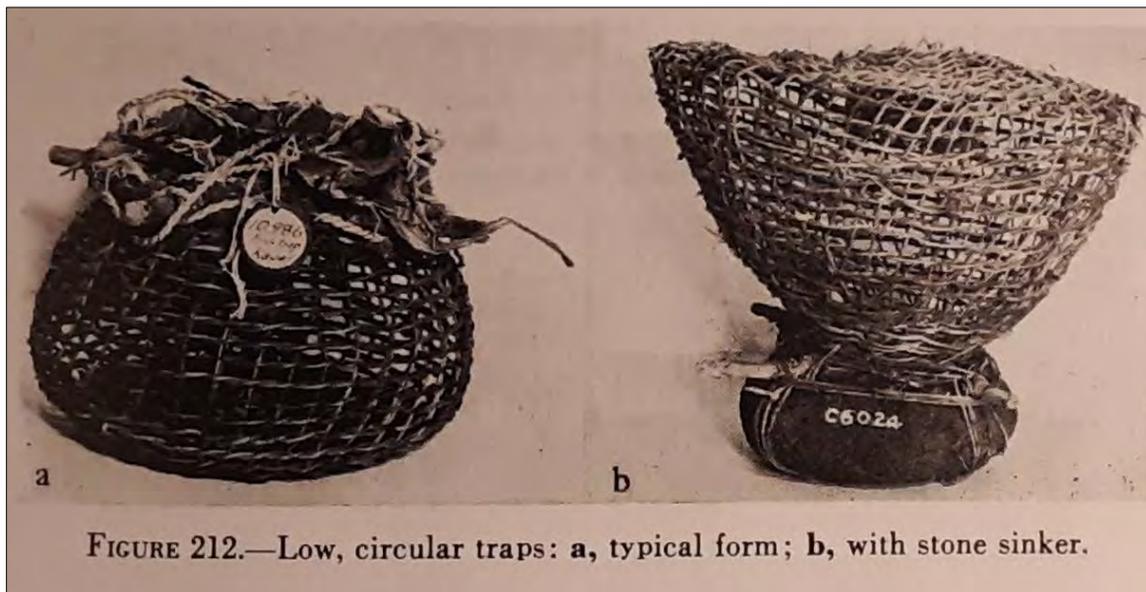


Figure 31. Basket traps (Source: Buck 1957)

In addition to their use in nearshore waters, some *hīna'i* were employed when catching freshwater stream fish including 'ōpae (shrimp) and 'o'opu, which was a practice done almost exclusively by women. Newman related the following details regarding basket traps:

Relatively few basket traps were made and most were used by women to catch 'ōpae, hīnālea, kala, and 'uī'uī. The traps were woven from fresh vines or flexible branches into box-shaped designs. In one common technique, a simple basket was lowered to the bottom in shallow water, often with a bait of pounded shrimp inside and when fish entered the trap, the woman watching nearby would dive to bring the trap to the surface. A more sophisticated version had a conical woven entry protruding into the interior where it terminated in an opening only large enough for a fish to squeeze through. The trap, baited with seaweed, ripe bread-fruit or papayas, cooked pumpkins or sweet potatoes, was lowered to the bottom, and when the fish entered by the conical entry they were unable to find their way back again. (1970:52-53)

One such basket trap was called *hīna'i ho'olu'ulu'u* (a diving basket), which was made from the vines of the 'āwikiwiki (*Canvalia galeata*) and later the weeping willow tree to catch hīnālea in nearshore waters. The method of using the *hīna'i ho'olu'ulu'u* is described in the book *Hawaiian Fishing Traditions* as follows:

The *hīna'i ho'olu'ulu'u* [diving basket], used in catching hīnālea (a small species of Julis), is a small basket made from the vines of the 'āwikiwiki (a convolvulus) and is made anew from day to day as wanted. A light framework of twigs is first tied together and then the 'āwikiwiki vines, leaves and all, are wound in and out round and round till the basket is of the requisite size, three or four feet around and about one and a half feet deep. Shrimp pounded and enclosed in coconut fibre [*sic*] is occasionally placed at the bottom of the basket for bait, but usually the scent of the bruised and withering 'āwikiwiki leaves seems to be sufficient to attract the hīnālea. Women attend to this kind of fishing. They wade out to suitable places, generally small, sandy openings in coral ground or reef, and let the baskets down suitably weighted to keep them in position. The weights are attached in such a way as to be easily detached. Each woman then moves some distance away from her basket, from where she can watch the fish enter it.

When all the fish in sight have entered, the woman takes the basket up, transfers the fish to a large, small-mouthed gourd, and moves the basket to a fresh place. This kind of fishing can only be done on calm, sunny days at low tide. Since the introduction of the weeping willow, the *hīna'i ho'olu'ulu'u* are sometimes made from willow twigs. Such baskets can be used over and over again. Men sometimes take such *hīna'i* and using wana (sea urchin) for bait, with the top of the shell broken to expose the meat, place them in comparatively deep water, piling stones around them to keep them in place. The men leave them for a day or two, and if the place is a good fishing ground, the baskets will be full by the time the men return. (Manu et al. 2006:95)

Other basket traps include the *hīna'i uiui* (*Platophrys pantherinus*) which was used on a small flat-fish said to make an appearance every ten, fifteen, and twenty years; when spotted, fishermen and residents usually took this as a bad omen and thought of it as a "precursor of death of a very high chief" (Cobb 1902:732). Other baskets employed were the *hīna'i puhi* used for eels and the *hīna'i kala* (also known as a 'ie kala) that was utilized for catching the kala, one of the fish on the Top 20 Species list. A *hīna'i kala* was a large trap that could hold up to sixty kala at a time (Kamakau 1976:84). Per Kamakau's account, *Limu kala* was used to first feed the fish in a sea pool (*kaheka*) consistently over a period of time. When fishermen saw that the fish were plentiful, an 'api (feeding basket) was brought back with *limu kala*. Sticks were gathered—*lama* (ebony; *Diospyros*) for warps, 'aukā and *ninika* (Malabar nightshade; *Basella alba*) for the wefts, and 'ie (*Freycinetia arborea*) for twine. In the evening, *limu kala* would be dropped in the *ko'a* and the 'api. The following morning the traps were woven under *kapu*. Those who were weaving the *hīna'i* were not allowed to be in contact with a menstruating woman, a corpse, or to leave the site until completion. No shadow was to be cast upon the *hīna'i kala* either. Men were not allowed to rejoin their wives or households until the basket was completed. When the basket was completed, a prayer was made to the *akua* who could release the restriction to free the *kapu* (Kamakau 1976:84-85). Once the *kapu* was lifted, husbands could return home and the *hīna'i kala* could be used. The day the *hīna'i kala* was employed was a highly publicized day where villagers and visitors gathered. Typically, the first day the *hīna'i kala* was used, all catches were reserved for the *ali'i* of that land, the 'aumakua, *akua*, and fishermen (ibid.). The second day the take was for the *kama'āina* and fishermen. The first catch was for the 'aumakua to release any restrictions and to make an offering (ibid.).

Collecting Fish by Hand

Hand collecting, which often required nothing more than a watchful eye, a swift hand, and a storage vessel. Hand collection was utilized to catch a variety of nearshore species. In describing the method of hand collecting, a practice that was done by scouring and or diving the nearshore areas, Newman provides the following description of hand collecting, which was primarily a nocturnal pursuit done with the aid of torch light, similar to that depicted in Figure 32,

Collecting by hand was practiced in shallow water, both on the surface and by diving. Some types of fish were caught by hand in shallow pools as well as by divers in underwater caves while other food items collected by hand included crabs, lobsters, eels, sea urchins, sea cucumbers, shellfish, octopi, shrimp, and seaweed. Much of this type of exploitation was practiced at night, particularly for mobile fauna. No items of material culture were used except for fiber containers in which the organisms were placed, and perhaps the torches used at night to mesmerize fish (Newman 1970:51).



Figure 32. Night fishing with a torch ca. 1948 (Photo credit: Eliot Elisofon).

Fishing with Hook and Line

Although the hook and line method of fishing was primarily used in offshore waters, it was also employed in nearshore waters. Abbott notes that “hooks [Figure 33] were mainly fabricated from non-plant materials—pearl shell, turtle shell, ivory, and bone—but hardwoods like ‘*alahe ‘e* [*Canthium odoratum*] and *koai ‘e* (*Acacia koaia*) also played a minor part” and that “...wood served only for the shaft of the two-part hook, the second part being a sharp tip made of bone or another substance that would hold a fine edge” (1992:83). The fibers from the hardy *olonā* (*Touchardia latifolia*) were the choice material for fishing lines. To camouflage the white fibers, fishing lines and nets were often immersed in a dye bath made of pounded *kukui* (*Aleurites mollucana*) bark, which resulted in a reddish brown coloration (Langlas 2003). In some cases the fisher, using just a baited hook and line, simply cast the rig into the ocean from the shore. In describing the use of a hook and line attached to a pole, Newman explains:

Sub-surface angling was done with a pole and line in shallow water and with hand lines for deep-water bottom fishing...Some were attached directly to the hook, while the palu [chum] bait was merely rubbed on the hook; often a bag of bait was lowered near the baited hooks and released underwater. (1970:62)

Newman also describes a slightly more complex hook and line technique called *kākā*, as follows:

Kākā Technique:-- Deep-water bottom fishing used a rig of multiple hooks attached by short leaders to the main 3/8th incl (1.7 cm.) fish line at intervals close to the bottom. Each short line with the hook attached was supported by a section of coconut midrib lashed perpendicular to the main fish line which served to keep the multiple hooks separated from one another and from the main line. (1970:62)



Figure 33. Traditional Hawaiian fishhooks (Source: Young 1999).

Fishing with Lures

Fishing lures crafted from a combination of stone, shell, wood, and plant fibers were utilized in the nearshore waters, as well as in offshore trolling. While mother-of-pearl shell was the primary material used for trolling lures, which were attached to a line and dragged behind a canoe to catch offshore pelagic species, nearshore lures were far more specialized and often used to capture *he‘e* (octopus). Octopus lures (Figure 34) were known as *lūhe‘e* and Abbot reported the following details about their construction and use:

In the pre-contact era, octopus was a very highly regarded food, and besides spearing these animals in their holes, Hawaiian fishermen caught them from canoes using two kinds of lures. The simple of the pair consisted of a hood of wood or bone lashed to a stick, a stone attached as a sinker, and a tuft of *tī* leaves to camouflage the hook. The second lure included all these elements but also incorporated the colorful, shiny shell of a Mauritius or tiger cowry (*leho*), bound back to back with the sinker. Since an octopus puts up a good fight, these lures were ruggedly built, tied with *olonā* cordage and perhaps secured with *kēpau* as well.

Similar lures have been made and used throughout Polynesia since time immemorial and, in the hands of a skilled fisherman, are very effective. The octopus (today commonly referred to in Hawai‘i as “squid”) is a keen-eyed animal generally curious about objects introduced into its environment, and it feeds on cowries, so a *leho* lure presented it a double temptation as the fisherman slowly dragged it, cowrie side up, along the bottom. (1992:86)

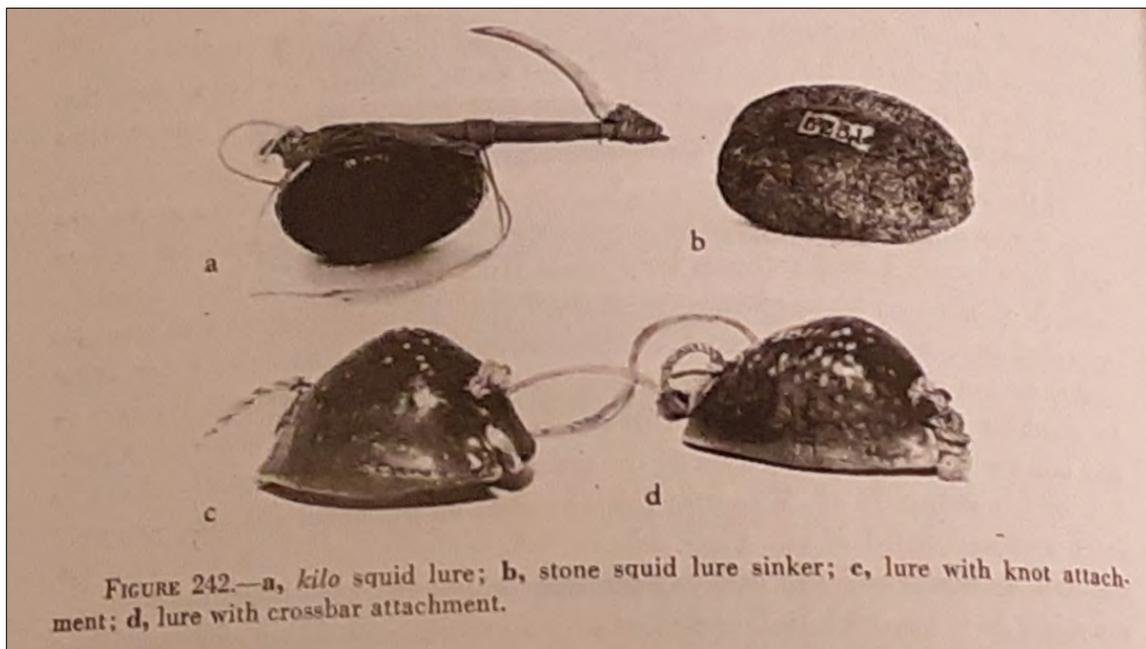


Figure 34. Examples of *lūhe‘e* (Source: Buck 1957).

Kahā‘ulelio (2006) describes another traditional fishing technique known as *melomelo*, which involved the use of a carefully curated stick as a lure to attract fish used to attract fish with a net from a canoe. This method was effective in catching various fish including *hīnālea*, which is one of the Top 20 Species (emphasis added), as follows:

It was a smooth, black stick, as long as from the knuckles to the armpit. It was made black. It had a small knob at the top, around which the line was tied. The stick was constantly toasted over the fire and rubbed with the oil of dried coconuts. The rubbing was done with a piece of *kapa* made of *mamaki* until it shone; then it was wrapped and laid away in the trunk. If we were to smell it, it was heavily fragrant. The canoe went out before sunrise, just outside of the breakers. There were two of us who used to go, my father and I, with a net having meshes two fingers in width, ten fathoms long, and three wide. As soon as the stick was let down, these fishes gathered to the spot: the *palani*, *mahamea*, *‘ōpelu*, *mā‘i‘i‘i* (*palapala*), *humuhumu*, *hīnālea* and so on. The net was lowered from the back of the canoe, then with a cord of the net held fast in the hand, my father leaped overboard and swam. I, in turn, held the *melomelo* stick. He swam around the canoe, where he came to the sticks that held the nets open. He tied them together and went on board the canoe, where he watched the fish circling around the stick. He jumped back into the water and pulled the support sticks until they met. All the fish were caught and we turned shoreward. My father called this kind of fishing a “morning meal,” a “cure for hunger,” and when the chiefs wanted fish, it was no trouble to get them. (Kahā‘ulelio 2006:111)

Fishing with Nets

Upena (nets) of various shapes, mesh width, and sizes were widely used for traditional nearshore and offshore fishing. The fibers of *olonā* (*Touchardia latifolia*) were the primary material from which nets and fishing line were made. *Olonā* required careful cultivation and could only grow in the wetter upland areas. For the fishers who relied on these valued fibers, procuring such material necessitated exchange with those of the uplands—a hallmark activity of the *ahupuaʻa* system (Abbott 1992). Abbott (1992), however, states that the myriad of nets that were traditionally employed can be categorized into four primary types: *ʻupena kuʻu* (gill net); *ʻupena pāloa* (long seine net); *hukilau* (seine net), and scoop nets. In addition, fishers were often seen among the reefs with long nets dangling from their bodies and hands, such throw or cast nets (Figure 35) were introduced by Japanese migrants around 1890, and became known as *ʻupena hoʻolei*, (Mitchell 2001). Elbert and Pukui (1986) list roughly thirty distinct names that were used to refer to different net types. The amount of culture-historical information available regarding traditional net fishing suggests that these methods were likely favored by Kānaka Maoli for the capture of both nearshore and offshore marine species. A selection of different types of nets and traditional netting strategies fishing are described in further detail below.



Figure 35. Man casting *ʻupena hoʻolei*. (Hawaiʻi State Archives PP-22-1-011)

'Upena ku'u (gill nets)

Gill nets or *'upena ku'u* (Figure 36) are so-called because fish become enmeshed within the openings of the net itself along their gills, and are later removed by hand. Of *'upena ku'u*, Abbott writes:

'Upena Ku'u (gill nets): These larger nets, with mesh up to three centimeters (one inch) in diameter, were set upright in the water to catch schools of fish such as *'ōpelu*, and *'akule*, species related to the mackerel. They worked by entangling the fills of the swimming fish and ranged from as short as seven meters (twenty-three feet) to ten times that length. (Abbott 1992:83)



Figure 36. Girl with gill net, late 18th century (Hawai'i State Archives PP-34-8-008)

Newman also provided the following late 19th century description of different types of gill nets utilized in Hawai‘i:

Gill nets were designed to entangle the fish in a net with a fairly large mesh instead of merely trapping them within an encircling small mesh net wall as was done with seines and bag nets. Gill nets were manufactured in different sizes according to the type of fish to be caught and the habitat to be exploited, ranging in length from about 55 feet (17 meters) to over 1,200 feet (366 meters), in depth from seven feet (2 meters) to 25 feet (8 meters), with mesh size from one-half to seven inches (1.2 to 17.7 cm.). Three basic techniques were used in gill netting:

1. letting the net remain stationary and allowing the fish to entangle themselves in the mesh;
2. driving the fish into a stationary net; or
3. moving the gill net to encircle the fish and then scaring them into the entangling mesh.

Stationary gill nets were often placed at high tide across shallow openings in the coral reef at night to entangle any fish navigating the fish run. Nets used in this fashion usually had a mesh of two to two and one-half inches (5 to 6 cm.).

Drawn gill nets were used to either completely encircle fish or to arc a half-circle around them before the fish were scared into the net by fishermen beating and splashing the water from within the circle or across the open end of the semi-circle. Sometimes, the nets were drawn up on the shore after the fish were meshed but at other times, the fish were taken out of the nets and put into canoes.

Lobsters were caught in a special gill net, with a seven-inch (18 cm.) mesh, by placing the net completely around a rock cluster and leaving it in place all night to entangle the lobsters as they came out of the rock cairn. (1970:53-54)

Moemoe (also known as *ho‘omoemoe*) describes a traditional method where a gill net was typically set then retrieved at a later time, as in the historical account above, fishers would set the gill nets to ensnare fish overnight and pull the nets the following morning—hence the name *moemoe*, which means “to sleep” (Weltman 2013). Kahā‘ulelio relates his experience of *ho‘omoemoe* below:

The net is laid at seven o’clock in the evening and only two fishermen are needed, one at each end of the long net, sixty fathoms or more in length depending on the desire of the fishermen. If at twelve o’clock the fishermen thought of going out to raise the net, they may do so... When the fish are gathered, we lay the net again for the coming of daylight, then the fisherman goes back to enjoy his sleep (2006:171)

Moemoe is a passive method and an example of the use of a stationary gill net from the 19th century account reproduced above. In contrast, the traditional Hawaiian method known as *pa‘ipa‘i* is an active method that requires active participation on behalf of the fisher to corral the fish into the net (Weltman 2013). As in the historical account, *pa‘ipa‘i* is thus named because the fisher would *pa‘i* or slap, beat, hit the surface of the water to scare the fish towards and into the awaiting gill nets (Weltman 2013).

‘Upena pāloa (seine nets)

Abbott describes *‘upena pāloa* or seine nets thusly,

... Rather than capturing fish by entangling them in the mesh itself, seines encircled the prey. Like gill nets, they were held upright in the water, their upper edged suspended from floats made of *hau* wood, the lower portions weighted with stone sinkers. Using large gill nets and seines was a community operation, involving a large number of people, numerous small canoes, and a lot of cooperation. (Abbott 1992:83-84)

Newman adds the following about *‘upena pāloa*:

A Hawaiian seine was a net deployed in the water and moved horizontally, trapping fish by impounding them within a complete circle formed by the net, or between the net and the shoreline. The fish were not normally entangled in the mesh as with a gill net, but rather were kept within a small circle by the net wall where they could be scooped out with small bag nets or dragged bodily onshore, net and all. A bag net was often used in conjunction with a seine. . . Seines varied in length from about six to over 350 feet (2 to 107 meters) in length, with the common large net measuring some 150 to 350 feet (46 to 107 meters) in length, about 10 feet (3 meters) in depth, with a mesh width of several inches. The net size and mesh type seem to have been dependent upon the particular types of fish to be caught and the habitats to be exploited. (1970:55)

3. Background

Abbott uses the term *hukilau* to refer to seine nets that were shorter in length and utilized in communal fishing endeavors carried out along the shoreline, as depicted in Figure 37 below, as follows:

Hukilau nets were used to capture smaller fish in shallow waters, usually in sandy-bottomed bays. The *hukilau* nets were shorter versions of the seine, with *tī* leaves tied along the top to alarm the fish and drive them into the center of the net. Setting a *hukilau* net, too, was a large, cooperative endeavor but with much of the work done by waders rather than from canoes. (Abbott 1992:84)

Although Abbott uses the term *hukilau* to refer to a type of large seine net, Kahā‘ulelio (2006) uses variations of the term *lau* to refer to various cooperative fishing methods, which involved the use of a *lau* or large seine net (Figure 38). Kahā‘ulelio (2006) describes the *lau* nets as being sewn together from at least three distinct nets that contained a different mesh width. These nets were traditionally woven from the fibers harvested from *wauke* (*Broussonetia papyrifera*) and *olonā*. Once the net was completed, men, women, and children were ordered to the uplands to gather yellowed foliage of plants such as *tī* or *mai‘a* (banana), along with dried *wiliwili* (*Erythrina sandwicensis*) wood, or dried gourds, for use as floats that were attached to the dragline and knotted with *tī* leaves.

Kahā‘ulelio also describes a cooperative fishing method known broadly as *lau*, which was carried out by men, women, and children under the direct supervision of a *po‘o lawai‘a* (head fishermen); he reports that “these people became the owners and shareholders in this kind of fishing” (2006:3). Although a great deal of labor and knowledge was involved in the preparation for and execution of communal fishing, it provided an abundance of reef fish such as ‘*ōpule*, *moi li‘i*, *palapala*, *kūmū*, *weke*, *kala*, *manini*, *moano*, *uhu*, ‘*ō‘io*, *hilu*, ‘*a‘awa* that could feed multiple ‘*ohana*. Per Kahā‘ulelio, *lau* was divided into two types—methods known as *lau nui*, *lau lele*, *lau kapalili*, and *lau ‘apo‘apo*, which utilized large draglines and were “done outside of the surf line, or where there was no surfline” (ibid.:3); and *lauahi*, *lau ‘ōhua*, *lau ‘ōhia liko*, *lau kō ‘upena pahu*, and the *lau kō pua li‘ili‘i*, which utilized drag nets and were “done within the reef” (ibid.).



Figure 37. *Hukilau* fishing with seine net (Hawai‘i State Archives PP-23-1-1-001).



Figure 38. *Lau* nets at Kualoa Ahupua'a with Mokoli'i in background; view to the northeast (Hawai'i State Archives PP-59-2-008-001).

Kahā'ulelio (2006) explains that with the *lau nui* method the net, which was attached to the dragline was loaded onto a canoe along with divers who took the net out to a depth of about fifteen fathoms. At the command of the *po'o lawai'a* (head fisherman), and with the aid of several other canoes, the divers carefully placed and arranged the net in the ocean and watched as the men in the canoe slowly paddled the canoes and net closer to shore. Kahā'ulelio writes of how the *lau* net was moved into shore thusly,

At that place, fifteen fathoms in depth, which I had mentioned before, the *lau* is let down to about half of the depth and is moved evenly up to a depth of four or five fathoms or less. The drag line goes almost to the sea floor but it doesn't completely touch, lest it snag on the corals or catch in hollows. When the stone anchors of the *lau* canoes are set, the men begin to pull the *lau* lines, six or seven men per canoe. When the sun shines directly down on the line, the shadows of the *lau* drive the fish shoreward to the place where the lines are being drawn. (2006:5)

As the net was drawn closer to shore, the *po'o lawai'a* and divers continued to monitor and adjust the net. The *po'o lawai'a* then determined where to lay the *papa* net, which measured roughly six to seven fathoms in length. While the *lau* net was used to usher the fish closer to shore, the *papa* net was used to catch the fish that were brought in; as the fish came closer to shore, the *papa* net was placed at the open end of the *lau* net. The divers continued to watch as the fish entered into the *papa* net, and when it was time the *po'o lawai'a* called for the lifting of the net into the canoe. Kahā'ulelio writes that "at this excited time, like a garden laden with flowers, such are the colors of the fish then as they surge excitedly to and fro, eager to find a way out" (ibid.:7). Kahā'ulelio adds that "the canoe to hold the fish draws near and the man the head fisherman placed on that canoe is hard-hearted, cross and stingy so that people don't crowd about and their hands plow in, bringing misfortune to the group" (ibid.:7-9).

Kahā'ulelio (2006) goes on to describe the lesser types of *lau* fishing, one of which was *lau kapalili*. Executed in a manner similar to the *lau nui* method, the *lau kapalili* technique utilized a much smaller net and was carried out in sandy areas and lagoons. The net was dragged shoreward, and the people dragged the net from the shore to the beach, where the fish flapped (*kapalili*) on the sand. The *lau ahi* fishing method was carried out during dark nights with no wave action. The net was drawn shoreward within the surf break into a sheltered bay. Kahā'ulelio (ibid.) describes the *lau 'ōhua* method as being carried out primarily by children and women, noting that the men aided only in drawing the *lau* net to shore. The fish caught using this method included juvenile wrasses such as the *'ōhua pa'awela* and *'akilolo*.

The *lau 'ōhua liko* method utilized a fine mesh net that measured roughly a fathom in length. The small mesh size allowed for the capturing of small shrimp and other small fish that lived around a heaped up cairn of rocks known as an *imu* or an *ahu*. The name used, however, varied from place to place. This method was typically employed in the early morning during low tides. Kahā'ulelio (ibid.) notes that when mosquito netting became available during the Historic Period it was also used in the *lau 'ōhua liko* method. The fine mesh net was placed around the stone cairn and people removed the stones one by one until none remained. The fleeing fish and shrimp were caught in the net then placed into a small pail and later consumed.

The *lau kō pua* method was done by children and adults during the wettest time of the rainy months when the streams were swollen, and the ponds near the beach would break open to the sea. This influx of freshwater attracted schools of tiny fish that were ushered into the sandy shore by children using yellowed banana leaves. The children and adults then picked up the small fish either by hand, or during the Historic Period by using mosquito netting. The captured fish were placed into a calabash and eaten later. In reflecting upon more recent fishing regulations of the 20th century, Kahā'ulelio laments that “because laws have been made about catching such small fish, this type of fishing is no longer seen.” (2006:13)

The last of the lesser type of *lau* fishing detailed by Kahā'ulelio is the *lau kō pahu 'anae*, which he describes as the “easiest kinds of fishing” (2006:13). This method was used to catch *'anae* and required the labor of four men, two of which kept control of the bag net while the other two controlled the *lau* dragline. The men worked in unison to bring the dragline and net together to draw in a school of *'anae*. This method was sometimes repeated four or five times, and as many as eighty or more fish could be caught.

Scoop Nets and Bag Nets

The final net types recorded by Abbott are hand-held scoop nets, which she describes as follows:

...scoop nets with handles and sometimes with closure mechanisms served a variety of purposes, including catching fish attempting to leap out of seine or *hukilau* nets. These small, one-person nets were also employed to catch crabs and freshwater shrimp (*'ōpae*), the latter being a speciality of women. Scoop net handles and closures were frequently made from the endemic shrub *'ūlei* (*Osteomeles anthyllidifolia*), whose spreading branches can be easily bent into loops. The ends of the piece were lashed together with cord to form the handle of the net. (1992:84)

Newman (1970) also details the use of scoop nets, but he instead refers to them as bag nets with two specific types: hand-held ones (Figures 39 and 40), and those that were manipulated by attached ropes (Figure 41). Newman's description of these nets reads thusly:

Bag nets were made into an enclosed purse with only one open end; or alternately were flat pieces of netting that were closed into a self-contained bag by manipulating attached flexible sticks in a particular manner to seal it. Although bag nets were extensively used in conjunction with seines, there was a great diversity of bag nets used alone, and these seem to have been quite specialized by type of fish to be caught. An initial ordering of these different types may be made on the basis of use technique: (1) hand held, and (2) manipulated by attached ropes.

Hand Held Bag Nets:--The hand-held bag nets were fine meshed small nets fitted on a flexible wooden hoop which held the mouth open, used for dipping out fish trapped by an encircling sein net; for scooping up fish at night in very shallow water areas, usually by torchlight which mesmerized the fish; or by being held across the opening of an underwater hole by a diver while the fish hiding inside were herded into the net with a stick.

Rope Manipulated Bag Nets and Baits:--Bag nets manipulated by attached ropes were often used with some form of bait to draw the fish into the net. Common baits were cooked pumpkin, squash, sweet potatoes, kukui and coconut meat; raw mashed bananas, papaya, breadfruit or taro; pounded up fish, sea urchins, shrimp or eels; whole small fish such as *nehu*, *'iao*, and *akule*; or a special mixture called *palu* which was based on the cooked ink bag of the octopus pounded into a paste with ingredients added such as the juices of various plants, salt, spices, kerosene, tobacco juice, liquor, or Perry Davis Pain Killer. These different baits were often mixed with sand, to make the bait sink, and then placed in the water near as well as inside the bag net to attract fish. Some of these baits are obviously the result of European diffusion. When the fish, usually *'opelu*, were inside the bag, it was lifted to the surface by the attached ropes. (Newman 1970:56-57)

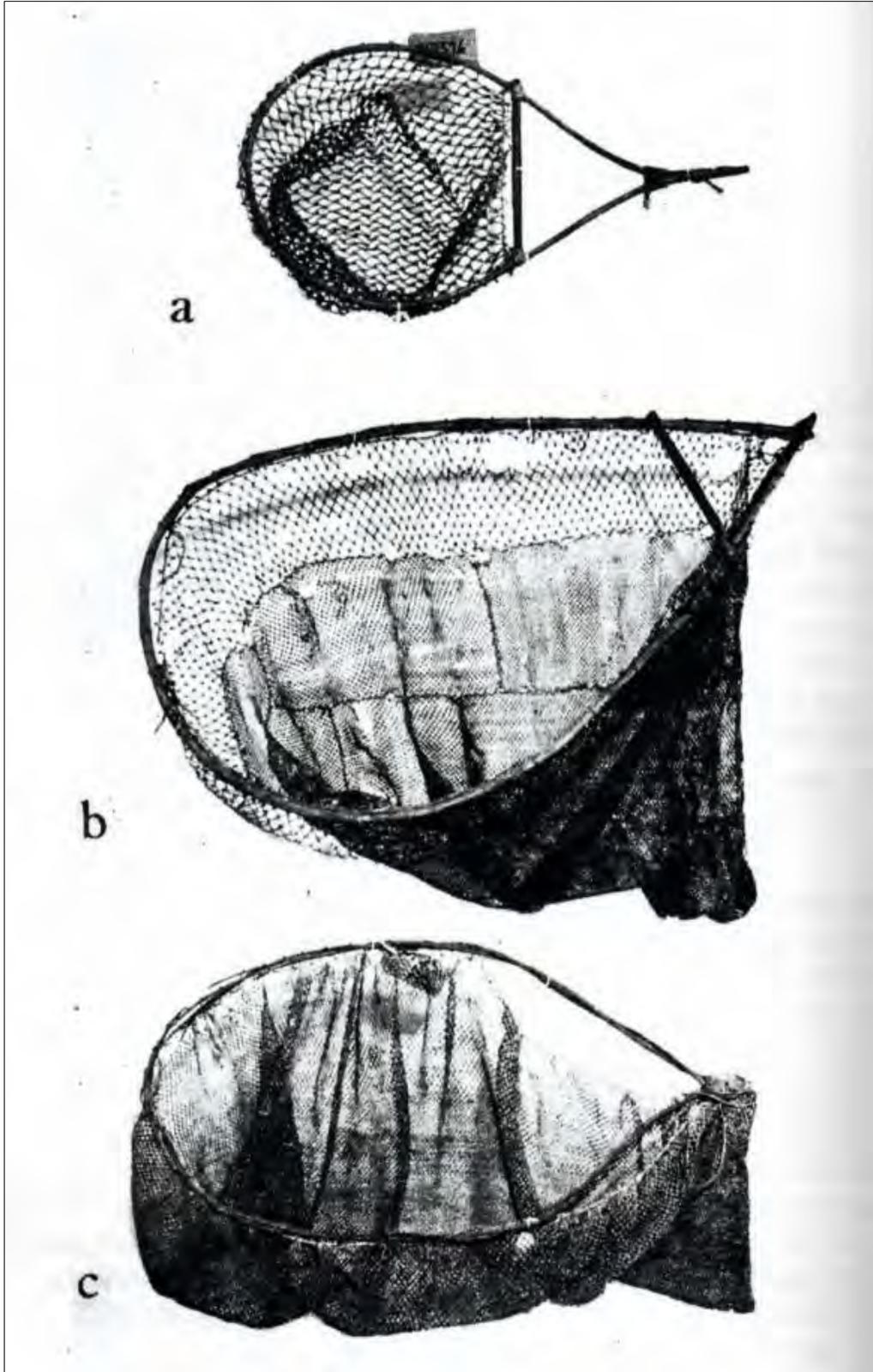


Figure 39. "Scoop nets: a, smallest net with pliable wood frame and crossbar; b, larger net with extended rod frame and crossbar; c, with vine frame, lacking crossbar" (Buck 1957:300).

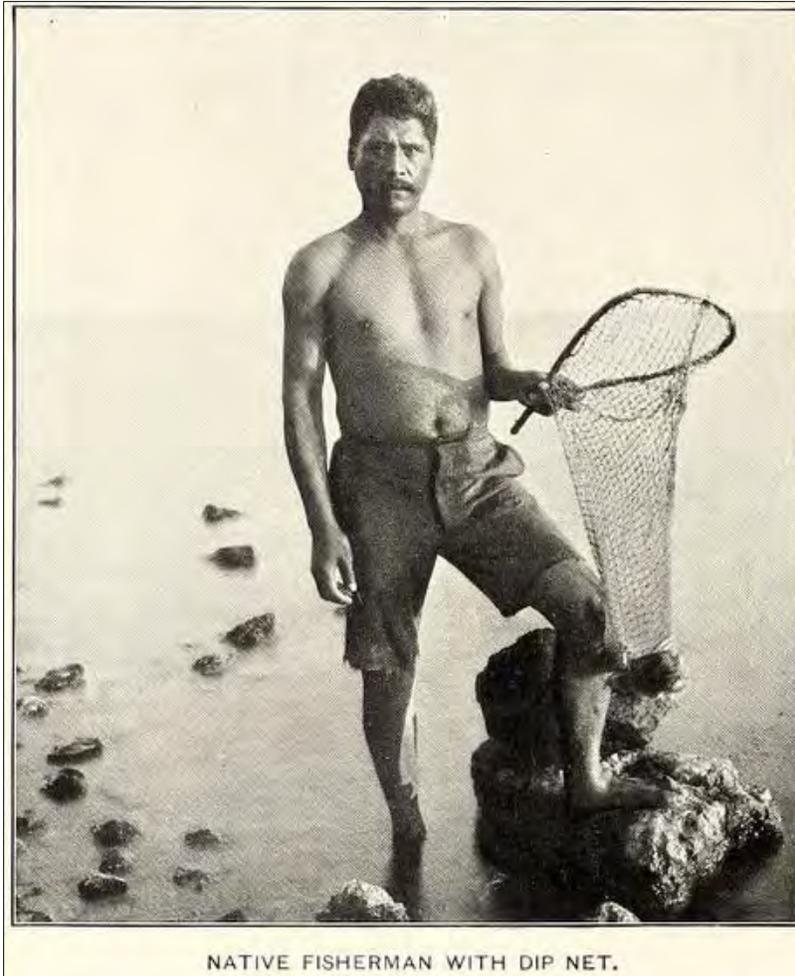


Figure 40. Dip net ca. 1900 (Cobb 1902, Plate 23)

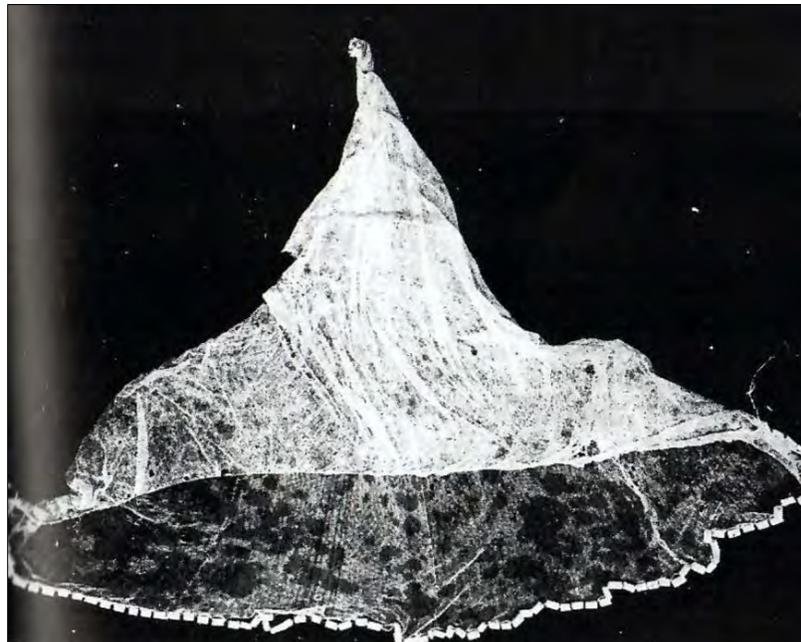


Figure 41. 'Ōhua bag net (Buck 1957:309).

Fishing with Poison

The use of plant-based poisons for fishing in Hawai‘i involved two primary agents, the ‘*auhuhu* (*Tephrosia purpurea*) and ‘*ākia* (*Wikstroemia* sp.). These agents, which can still be found within the study area today (Figure 42), “were crushed, either with a mortar and pestle or with rocks found by the shore,” and then scattered in tide pools, “and in a few minutes the small fish that were present would float to the surface and could be picked up” (Abbott 1992:86).



Figure 42. Photo of ‘*ākia* plant at Maunalua Fishpond Heritage Center with *mākāhā* beyond.

Regarding the impact of the poison, Abbott emphasizes that:

This effect did not last more than twenty or so minutes, depending on the size of the tide pool and the speed with which fresh seawater entered in and diluted the toxin. Any fish that were washed out of the pools or overlooked in the gathering would recover and swim away, since the toxins merely stupefied the fish rather than killing them outright. In this sense, these old “poisons” more closely resembled modern fish anesthetics than the chemical rotenone, another plant derivative used to catch fish, from which fish do not recover. No data suggest that ‘*auhuhu* or ‘*ākia* toxins are transferred to humans through consumption of fish caught in this way. (Abbott 1992:86)

Newman’s discussion of plant-based poisons, also refers to ‘*auhuhu* (written as *ahuhu*) and ‘*ākia*, as follows:

Although fish poisoning was made a misdemeanor by legislation in 1850 (Jordan and Evermann 1902:365), it was still reported by Cobb in 1902. Poisons used were of plant origin and made of pounded *ahuhu* (*Tephrosia purpurea*) and ‘*ākia* (*Diplomorpha sandwicensis*) to be inserted into underwater caves; the fish were not affected as a human food by it. For obvious reasons there are no data available on poisoned fish in the 1900 commercial market. (Newman 1970:51)

Newman also cites Campbell (1967), who described fish poisoning in the same manner as Cobb for the late 19th century, but notes that Campbell stated that the fish were instantly gutted after being poisoned to keep the poison from affecting the quality of the flesh. Cobb (1902), like Abbott, on the other hand, states that the poison did not affect the flesh.

Spearing Fish

Traditional *‘ō i‘a* or *pōluhi* (fish spears) used for catching fish were crafted from several types of hardwood species such as *kauila* (*Alphitonia ponderosa*), *uhiuhi* (*Caesalpinia kavaiensis*), and sometimes *koai‘e* (*Acacia sp.*), while spears used to catch the elusive *he‘e* (octopus) were made from *alahe‘e* (*Psydrax odorata*), *‘ūlei* (*Osteomeles anthyllidifolia*), and *‘a‘ali‘i* (*Dodonaea viscosa*) (Abbott 1992). Fishing spears typically ranged in length from one to two meters (Figure 43); those used to catch *he‘e* were much longer, ranging anywhere from two to four meters in length. Kahā‘ulelio (2006) reports that spear fishing was done either by swimming, or from canoes. Abbott relates that spears “saw heavy service in night-time torch fishing (see Figure 32), as well as during daylight hours... and were especially useful for picking up sea urchins with venomous spines (*wana*)” (1992:86).



Figure 43. Fishing with spear ca. 1890 (Bishop Museum Archive).

Newman provides the following description of Hawaiian spear fishing, which during the Historic period also included the use of iron tipped spears:

Fish spears were about six feet long (2 meters), made of a very hard wood tipped with an iron point, and used underwater by a diver who positioned himself on the bottom and impaled fish on the spear as they came close. It was possible to spear more than one fish per dive by allowing them to slip down the spear after they were pierced. Above surface use of spears was restricted to spearing turtles, octopi, 'o'opu-hue, and fish mesmerized by torchlight at night in shallow water. No mention was made of spears propelled by slings or elastic bands, such as the "Hawaiian sling," and these are undoubtedly of twentieth century origin. (1970:52)

While the above-described traditional cultural fishing practices of trapping, hand-collecting, using hook and line, trolling with lures or using octopus lures, netting, poisoning, snaring, and spearing reflect the tangible methods used by *po'e lawai'a* to harvest marine resources, the following section will explore Hawaiian fish nomenclature. This is followed by a discussion of cultural the cultural significance and traditional uses of the Top 20 Species.

HAWAIIAN FISH NOMENCLATURE

Kānaka Maoli's connection to the sea, and all its lifeforms, is further reinforced by ways in which fish were categorized, named, and used. Their keen awareness of the natural world, coupled with their dependence upon marine resources culminated in a complex naming system for Hawaiian marine resources that conveyed descriptive information, as well as important cultural information. Hawaiian fish nomenclature mirrors other aspects of traditional Hawaiian society, where detailed naming practices helped to categorize the seemingly endless variety of reef dwellers. Hawaiian fish nomenclature has endured to this day through its constant use—a practice that speaks to both the cultural significance of fish, and the importance of the intergenerational transmission of knowledge. Titcomb relates that "some names of fishes show the relationship of Hawaiians to other Polynesians, and are therefore very old," but that "many names are peculiar to Hawaii" (1972:51). She adds that fish names were maintained through direct use, as well as through the creation of chants that served as a memory aid (*ibid.*).

According to Malo (1951), all products of the ocean and freshwater streams and rivers, whether mobile or not, were considered *i'a* (fish); for instance, the various species of *limu* (seaweed) were considered *i'a*. Likewise, Titcomb conveys that the term *i'a* was applied to vertebrates and invertebrates alike, even "those that were utterly useless as food and of no importance in any other way" (1972). Titcomb further relates that Hawaiians gave two names to most fish, one designating the kind (or species), the other designating a group characteristic. The names usually chosen for fish were descriptive of the colour, structure or habitat, such as

(1) colour: *lelo* (reddish), *mele* (yellow), *uli* or *uliuli* (blue, also means green, dark-coloured, that is, the colour of the deep blue sea), *kahauli* (dark-striped), *kea* (white); (2) form: *po'onui* (large-headed), *waha nui* (large mouthed); (3) a special characteristic: *makaonaona* (bright-eyed); *moe* (sleeping), *holo* (travelling), *ka'aka'a lā'au* (stick rolling), *pili ko'a* (coral clinging). (Titcomb 1972:50-51).

This traditional system of nomenclature is exemplified in the naming of triggerfish known broadly as *humuhumu*; such as, "*humuhumu 'ele'ele* (black), *h. mimi* (malodorous), *h. nukunukuapua'a* (nose like a pig), and others" (Titcomb 1972:50).

Similarly, some fish names incorporated terms that distinguished specific growth stages of the fish; such as, *aka* to indicate when the "body is still transparent" and *hāuli* to indicate when the "body darkens," *mana* to refer to when "markings appear" and *kakau*, which is used when the fish is "fully marked" and had reached the "fullest stage of development" (Titcomb 1972:54). Other terms such as *ōhua* or *āhua* were used refer to the schooling of juvenile fish, including reef fish such as *hīnālea*, *humuhumu*, *kala*, *kūpou*, *manini*, *pualu*, and *uhu* (Pukui and Elbert 1986). Fish that were cultivated in fishponds, including *'ama'ama* (mullet), were the subject of close observation, and the names given to these fish were based on size, with *pua* to refer to fish that were a finger's length, and *kahaha* to refer to fish that had reached a hand's length (Titcomb 1972).

While *i'a* was the broadest term used to refer to all sorts of marine species, Hawaiian fish nomenclature also differentiated fish by their habitat. Fish that dwelled in coral reefs were termed *i'a o ke ko'a* (*lit.* fish of the reef), while those that lived in deeper waters were referred to as *i'a o ke kai uli* (*lit.* fish of the deep sea) (Titcomb 1972). Kānaka Maoli also distinguished and named the anatomical features of fish, both the exterior features as well as the principal internal organs. Titcomb provides a list of the anatomical terms that were given to the various parts of the fish, which is reproduced in Table 3 below.

Table 3. List of Hawaiian anatomical terms for fish (after Titcomb 1972:54).

<i>Hawaiian Term</i>	<i>English Equivalent</i>	<i>Hawaiian Term</i>	<i>English Equivalent</i>
<i>nuku</i> , or <i>nukunuku</i>	nose	<i>kualā</i>	dorsal fin (same for soft dorsal)
<i>lae</i>	frontal region over eye	<i>unahi</i>	scales
<i>alo</i>	chest	<i>unahi kalakala</i>	the rough scales from mid-body to tail of certain fishes-scutes
<i>alo piko</i>	belly	<i>kakala</i>	knife-like cartilage near the tail (as in the surgeon fishes)
<i>mahamaha</i>	gill plate	<i>hi'u</i>	tail
<i>api</i>	gill opening	<i>pewa</i>	tail fin
<i>pihapiha</i>	gills	<i>umiumi</i>	barbels (same term as is used for beard of a man)
<i>halo</i>	gill fin	<i>kiwi</i>	the “unicorn” of the <i>kala</i> fish

While the use of some traditional Hawaiian fish names extended across the Hawaiian Islands, Titcomb states that:

In spite of a conscious effort to hand down knowledge, names for some fish did vary from island to island, and even from one part of an island to another. This may be due in part to faults of memory, though memories were trained to astonishing capacity, and in part to a conscious wish to call a fish by what seemed a more appropriate name. (1972:49)

Understanding how Kānaka Maoli categorized and named the various marine species provides insight into understanding their cultural significance. Further species-specific cultural information pertaining to the Top 20 Species is presented in the following section.

SPECIES-SPECIFIC TRADITIONAL CULTURAL KNOWLEDGE AND PRACTICES PERTAINING TO THE TOP 20 COLLECTED AQUARIUM FISH SPECIES

In an effort to identify any traditional cultural uses, practices, and beliefs associated with the Top 20 Species, the authors of this report began by identifying and compiling the Hawaiian name(s) associated with each of them, as well as their origin status—whether they are indigenous, endemic, or invasive (Table 4).

Table 4. Hawaiian Names and Origin Status of the Top 20 Species.

<i>Scientific Name</i>	<i>Hawaiian Names</i>	<i>Common Name</i>	<i>Origin Status</i>
<i>Acanthurus olivaceus</i>	<i>na'ena'e</i>	orangeband surgeonfish	Indigenous
<i>Anampses chrysocephalus</i>	species of <i>hīnālea</i>	psychedelic wrasse	Endemic
<i>Canthigaster coronate</i>	<i>pu'u 'olai</i>	Crowned puffer	Endemic
<i>Canthigaster jactator</i>	<i>'o'opu hue</i>	whitespotted Toby	Endemic
<i>Centropyge fisheri</i>	unknown	Fisher's angelfish	Indigenous
<i>Centropyge potteri</i>	unknown	Potter's angelfish	Endemic
<i>Chaetodon miliaris</i>	<i>kīkākapu</i>	milletseed butterflyfish	Endemic
<i>Chaetodon multicinctus</i>	<i>kīkākapu</i>	multiband butterflyfish	Endemic
<i>Cirrhilabrus jordani</i>	species of <i>hīnālea</i>	flame wrasse	Endemic
<i>Ctenochaetus strigosus</i>	<i>kole, kole makaonaona</i>	goldring surgeonfish	Endemic
<i>Forcipiger flavissimus</i>	<i>lauwiliwili nukunuku 'oi'oi</i>	forcepsfish	Indigenous
<i>Halichoeres ornatissimus</i>	<i>lā'ō</i>	ornate wrasse	Endemic
<i>Macropharyngodon geoffroy</i>	species of <i>hīnālea</i>	shortnose wrasse	Endemic
<i>Naso lituratus</i>	<i>umaumalei, kala</i>	orangespine unicornfish	Indigenous
<i>Pseudanthias bicolor</i>	unknown	Bicolor Anthias	Indigenous
<i>Pseudocheilinus octotaenia</i>	species of <i>hīnālea</i>	eightline wrasse	Indigenous
<i>Pseudocheilinus tetrataenia</i>	species of <i>hīnālea</i>	foulined wrasse	Indigenous
<i>Thalassoma duperrey</i>	<i>hīnālea lauwili</i>	saddle wrasse	Endemic
<i>Zanclus cornutus</i>	<i>kihikihi</i>	moorish idol	Indigenous
<i>Zebrasoma flavescens</i>	<i>lā'ī pala, lau'ī pala</i>	yellow tang	Indigenous

To verify the accuracy of traditional naming practices and to address any discrepancies therein, the Hawaiian names were cross-referenced with primary and secondary sources, which are cited in the ensuing paragraphs. The Hawaiian fish names presented in Table 4 should not be considered an exhaustive list, as it may not capture regional names or names used by certain families or individuals. Once all known Hawaiian names were identified and correlated, additional cultural information was gathered for each of the twenty species from various Hawaiian and English language sources.

The information compiled from these sources includes details about ongoing and former traditional uses of the Top 20 Species, species-specific traditional methods for catching said fish species, as well as species-specific legendary accounts. As discussed above, Hawaiian fish nomenclature is sometimes inconsistent or conflicting because many species were known by multiple names, some of which were qualifiers for specific characteristics or referred to specific growth stages. Despite the challenges mentioned above, a significant amount of information was found with respect to traditional subsistence practices, beliefs, customs, and general cultural uses of the Top 20 Species—was categorized (see Table 4). Photos were retrieved from the Marine Life Photography database compiled by Keoki and Yuko Stender (www.marinelifephotography.com) and permission to reproduce the photos for this report was granted by Mr. Keoki Stender on December 17, 2019.

***Acanthurus olivaceus* (na‘ena‘e)**

Acanthurus olivaceus or orangeband surgeonfish (Figure 44) is referred to as na‘ena‘e, which means “quick, alert” (Pukui and Elbert 1986:258). Na‘ena‘e are grayish-brown in color with an orange band trimmed with a purple streak that extends along its body. Kent (1986) reports that na‘ena‘e reside on the outer ends of the reef where waves and sandy beaches are present. The name na‘ena‘e is also applied to a native daisy known for its small yellow, orange, purple, or white flowers (Pukui and Elbert 1986). The review of culture-historical literature conducted for this study did not reveal any additional cultural information related to this species.



Figure 44. *Acanthurus olivaceus* at Hanauma Bay, O‘ahu.

***Anampses chrysocephalus*, *Cirrhilabris Jordani*, *Macropharyngodon Geoffroy*, *Pseudocheilinus octotaenia*, and *Pseudocheilinus tetrataenia* (hīnālea)**

Anampses chrysocephalus (psychedelic wrasse; Figure 45), *Cirrhilabris jordani* (flame wrasse; Figure 46), *Macropharyngodon Geoffroy* (shortnose wrasse; Figure 47), *Pseudocheilinus octotaenia* (eightline wrasse Figure 48), and *Pseudocheilinus tetrataenia* (fourlined wrasse Figure 49) are all wrasses, which are broadly referred to as hīnālea, occasionally shortened to ālea, in the Hawaiian language; while *Thalassoma duperrey* (saddle wrasse) are referred to as hīnālea lauwi, and discussed in a separate section. Hīnālea, distinguished by their elongated bodies, can range in size from three to ten inches long (Hoover 2007; Kahā‘ulelio 2006); and are also described in ethnographic literature as having sharp protuberances (Malo 1951). Their colors and attributes vary according to species.

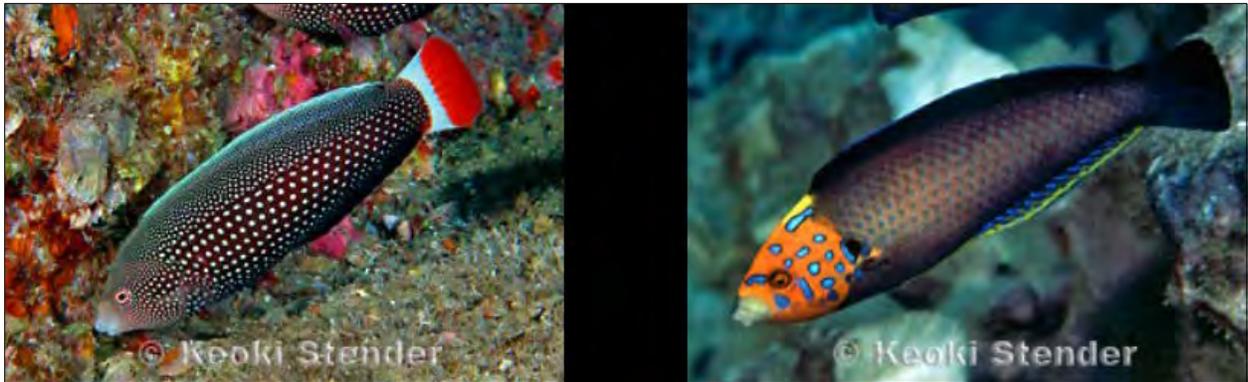


Figure 45. *Anampses chrysocephalus* female (left) and male (right).



Figure 46. *Cirrhilabris jordani* female at Kewalo Hump, O'ahu.



Figure 47. *Macropharyngodon Geoffroy* at Kewalo Pipe, O'ahu.



Figure 48. *Pseudocheilinus octotaenia* at Lanai lookout, O‘ahu.



Figure 49. *Pseudocheilinus tetrataenia* at Kahe Point, O‘ahu.

Hoover relates that “the general Hawaiian name *hīnālea* is applied to most, but not all; many of the smaller wrasses have no known Hawaiian names” (2007:158). Elbert and Pukui explain that “*hīnālea* may be qualified by the terms ‘*ele‘ele* [very dark, black], *līpoa* [fragrant seaweed], *lolo* [lazy], *nī‘au* [coconut midrib or spleen], *nuku ‘i‘iwi* [bird wrasse], *nuku ‘i‘iwi ‘ula* [red bird wrasse], *nuku ‘i‘iwi uli* [dark bird wrasse], *nuku loa* [long snout], [and] *nuku loa ‘ele‘ele* [black long snout]” (1986:71).

Hīnālea are found primarily in shallow water, but are also known to live in waters seven to eight fathoms deep (Titcomb 1972). Their behavior, and the areas in which they dwell, are described in the ‘*ōlelo no‘eau*, “*naueue ka hi‘u o ka i‘a lewa i ke kai*,” which literally translates as “the tails of the fish that move in the sea tremble” (Pukui 1983:250). Pukui goes on to explain that this expression was said of fish, such as the *hīnālea*, whose tails can be seen bending as they seek hollows in the corals for hiding during the cold month of Welehu (approximately November).

Traditional fishing methods used to catch *hīnālea* included the use of a carefully curated stick used to attract fish known as *melomelo* (Kahā‘ulelio 2006) and poisoning. ‘*Upena holahola* was the name given to a net that was used in conjunction with certain piscicidal plants that were crushed and placed around a *hīnālea* fish hole (Cobb 1902:734-735). The toxins released from the crushed plants diffused throughout the water thereby paralyzing the trapped fish and causing the *hīnālea* to float to the surface into the *holahola* net (1902:734-735). Another method involved the use of *kūkulu ‘upena* (standing nets) and *ke kāmākoi*—a fishing pole made of bamboo or *hau* (*Hibiscus tiliaceus*)

3. Background

measuring about eighteen feet long—for catching *hīnālea*. The *ke kāmākoi* method was used from the nearshore reefs where the fisher could cast a hook and line attached to the fishing pole into the sea from the shore (Manu et al. 2006).

As previously mentioned, *hīna'i* (basket traps) were also traditionally employed to catch *hīnālea*. In particular, Manu et al. relate a *mo'olelo* that describes the legendary origin of the use of *hīna'i* woven of fibers from the '*inalua* (*Cardiospermum halicacabum*) vine, which “has been the method of catching *hīnālea* ever since” (Manu et al. 2006:53). This legendary tale tells the story of Kalamainu'u, a *mo'o* (lizard) goddess. While on O'ahu, Kalamainu'u enticed a young *ali'i*, Puna'aikoa'e, and lured him to her cave on the island of Moloka'i. Drawn by the beauty of Kalamainu'u, Puna'aikoa'e became her obedient captive and remained in the cave until one day he longed for freedom and to be amongst other people again. Puna'aikoa'e overheard the cheers of people down below and became intrigued asking Kalamainu'u about what he heard. She explained that it was the sounds of people celebrating their victories in the *Makahiki* games. He then asked if he could leave the cave to see the festivities for himself, to which she consented. While mingling with the people, Puna'aikoa'e met a man by the name of Hinale, who was the brother of Kalamainu'u. As they conversed, Hinale discovered that Puna'aikoa'e was Kalaimainu'u's lover and immediately began plotting to free Puna'aikoa'e from his sister. As Puna'aikoa'e began to carry out his escape from Kalamainu'u, the *mo'o* goddess learned that the plan had been initiated by her brother, Hinale, and she sought revenge. When Hinale discovered that his sister was after him, he fled to the ocean where he transformed into a *hīnālea*. Kalamainu'u followed after him, but eventually lost Hinale. She then learned from a hermit crab how to entrap her brother, so she followed his instructions and constructed a basket trap made from the '*inalua* vine. After several attempts, Kalamainu'u eventually captured her brother in the trap.

Considered a popular fish of the Hawaiian diet, *hīnālea* are referenced in many *mo'olelo*. One origin story of this fish is associated with a female '*e'epa*, or mystical being, who after being angered by two other supernatural beings for helping her unfaithful husband, tore her enemies to pieces and transformed the torn pieces into the *hīnālea* (Kamakau in Titcomb 1972). In the February 8, 1911, issue of *Ke Au Hou*, a Hawaiian language newspaper, John H. Wise published a *mo'olelo* that describes the importance of the *hīnālea* for the conception of a child. Two *hīnālea* fish were wrapped in *ti* leaves and cooked on coals as offerings to the *akua* Kū and Hina, whom are believed to be responsible for conception. The first fish was given to Kū and the second to his wife Hina, and a chant would be uttered to grant the woman an offspring—if a son was desired, the chanter would mention the duties of a man; for a daughter, the duties of a woman would be mentioned (Wise 1911).

Hīnālea are also mentioned in the account of 'Ai'ai, who was the son of Kū and Hina, key fishing deities worshipped by the ancient fishers of Hawai'i Nei (Fornander 1919-1920; Valeri 1985). Fornander (1919-1920) relates that in 'Ai'ai's attempt to replenish the fish that were taken from the sea by his parents—after being threatened by Kahoalii, a chief of Hāna, Maui—he seeks the help of his friend Pilihawawa. To restore the fish in the sea, 'Ai'ai orders his friend to weave a basket for catching *hīnālea*. After the basket was woven, it was taken to the rocky shore and 'Ai'ai summoned the help of his parents, calling forth the young *hīnālea* and '*ōpule* fish. After hearing the calls of her son, Hina ordered her husband Kū to send fish to their son and as a result, droves of fish came onshore, some of which were collected by Pilihawawa. Kū'ulakai then sent in the surf which carried the fish back into the sea.

In a similar *mo'olelo* that features *hina'i* '*inalua* and Kalamainu'u, she resides at Makaleha, Mokule'ia in Waialua on O'ahu (Kamakau 1976:80). To the west of Makaleha is a ravine called Waile'a where Kalamainu'u lived with her tongue stretched to the back of the cave. Her tongue also served as a surfboard for Puna'aikoa'e, her lover, with whom she spent every with—night and day. Puna'aikoa'e did not know that his lover was a *mo'o* and after a few months, he grew pale and frail. One day he was able to hike to the ridge and saw the surf break at Pua'ena, Waialua. He longed to surf and Kalamainu'u let him, but warned him not to talk to anyone on his way to the beach even if they called him by name. Puna'aikoa'e made his way towards the beach passing Pu'e'a, Hinale's *heiau*, Makapu'uhale, and Kanoa where two men—Hinale and 'Akilolo—were cultivating their crops. The pair called out to Puna'aikoa'e but he ignored them as he was instructed by Kalamainu'u. After several failed attempts of getting Puna'aikoa'e's attention, the two men ran towards the beach and said:

“We speak to you of life; if you refuse to listen you will die.”

Puna'aikoa'e turned and looked at them and said, “My wife laid down her decree saying that I must speak to no one; but perhaps she does not know that I am talking to you two.”

The men said, “Your wife is an *akua*; we cannot hide our talking together. She is Kalamainu'u, a *mo'o* of 'forty thousand' (*kini*) *mo'o*, a *mo'o* of 'four hundred thousand' (*lehu*) *mo'o*. Those are bodies of your wife. Because we pity you, we are telling you this. The surfboard you are carrying is your wife's tongue.” (1976:80)

Puna'aikoa'e asked for advice on how to be saved and the two suggested he escape to Hawai'i Island, bathe in fresh water and then see his wife, Kalamainu'u. However, on his return to their cave, he encountered the mo'o body of Kalamainu'u. They had warned him, "When she shows you her akua forms, be courageous or you will die. Instead, she will come to kill the two of us" (1976:80). Puna'aikanoa'e was filled with terror but withstood it courageously. Kalamainu'u traveled makai to Hinale and 'Akilolo and chased them until they disappeared into the ocean floor. Tired from chasing the pair of men, two of her companions—Kuaō and Ahilea—asked how they could be of assistance to Kalamainu'u. She explained the story from beginning to end about Hinale and 'Akilolo. Kuaō and Ahilea offered Kalamainu'u the following advice in detail:

They were certainly in the wrong; they were supposed to be good brothers. You should kill them. They like 'ohiki crabs of this beach, to eat with the sweet potatoes which they cultivate in Kanoa, Keone'ae, and the uplands of Makaleha, but they are unskilled in torch fishing. You can cause their deaths through their fondness of 'ohiki. Go gather some 'inalua vines, observing a kapu, and on your return weave them into a trap. Begin at the entrance and when the part that goes in [the funnel] is finished, then bend [the warps] back to form the container. Spread apart (*pu'umana a'e*) the 'inalua kukula [the warps], and bend them to shape the round part of the basket. When you see that the container has filled out and is big enough, then decrease its size by pushing together (*hu'e*) the 'inalua kukula until the *hina'i* is completed. When the weaving of the *hina'i* is completed, the kapu will be over. Then go and dig 'ohiki crabs, take the *hina'i* into the sea, put in a crevice so that the sea runs in and out. The name of such a 'good place' is au [haunt]. Remove pebbles until the *hina'i* is properly balanced. Then go to a coral head, chew the 'ohiki, dive into the sea and place them in the *hina'i* and then go off to some distance. After a while dive again—Hinale and 'Akilolo will have come to eat their favorite food and you will find your enemies there in the *hina'i*. (1976:82)

Kalamainu'u heeded their advice and followed their instructions. She killed Hinale and 'Akilolo tearing them into pieces, which became the *hīnālea* fish. Kamakau adds that those who wove *hina'i hīnālea* observed these *kapu* and *hīnālea* were plentiful. It is also said that because there was so much *hīnālea* caught by setting traps, the waters from Kumalaekawa to Ka'ena had a distinct stench that emitted when they were dried. Kalamainu'u became an 'aumakua for trap fishing (Kamakau 1976:82).

The 'ōlelo no'eau, "Ipukai *hīnālea*" translates to "A dish of *hīnālea* fish" (Pukui 1983:136). It is a rude remark regarding one with bad breath or "one whose nose has the foul odor of catarrh." The *hīnālea* was the favored fish for the dish called *i'a ho'omelu*. The preparation required the *hīnālea* to be slightly decomposed, which would emit a strong odor. It would then be seasoned with salt, 'inamona (relish made of the cooked kernel of the *kukui*), and chili pepper, which would mask the dish of its putrid scent.

The story titled *The Wind Gourd of La'amaomao* (Nakuina 2005) also makes reference to *hīnālea* and notes that it was the preferred fish to cut through the bitterness of the drink known as 'awa (kava). This account relates how *hīnālea* were kept in small sea pools, and collected at the request of a chief. In the preamble to this story, Pāka'a who was the beloved servant of Keawenuia'umi, a chief of Hawai'i Island, was unjustly cast out of the king's court and replaced by two new, but inept, servants named Ho'okeleipuna and Ho'okeleihilo. These two servants knew very little about the chief's likings, and overtime Keawenuia'umi became aware of their incompetence. Longing for his beloved servant, Keawenuia'umi and his entourage set out in search of Pāka'a, who by this time had relocated to Moloka'i with his wife and son, Kūapāka'a. After the king's arrival on Moloka'i, Kūapāka'a invoked a mystical storm through the use of the sacred wind gourd of La'amaomao, which thwarted the king's plan to return to Hawai'i Island. To win the compassion of Keawenuia'umi, and to gain back his role in the king's court, Pāka'a taught his son everything he knew about the chief, including his fondness for consuming *hīnālea* after downing a cup of 'awa, his favorite beverage. The portion of the story describing the use of *hīnālea* is presented below (all mentions of *hīnālea* are presented in bold text for emphasis):

When night fell and everyone was at ease, Keawenuia'umi reminisced: "My love for Pāka'a wells up in me. On evenings like this, my kauwā would bring me my cup of 'awa and live **hīnālea**, and the intoxication would take effect; I would sit enjoying the intoxication of the 'awa until I fell asleep; then I would sleep soundly all night long. How I miss Pāka'a!"

Kūapāka'a heard these words of the ali'i and reported to his father: "Kā! My haku desires some 'awa. He spoke of his love for you; when you were his kahu, you brought him his 'awa. He misses it."

Pāka'a took out an 'awa preparation bowl and a cup, some grass for straining the 'awa, a piece of dried 'awa root, and portions of 'awa root already chewed, which he tied into bundles. He put

everything into a piece of trimmed kapa, which he took out of the wind gourd of La‘amaomao,, and told his keiki, “Take this dried ‘awa to your ali‘i and show it to him. If he tells you to chew it, look for a dark place and hide the dried ‘awa there, then strain this portion of already chewed ‘awa into the bowl. He’ll be impressed with how quickly you’ve prepared the ‘awa for him. That’s the way I did it when I was with him. After pouring the ‘awa into the cup, serve the ‘awa to him, then run quickly to the beach to get the live **hīnālea** we put into the small pond, and give them to your haku as pūpū to cut the bitterness of the ‘awa.”

When the ali‘i saw the large dried ‘awa root, he told the keiki, “You must chew my ‘awa.” The keiki turned away to a corner of the room and dropped the dried ‘awa root there, then poured water into the preparation bowl and put into it the ‘awa Pāka‘a had already chewed. He strained the juice out of the chewed ‘awa with the grass, then poured the juice into the cup and gave the cup to the ali‘i. Then he ran to the beach and returned with two **hīnālea** wriggling about in his hands. He put them on a dish and placed the live **hīnālea** before the ali‘i. (Nakuina 2005:68-69)

Canthigaster Coronata (pu‘u ‘ōla‘i) and Canthigaster jactator (‘o‘opu hue)

Canthigaster Coronata (Crowned Toby/Saddle Puffer; Figure 50) and *Canthigaster jactator* (Hawaiian whitespotted Toby; Figure 51) are two of twelve known species of pufferfish that inhabit Hawai‘i’s waters. The common name of *C. coronata* and *C. jactator*—Toby, originated from Australia to identify these diminutive puffers that measure less than four inches long and have a slightly elongated snout (Hoover 2007).

C. Coronata have dark saddles that extend along their spines (see Figure 50), which Hoover suggests, “may have reminded the old Hawaiians of lava flows for the Hawaiian name [*pu‘u ‘ōla‘i*] means ‘cinder cone’” (ibid.).

C. jactator are the most common Toby in Hawai‘i and are frequently seen in pairs. They are brown with white spots with a light green fluorescent color on the head and snout (see Figure 51) and can be found in active reef areas or in “dead silty places where little else seems to live” (Hoover 2007:109).



Figure 50. *Canthigaster Coronata* at Waimea Bay, O‘ahu.



Figure 51. *Canthigaster jactator* at Hale‘iwa trench, O‘ahu.

In Hawai‘i, Puffers and Tobys are sometimes referred to generally as *makimaki*, “a term apparently not used in ancient times,” and possibly a variation of the word *make*, meaning death (Hoover 2007:107). Other names traditionally used for pufferfish were ‘o‘opu hue, possibly an alteration of *ōpūhue* (calabash, gourd) or *kēkē* (potbelly), which refers to the rounded stomach of the fish that resembles a gourd when they inflate their bodies with air (Titcomb 1972). It should be noted that these fish should not be eaten and are known to be poisonous. Pukui states that Hawaiians rarely ate pufferfish of any variety, however, Malo points out that “the poisonous part is the gall. By carefully dissecting out the gall-bladder without allowing the escape of any of its contents, the fish may be eaten with impunity. Its flavour is delicious” (Titcomb 1972:131). Kepelino relates that there are two kinds of ‘o‘opu hue, the *malani* and *manalo*. The former is edible while the latter is poisonous, Titcomb (1972) reports that both Chinese and Japanese in Hawai‘i eat the ‘o‘opu hue because of its flavor. To determine the difference between the two, Kepelino shares:

To tell them apart look at the teeth. If the teeth are yellow the fish is poisonous. But if the teeth are a bright, clear white the ‘o‘opuhue is good to eat. The skin is rough and should be peeled off. The fish has much flesh and is good. It should never be eaten raw. (Titcomb 1972:131-132)

Titcomb then cites Beckley who further explains that the poison is contained in three sacs, which must be removed intact and because the skin is also slightly poisonous, one must skin the fish before consuming it (ibid.). Furthermore, ‘O‘opu hue caught in the ocean are much more poisonous than those found in *loko i‘a* (ibid.).

Centropyge fisheri*; *Centropyge potteri

Species of the genus *Centropyge*, popularly known as angelfish, typically have a large backward-pointing spine on the gill cover. Of the five species in Hawai‘i, three are endemic, however, the review of historical literature conducted for this study did not reveal any specific Hawaiian name or any specific cultural information related to any of these species.

Centropyge fisheri (Fisher’s angelfish; Figure 52), is a small orange-brown fish trimmed in iridescent blue with a translucent tail. These fish are typically found in finger coral (*Porites compressa*) at depths of 80 feet. Known to be quick moving, they tend to stay close to cover and are not frequently seen (Hoover 2007).

The endemic *Centropyge potteri* (Potter’s angelfish; Figure 53) is the most frequently spotted angelfish in Hawai‘i. This species has a rusty orange color on its head and back, which transitions to a bluish black on the rest of the body. The body is “covered with irregular vertical gray-blue lines” with blue and black horizontal stripes on the rear fins (2007:3). The males tend to have more of a blue color than their female counterparts. These fish live in pairs or in small groups, and dwell in the clear water under ledges and on reef slopes with hollow spaces.



Figure 52. *Centropyge fisheri* at Mokulei‘a, O‘ahu.



Figure 53. *Centropyge potteri* female in sea cave on O‘ahu.

***Chaetodon miliaris* (Lau/Lauhau wiliwili) and *Chaetodon multicintus* (kikākapu)**

Chaetodon miliaris (milletseed butterflyfish; Figure 54) and *Chaetodon multicintus* (multiband butterflyfish; Figure 55), and other members of the genus *Chaetodon*, are broadly referred to as butterflyfish and are usually yellow or white in color with distinct markings (Kent 1986; Titcomb 1972). They grow to about six inches in length, and are distinguished by their compressed bodies (ideal for navigating narrow reef spaces) and small pointed mouths. Butterflyfish are known by a number of Hawaiian names including *kapuhili*, *kihikihi*, *kikākapu*, *lauhau*, *lauwiliwili*, *lauhau wiliwili*, and *nukumuku* (Titcomb 1972). While sometimes eaten, butterflyfish appear to have been more commonly caught and used for certain rituals and ceremonies. Specific information related to four types of butterflyfish found in the culture-historical literature, *kapuhili*, *kikākapu*, *lauhau* and *lau/lauhau wiliwili*, is presented below.



Figure 54. *Chaetodon miliaris* at Kewalo, O‘ahu.



Figure 55. *Chaetodon multicintus* at Mokuelia, O‘ahu.

Kapuhili

The term *kapuhili* has been translated by Elbert and Pukui as “...many taboos inherited from chiefly ancestors or from the gods; person with many taboos” (1986:133). Titcomb reports on an account written by S. K. Kamakau in 1845 while he served at the Lahainaluna seminary on Maui that describes how these fish received their distinct marks. In this account, *kapuhili* is the name of the person, or perhaps the deity, who marked each fish with their distinct colors. Kamakau notes:

These islands of Hawaii were created by Kumuhonua (whose wife was Haloiho). He slept and when he awoke, the earth turned and this was called an earthquake.

At that time the duty of each creature had not been apportioned, nor were names given to each...So all things were gathered together—animals, birds, crawling things, winged things that fly through the air, and man. The work of each was assigned...It was as Molea in Hamakua that all the fishes gathered, the big fish and the little fish. It was there that all the fishes were marked, and streaked ones, the red ones, the white ones, the yellow ones and all the kinds found in the ocean. **Kapuhili** was the overseer who marked them. The unmarked fish were spotted simply by having ashes sprinkled over them. Then the proper names were given to each variety of all the fishes in the ocean. (in Titcomb 1972:48)

Kīkākāpu

The name *kīkākāpu* is used to describe “various species of butterfly fishes of the genera *Chaetodon* and *Cheilodactylus*” and may be further qualified by terms such as “*alo lua* and *ko ‘a*” (ibid.:148). Titcomb (1972) relates that *kīkākāpu* were also considered sacred, and makes reference to a chant presented in the account of Kihaapi‘ilani, a 16th century chief of Maui (Fornander 1880). The portion of the chant referencing the *kīkākāpu* (name bolded for emphasis) reads thusly:

<i>He kakau kiko onio i ka lae,</i>	With striped marks on the forehead,
<i>Ke kiko o ke ki-kakapu,</i>	Marks of the kikakapu,
<i>O ka ia kapu hilia au awahia.</i>	The sacred fish with the bitter gall.
(Fornander 1916–1917:241)	(Fornander 1916–1917:240)

Kīkākāpu are also noted in a name chant composed for Kauikeaouli (Kamehameha III) that is duly titled *Mele no Kauikeaouli*. The portion of the *mele* that references both the *kīkākāpu* and *kapuhili* (names bolded for reference) is presented below:

<i>Ke kakau kiokii onio i ka lae</i>	The forehead was marked with variegated stripes,
<i>He kikoi kapu,</i>	Indicating high kapu;
<i>O ke kikakapu o ku ia kapuhili</i>	The kikakapu was substituted for kapuhili,
<i>Au wahiawahi ia lani.</i>	The time that chief ended.
(Fornander 1919–1920:485)	

The use of *kīkākāpu* to signify one’s intent to challenge a group of people is described in an account titled, *Ka ‘ao no Kaipalaoa, ke Keiki Ho ‘opapa* (Legend of Kaipalaoa, the Ho ‘opapa Youngster) (Fornander 1916–1917). Fornander writes that Kaipalaoa’s father, Halepaki, was killed by Kalaniali‘iloa, the *kapu* chief who was skilled in *ho ‘opāpā*—a traditional art of riddling and debate. To avenge his father’s death, Kaipalaoa sought to master the art of *ho ‘opāpā* and compete against Kalaniali‘iloa, and eventually made his way to Hanalei, Kaua‘i. While at Hanalei, the boy came across two of the king’s canoes that were filled with fish. The king gave the boy two fish, an *oililepa* and a *kīkākāpu*, and Kaipalaoa continued on his way to where the *kapu* chief Kalaniali‘iloa lived. Fornander relates the following details regarding the use of the *kīkākāpu*,

From this place he continued on to Anahola; thence on to Kealia and then on to Wailua where Kalanialiiloa resided, where was his bone fence, almost completed, built from human bones. When he arrived at the place he looked and saw the bones of Halepaki his father; they were still fresh, the bones not yet being bleached. At sight of this the boy bowed in sorrow and wept. After his weeping he approached the flagstaff and pushed it down and put up the oililepa, one of the fish brought along by him. He then next took the kapu stick and pushed it down and put up in its place the other fish, the **kikakapu**. By this action of the boy, it was meant as a challenge to the people that he saw come to meet them in a wrangling contest. When Kalanialiiloa and his instructor saw the action of the boy, they knew at once that he was challenging them to a contest of wits, so a messenger was dispatched to meet the boy showing the challenge was accepted. (1916–1917:576)

Lauhau and Lauhau wiliwili

The term *lauhau* has been translated as “brightly colored butterfly fish (*Chaetodon quadrimaculatus* and *C. umimaculatus*)” and may also be “qualified by the terms *kapuhili*, *kīkākāpu*, *maha uli*, *nuku ‘i ‘iwi* or *nuku ‘iwi*, and *wiliwili*” (Elbert and Pukui 1986:195). The milletseed butterflyfish (*C. miliaris*) ranges in length from one to six inches and is pale yellow in color with a black band on the head across the eye and another near the tail, “rows of pale blue spots string downward” along the sides of the body (Titcomb 1972:98). This variety of fish is known as *lau wiliwili* or *lauhau wiliwili*, meaning “wiliwili leaf,” because its shape is believed to resemble the endemic *wiliwili* tree. The fourspot butterflyfish (*C. quadrimaculatus*) is termed *lauhau*. A characteristic of the *lauhau* is described in the *‘ōlelo no ‘eau*, “*he lauhau, he i ‘a hōkake kāheka*,” which has been translated as “it is a lauhau, the fish that creates disturbances in sea pools” (Pukui 1983:80). Pukui goes on to elaborate on this saying, noting that it was in reference to “...a boisterous person” (ibid.). Manu et al. (2006) describe how *lauhau* were caught using the *kūkulu ‘upena* method, or a standing net, which was cast from the shore. They indicate that the types of fish commonly caught in the *kūkulu* nets were ‘*ālo ‘ilo ‘i* (*Dascyllus albisella*), *hīnālea*, and *lauhau*.

With respect to its value as a food fish, Titcomb reports that there was some disagreement as some informants reported that this fish was “bony, not worth eating” while others contend “sweet flesh, broiled on charcoal immediately, without scaling or cleaning” (1972:97). Titcomb adds that the *lauhau* was used in the *ho ‘omelumelu*

style of preparation (ibid.). Elbert and Pukui define *melu* as “...slightly decomposed, then salted and seasoned with kukui-nut relish, chili peppers, etc.” (1986:246); this *ho ‘omelumelu* preparation of fish was also applied to *hīnālea*.

***Ctenochaetus strigosus* (kole, kole makaonaona)**

Ctenochaetus strigosus (Figure 56), known in Hawaiian as *kole makaonaona* or *kole*, are characterized by their yellow-ringed eyes, and are the most popular variety of *kole* for eating. The eyes of this variety were described as beautiful, and the name *kole maka onaona*, bright-eyed *kole*, was often applied to them (Pukui and Elbert 1986). *Kole* are often found traveling in schools, and sometimes associate with the *pāku ‘iku ‘i*, or Achilles Tang (*Acanthurus achilles*).

Kole have very small scales, but have tough, thick skin. This trait has been poetically described in the ‘*ōlelo no ‘eau*, “*he nanea no ka lawai ‘a kole*,” which means, “it is interesting to fish for *kole*” (Pukui 1983:91). Pukui adds, “it is interesting to gather and tell stories. The English word ‘story’ was Hawaiianized to *kole*, which is also the name of a thick-skinned fish” (ibid.).

Although *kole* is known as being tough-skinned, it is considered a favorite fish to eat raw. Malo indicates that *kole* have flattened bodies and are considered “good eating” (Malo 1951:46). *Kole* was also important for traditional practices and customs relating to the home, as it was believed to “hole,” or “strip away,” (Titcomb 1972) unwanted spiritual energy from the house. As documented by Titcomb, if a home that was under construction needed to be rid of “evil influences,” *kole* or ‘*āholehole* (*Kuhlia xenura*; Hawaiian flagtail) were placed under the east-facing house post prior to it being set (1972:60).



Figure 56. *Ctenochaetus strigosus* at Mokapu, O‘ahu.

In the March 8, 1923 issue of *Ka Nūpepa Ku ‘oko ‘a*, an article titled *Ka Ho ‘opakele Ana I Nā I ‘a*, offers insights into the traditional beliefs and practices related to catching *kole* and other similar fish. Presented below is a portion of this article concerning *kole* (bolded for emphasis), translated by Titcomb:

Fish such as the Manini, the **kole**, the uhu, the kumu and the palani and the kala and many others went into sea pools to live until the tiny fish were grown. No kapus were imposed on them at the spawning season. The mullet, squid, aku, opelu and other fish bore their young in a place that was not sheltered... They were made kapu when the spawning season was near until the months for this duty were over. (Titcomb 1972:14).

***Forcipiger flavissimus* (lauwiliwili nukunuku ‘oi‘oi)**

The Longnose Butterflyfish (*Forcipiger flavissimus*; Figure 57), also known as the *lauwiliwili nukunuku ‘oi ‘oi* or forcepsfish, is a common 6-inch long reef fish recognizable for its intense yellow color, long snout, and quill-like dorsal spine (Hoover 2007). There are two species of the Longnose Butterflyfish—the *Forcipiger flavissimus* and the *Forcipiger longirostris*—which both take on the name *lauwiliwili nukunuku ‘oi ‘oi*. Per Hoover, The term *lauwiliwili* translates to “leaf of the *wiliwili* tree,” *nukunuku* is “beak,” and ‘*oi ‘oi* is “best” or “sharp” (2007:23). The name refers to the vibrant colors of the native *wiliwili* tree foliage and the shape of the forcepsfish’s beak-like mouth, which they use to probe corals for food. These fish frequent walls, ledges, and overhangs at a depth of up to 350 feet (Stender and

3. Background

Stender 2019). Although small in size, this fish was “good to eat, though there is little flesh” (Titcomb 1972:117) and was typically broiled. The review of culture-historical literature conducted for this study did not reveal any additional cultural information related to this species.



Figure 57. *Forcipiger flavissimus* pictured on O‘ahu.

***Halichoeres ornatissimus* (lā‘ō)**

Halichoeres ornatissimus (Ornate/Pinkface Wrasse Figure 58), referred to in Hawaiian as lā‘ō, is a small, slender fish that ranges from five to six inches in length. Bright in color, lā‘ō are distinguished by their salmon hue and iridescent green stripes that extend across the face (Hoover 2007). The dorsal, anal, and tail fins are blueish with green spots and stripes. Juvenile lā‘ō are dark reddish brown with light green stripes and brown spots. The review of culture-historical literature conducted for this study did not reveal any specific cultural information related to this species.



Figure 58. *Halichoeres ornatissimus* female at Waimea Bay (left) and male at Waikīkī (right).

***Naso lituratus* (kala, umaumalei)**

A member of the surgeonfish family (*Acenthuridae*), *Naso lituratus* (Orangespine Unicornfish; Figure 59), known in Hawai‘i as umaumalei, is common in shallow waters where it feeds upon algae, sometimes in schools. While the umaumalei is a specific species within the family *Acenthuridae*, some traditional accounts classify them under the name kala or kala umaumalei (Titcomb 1972). Hoover describes the most prominent features of this fish as follows: “bright orange lips, a graceful curve of yellow from eye to mouth (somewhat like a lei), and orange caudal spine identifies this attractive hornless unicorn fish” (Hoover 2007:148). Per Hoover, the orange markings tend to brighten in color when hunting; the colors are dull when these fish are in their juvenile stage, while large males are distinguished by thin tail streamers (ibid.). This species ranges in size from fourteen to eighteen inches long, but they have yellow tails when they are four to five inches long, and a spike near the caudal fin, which they use to defend themselves (Titcomb 1972).



Figure 59. *Naso lituratus* at Hanauma Bay, O‘ahu.

A chant submitted by S. Z. Kalaaakumuole (1866) to the November 24, 1866 edition of *Ka Nūpepa Kū‘oko‘a* states, “*O ka Umaumalei ke lii,*” which translates as “the *umaumalei* is chief.” The *umaumalei* is also referenced in the Kumulipo (Beckwith 1951; Glidden et al. 1997; Liliuokalani 1978), where it is paired with its land counterpart the ‘*ūlei* (*Osteomeles anthyllidifolia*). In addition to their protruding horn, *kala* also have a caudal spine. An ‘*ōlelo no‘eau* that describes this unique trait states, “*mālama i ke kala ka i‘a hi‘u ‘oi,*” which translates as “watch out for the *kala*, the fish with a sharp tail,” and is said as “a warning to beware of a person who is well equipped to defend himself” (Pukui 1983:230).

Kala in all of its forms was a popular Hawaiian delicacy for they were abundant and easy to catch; most often broiled over coals and rarely eaten raw (Titcomb 1972). Malo described the fish as being “greatly flattened” (1951:46). The soft parts of the fish are described as good *palu* (fish bait); and *kala* were often dried after skinning the fish with the flesh cut into strips, or with the skin on and the meat cut away from the spine (Titcomb 1972).. According to Titcomb (1972), an informant described this fish as best when broiled or baked, after it was about three-quarters dried, and not too stiff or hard.

The skin of the *kala* is tough and has no scales, which made it ideal for the covering on the *pūniu*, a small drum that was lashed onto the thigh of a *hula* dancer (Abbott 1992). The skin also produces a pungent odor, but its strong smell varied depending on the region it was from, which is a result of their diet (Titcomb 1972). A traditional custom to rid the pungent smell, was done in the same manner as for the *palani*, which was to lay the fish across both hands with the head on the left palm and the tail on the right palm, then breathe in over the fish, while turning the head from left to right, and then breathe out violently. This process was repeated on the other side of the fish (Titcomb 1972).

Per Titcomb, during the spawning seasons, certain fish were prohibited from being caught and consumed, which included *kala* (ibid.). In the March 8, 1923 issue of *Ka Nūpepa Ku‘oko‘a*, an article titled “*Ka Ho‘opakele Ana I Nā I‘a,*” offered insight into the traditional beliefs and sustainable practices of *kala* and other similar fish. Presented is a portion of this article concerning *kala*, translated by Titcomb:

Fish such as the Manini, the kole, the uhu, the kumu and the palani and the kala and many others went into sea pools to live until the tiny fish were grown. No kapus were imposed on them at the spawning season. The mullet, squid, aku, opelu and other fish bore their young in a place that was not sheltered... They were made kapu when the spawning season was near until the months for this duty were over. (Titcomb 1972:14).

Although already touched upon in the traditional fishing methods discussion, further details about the use of *hīna‘i* and *holoholo* nets are provided below as they were used to catch *kala*. Manu et al. (2006) described the ‘*ie kala* (lit. *kala* basket) as the largest type of *hīna‘i*. These baskets were round and flat, and about four to five feet long and two and a half to three feet deep with a one-and-a-half-foot opening. Near the large end of the opening, a small wicker cylinder or cone is attached and turned inwards towards the bottom of the basket with the free end of the cone small enough for the *kala* to fit through. Use of the ‘*ie kala* is described as follows:

Immediately below the end of this cone, on the bottom of this basket, is placed the bait, properly secured, which in the case of the *kala* is *limu kala* (a coarse brownish-yellow algae on which this fish feeds and from which it takes its name), ripe breadfruit, cooked pumpkins, half-roasted sweet potatoes, and papayas. This basket is called 'ie lawe (taking basket). The fishermen generally feed the fish at a given place for a week or more before taking any, using large feeding baskets, similar to the 'ie lawe, but without the inverted cylinder and wider at the mouth to allow the fish free entry and exit. After a week or two of feeding, the fish become very fat and fine-flavored, and also very tame, so that baskets full of fish can be drawn up in the 'ie lawe without in the least disturbing the fish which are still greedily feeding in the feeding baskets. The 'ie kala are occasionally used to catch other kinds of fish, substituting bait known to attract particular kinds, but the technique is never as successful as with *kala*. (Manu et al. 2006:96)

When the *hīna* 'ī were used it was an event for the village—all would gather at the shore. The first *kala* went to the *ali* 'i of the area, while the fisherman was allowed to take a few from the *akua* basket. After distribution of the fish, an *imu* (underground oven) would be ashore and ready for cooking. Preparation methods include *pūhōlo* (steam), *kālūa* (to bake), *hākui* (to steam), and *lāulau* (wrapped in ti leaves and baked). Once the *kala* was cooked, the first *hīna* 'ī was for the gods and head fishermen along with his crew and the *ka honua* 'āina (heads of the land). It is said that the land of Ka'ena was the "land abounding in *kala* fish, but perhaps by now their heads are as hard as coral, *ko 'a ka lae* [past full maturity, not having been caught]" (Kamakau 1976:85).

Additional methods for catching *kala* included the use of a *holoholo*, a net tied to a twelve-foot-long piece of *alāhe'e* (*Canthium odoratum*) wood. The net was lowered down in an area with swift-ebbing tides with one person holding the net and the other corralling fish into it (Manu et al. 2006). *Hina* 'i *pai kala*, was a method of using a plaited basket as a net. The basket was filled with *limu kala* (seaweed), *kalo*, and pumpkin and then let down for the fish to feed. This process was continued until the fish became plump and accustomed to feeding in the basket, then a dipnet or scoop net was used to collect *kala*.

Kala was also used for ceremonial purposes. The *kahuna* 'aumakua and *kahuna* po'oko'i were the most notorious and demanding in terms of sacrifices and offerings needed to proceed with the healing process (Kamakau 1964:96). The food items requested included a black sow, eight *kala* fish, eight *kumu* fish, eight *he'e*, a *weke* fish, a mullet, an *awa* fish, 'ōpae from *mauka* streams, *ho'io* shoots, a red chicken, a white chicken, a black chicken, a young coconut, *kapa*, a dog, sugar cane, spring water, a *lei*, body adornments, sweet potatoes, *kalo*, 'uala *palau* (sweet potato and coconut milk pudding), bananas (*popo'ulu* and *iholena* varieties), 'awa, and *poi*. These items were for the patient and his relatives to eat, but if the 'ohana (family) extended the offer for the *kahuna* and his family to join in on the feast they would oblige.

Pseudanthias bicolor

Pseudanthias bicolor (Bicolor Anthias; Figure 60) are commonly encountered by divers in Hawai'i (Hoover 2007:75). Their back and upper side are orange, while the underside ranges from a pale lavender to white. Males are larger than females and have an elongated second and third dorsal spine bearing a small fleshy yellow flap at the tip. These fish prefer depths of 40 ft. or more and live in colonies along walls or isolated coral heads. However, they have been spotted at depths of 15-20 ft. at Mākua, O'ahu. They can grow in length up to 4.5-inches. The review of culture-historical literature conducted for this study did not reveal a Hawaiian name or specific cultural information related to this species.



Figure 60. *Pseudanthias bicolor*.

***Thalassoma duperrey* (*hīnālea lauwili*)**

Thalassoma duperrey (saddle wrasse; Figure 61) also known as the *lauwili* variety of *hīnālea* is said to have been named after the *wiliwili* (*Erythrina sandwicensis*) tree; a dryland tree whose flowers are of a bright orange hue. This variety is said to be the most commonly observed of the *hīnālea* species. *Hīnālea lauwili* are small coral reef fish that are very abundant in Hawaiian waters. The *lauwili* is referenced in traditional fishing practices as “the proper fish to eat as an aftertaste to ‘awa [a mildly narcotic drink made from the chewed *Piper methysticum* plant]” (Titcomb 1972:77). The scales of the fish were hard to remove so it was usually skinned, before or after cooking, or broiling, but was mostly eaten raw. This type of fish was also good for *i’a ho’omelumelu*, which is the practice of removing the entrails, head, tail, and spine, followed by scraping off the scaly skin, then dressing it with condiments (Titcomb 1972:77). Beyond these details, the review of culture-historical literature conducted for this study did not reveal any additional cultural information related to this species.



Figure 61. *Thalassoma duperrey* male at Kewalo, O’ahu.

***Zanclus cornutus* (*kihikihi*)**

Zanclus cornutus (Moorish Idol) is the only member of the family Zanclidae (Hoover 2007:90). This classic coral reef fish, known in Hawaiian as *kihikihi*, translated as “corners, curves, angular” aptly describes this fish’s body shape and markings (Pukui and Elbert 1986:147). Hoover reports that *kihikihi* can grow up to eight inches long and are reported to be “difficult to maintain in captivity, being active and high-strung, hard to feed, and surprisingly aggressive.”

3. Background

(2007:90). Their white and yellow-gold bodies are striped with thick jet-black bands, while their snouts are long and striped with orange and white. They are easily identified by a wispy, long white filament that extends from their dorsal fin. In describing additional qualifiers, Titcomb notes that other varieties of *kihikihi* were known by the terms “*kihikihi launui* (big-leafed), or *mane‘one‘o* (irritating), *k. alo-‘ula* (red breast), silvery, *k. pohaka* (big spot), and *k. halena* (yellowish)” (1972:88).



Figure 62. *Zaclus cornutus* at Kewalo Pipe, O‘ahu.

Typically traveling in pairs or schools, these fish can be found in deep waters but are commonly observed grazing on sponges in shallower waters. Although Hoover (2007) contends that their diet consists primarily of sponges, which likely produces a bad taste, Titcomb provides conflicting accounts regarding its consumption. Titcomb relates that it was “not eaten much, too little flesh” but also states that *kihikihi* was “A delicious fish when broiled, not only to the back-country people; it is considered delicious in the courts of the chiefs, delicious to Panaha‘eka (Panaha-the-humble)” (1972:88). Native Hawaiian author, David Malo, noted that this flat bodied fish was one amongst almost two dozen (although he adds that the list was not exhaustive) considered to be good eating ((1951:46).

***Zebrasoma flavescens* (*lā‘ī pala, lau‘īpala*)**

Zebrasoma flavescens (Figure 63) are most commonly known as yellow tangs and referred to in Hawaiian as *lau‘īpala* or *lā‘ī pala*. It is an inshore fish that grows up to approximately seven inches. A bright-colored yellow, the *lā‘ī pala* has no scales; rather, they have a combination of rough and soft skin (Titcomb 1972). Per Titcomb (1972), Although small, these fish were considered a delicacy were prepared for consumption by broiling; the skin was edible when cooked, but was removed if eaten raw.

In *The Epic Tale of Hi‘iakaikapoliopole*, Hi‘iaka spoke of a healing ritual that includes the consumption of the *lau‘īpala*:

Listen to me, this grandchild of ours will be troubled no more. When we depart, you fetch the blossoms of the ma‘o in abundance, then mash them soft, make a ball of it, and affix it to the soft spot on the head of our grandchild. Before high noon, he will awaken, and will be healed. And if he hungers for food, then feed him warm potato, along with *lau‘īpala*, the fish called the yellow tang. That fish will make for abundance of food, like the bounty of Maka‘ukiu. This grandchild of ours is no longer ill. (Ho‘oulumāhiechie 2006:131-132)



Figure 63. *Zebrasoma flavescens* at Kahe Point, O‘ahu.

It is evident from the information presented above that a large majority of these species were utilized throughout the Precontact and Historic era as they are mentioned in traditional legendary narratives and a variety of historical accounts. Collectively, these narratives provide a baseline understanding of the beliefs associated with some of these species and the ways in which these fish have been utilized in Hawaiian culture.

THE ARRIVAL OF WESTERNERS AND THE TRANSFORMATION OF MARINE RESOURCE MANAGEMENT PRACTICES IN HAWAI‘I

By the mid-18th century, Kamehameha had directed his efforts towards consolidating Hawai‘i Island under his rule. To accomplish this feat, Kamehameha continued to train under his more experienced kin, namely Kalani‘ōpu‘u, who held the title of *ali‘i nui* of Hawai‘i Island (Ii 1959). During Kalani‘ōpu‘u’s reign, the first foreign vessels captained by the British explorer, James Cook arrived in Hawaiian waters. Cook first landed at Waimea, Kaua‘i in 1778 and on January 17, 1779, he anchored in Ka‘awaloa Bay, Kona (Kamakau 1992). Aboard these foreign ships were innovative technologies and diseases unknown to the original inhabitants of the Hawaiian Islands. Items such as metal, nails, guns, canons, and the large foreign vessels themselves, stirred the interest of the Kānaka Maoli. Acquisition of these technological advancements came through barter. This ultimately resulted in the *ali‘i* gaining possession of foreign items that ultimately set traditional Hawaiian warfare in new trajectory, one forged by Kamehameha himself. By the late 18th century, wars were occurring regularly between intra-island and inter-island polities, and by 1810, Kamehameha had unified all of the Hawaiian Islands under his rule. Following this unification, Kamakahonu in Kailua, Kona became his seat of government until his death in 1819 (Kamakau 1992).

The year 1778 marks the end of what is often referred to as Hawai‘i’s Precontact Period and the beginning of the Historic Period. While 1778 signifies an important date in Hawaiian history, the Hawaiian chiefs still held outright rule over the land and its resources and maintained strict adherence to the *kapu* system throughout the Early Historic Period, despite the Western influences. At the outset of the Historic Period, there was a continued trend toward craft and status specialization, intensification of agriculture, *ali‘i*-controlled aquaculture, the establishment of upland residential sites, and the enhancement of traditional oral history. The veneration of traditional gods and the strict observation of the *kapu* system were also at their peaks (Kent 1983; Kirch 1985).

Some researchers have argued that the abrogation of the *kapu* system in 1819, under the rule of Kamehameha’s son, ‘Iolani Liholiho (Kamehameha II) undermined the foundation upon which traditional Hawaiian society was built, and altered not only the relationship between the *ali‘i* and the people, but also the Hawaiian people’s relationship to the land (Else 2004; Kame‘eleihiwa 1992). Such cultural changes were bolstered by the arrival of Missionaries, beginning in the early 1820s. These early missionaries introduced monotheistic Christian beliefs, established Hawaiian orthography, and generally promoted a Euro-American lifestyle and political system. During this same time period, the first commercial fishing ventures were underway in the islands as British and American whaling fleets began to arrive in Hawaiian waters. These early whalers established Hawai‘i as their provisioning and trading headquarters (Schug 2001). The whaling industry lasted for several decades, and by the 1850s had reached its peak,

with some five hundred whaling vessels operating out of the various island ports. Many Kānaka Maoli men, who were skillful on the ocean, became employed in this industry.

With the influx of foreigners, many of whom were quick to introduce the idea of trade for profit and fee simple ownership of land, Hawai‘i’s traditional culture and sociopolitical economy began to shift to meet the demands of the foreign population. Kānaka Maoli began to engage in commercial fishing, which led to the establishment of fish markets by the early 1830s (Schug 2001). As Schug explains, “commercial fishing provided Hawaiians an early opportunity to participate in the new island economy with a relatively small capital outlay and without abandoning their own customs and skills” (2001:17). Schug provides the following account of Hawaiian fishers’ adaptations to newly introduced Western materials:

As new goods and materials became available, Hawaiian fishermen modified their fishing accoutrements. Steel hooks, for example, replaced those carved from pearl-shell, and wooden spears were tipped with iron. But the Hawaiians retained many of the long-established fishing techniques that were so well adapted to Hawai‘i’s marine environment. Also retained were various ancient rituals to ensure safety at sea and a bountiful catch. Fishermen continued to pray to the traditional deities for success and appease them with offerings of fish. (2001:17)

Fishing Rights Codified in the Hawaiian Kingdom Government Constitutional Laws of 1839 and 1846

Traditionally, Hawaiian land stewardship practices and philosophies were centered around the natural resources that extended from the mountain tops to the deep ocean, which were held in “trust” by the *mō‘ī* (King) and his *ali‘i* (Maly and Maly 2003). Under the ancient system, land use rights included access to fisheries and natural resources that were within the lands, which were then given to the *hoa‘āina* (native tenants). In 1839, under the administration of Kamehameha III (Kauikeaouli) a set of laws were drafted that were known as *Ke Kumukānāwai, a me Nā Kānāwai O Ko Hawai‘i Pae ‘Āina* (The Constitution and Laws of the Hawaiian Islands). These laws proclaimed the rights of the people, and ensured equitable protection for the people and chiefs (Achiu 2002). By October 8th, 1840, Kamehameha III and Kekāuluohi, the *Kuhina Nui* (Premier), had enacted the 1840 constitution that “...organized the parts and the functions of government at that time,” and included the creation of the *‘Aha ‘ōlelo* (House of Representatives) as part of the legislative body, thereby allowing the voice of the people to be heard in governmental matters (2002:35). Kamehameha III officially defined the ancient fishing rights and practices of the people in the Constitution and Laws of 1839 and reconfirmed them in 1840 (2003:26). With respect to the fisheries, these laws permitted Kamehameha III to distribute the fishing grounds and resources between the *ali‘i* and the people of the land. Maly and Maly, further emphasize that “fisheries on coral reefs fronting various lands were for the landlords (*kono‘hiki*) and the people who lived on their given lands (*ahupua‘a*) under the *kono‘hiki*” (2003:243). Maly and Maly (2003) compiled the Hawaiian laws enacted between the years of 1833-1842 from archival records located at the Hawai‘i State Archives. These laws identified the responsibilities and rights of the *kono‘hiki* and the people pertaining to various types of fishing grounds and resources. As can be seen below, the laws also acknowledged the practice of *kapu*, or restrictions, with respect to fishing customs and specific fisheries. Those laws pertaining to fishing rights related to the *noa* or free fishing grounds are excerpted verbatim below:

No na Kai noa, a me na Kai kapu.

(Of free and prohibited fishing grounds) (1839-1841)

I. —Of free fishing grounds. (No ka noa ana o ke kai)

His majesty the King hereby takes the fishing grounds from those who now possess them, from Hawaii to Kauai, and gives one portion of them to the common people, another portion to the landlords, and a portion he reserves to himself. These are the fishing grounds which his Majesty the King takes and gives to the people; the fishing grounds without the coral reef. viz. the Kilohee grounds, the Luhee ground, the Malolo ground, together with the ocean beyond.

But the fishing grounds from the coral reefs to the sea beach are for the landlords, and for the tenants of their several lands, but not for others. But if that species of fish which the landlord selects as his own personal portion, should go onto the grounds which are given to the common people, then that species of fish and that only is taboo. If the squid, then the squid only; or if some other species of fish, that only and (1842:36) not the squid. And thus it shall be in all places all over the islands; if the squid, that only; and if in some other place it be another fish, then that only and not the squid.

If any of the people take the fish which the landlord taboos for himself, this is the penalty, for two years he shall not fish at all on any fishing ground. And the several landlords shall give immediate

notice respecting said fisherman, that the landlords may protect their fishing grounds, lest he go and take fish on other grounds.

If there be a variety of fish on the ground where the landlord taboos his particular fish, then the tenants of his own land may take them, but not the tenants of other lands, lest they take also the fish tabooed by the landlord. The people shall give to the landlord one third of the fish thus taken. Furthermore, there shall no duty whatever be laid on the fish taken by the people on grounds given to them, nor shall any canoe be taxed or taboo'd.

If a landlord having fishing grounds lay any duty on the fish taken by the people on their own fishing grounds, the penalty shall be as follows: for one full year his own fish shall be taboo'd for the tenants of his own particular land, and notice shall be given of the same, so that a landlord who lays a duty on the fish of the people may be known.

If any of the landlords lay a protective taboo on their fish, when the proper fishing season arrives all the people may take fish, and when the fish are collected, they shall be divided—one third to the fishermen, and two thirds to the landlord. If there is a canoe full, one third part shall belong to the fishermen, and two (1842:37) thirds to the landlord. If the landlord seize all the fish and leave none for the fishermen, the punishment is the same as that of the landlords who lay a duty on the fish of the people.

If, however, there is any plantation having fishing grounds belonging to it, but no reef, the sea being deep, it shall be proper for the landlord to lay a taboo on one species of fish for himself, but one species only. If the parrot fish, then the parrot fish only; but if some other fish, then that only and not the parrot fish. These are the enactments respecting the free fishing grounds, and respecting the taking of fish. (2003:244-246)

The next excerpt includes the laws related to fishing in the *kapu* fishing grounds:

2.—Respecting the taboo'd fishing grounds. (No na kai kapu)

Those fishing grounds which are known by the people to have shoals of fish remaining upon them, shall at the proper season for fishing be placed under the protective taboo of the tax officers, for the King. The fishing grounds on Oahu thus protected, are 1, Kalia; 2, Keehi; 3, Kapapa; 4, Malaekuli; 5, Pahihi. On Molokai, as follows: 1, Punalau; 2, Ooia; 3, Kawai; 4, Koholanui; 5, Kaonini; 6, Aikoolua; 7, Waiokama; 8, Heleiki. On Lanai the Bonito and the Parrot fish. On Maui, the Kuleku of Honuaula and other places.

On Hawaii, the Albicore.

On Kauai, the Mullet of Huleia, Anehola [Anahola], Kahili and Hanalei, and the squid and fresh water fish of Mana, the permanent shoal fish of Niihau, and all the transient shoal fish from Hawaii to Niihau, if in sufficient quantity to fill two or more canoes, but not so small a quantity as to fill one canoe only. But if the fishermen go and borrow a large canoe, that all the fish may be put into one, then there shall be a duty upon them. (1842:38)

On the above conditions there shall be a government duty on all the transient shoal fish of the islands. The tax officer shall lay a protective taboo on these fish for his Majesty the King, and when the proper time for taking the fish arrives, then the fish shall be divided in the same manner as those which are under the protective taboo of the landlords.

If the tax officer seize all the fish of the fisherman, and leave none for those who take them, then he shall pay a fine of ten dollars, and shall have nothing more to say respecting the royal taxes. But if the order for seizing all the fish of the fishermen was from the Governor, then he shall no longer be Governor, though he may hold his own lands, and the tax officer shall not be turned out of office. At the proper time the tax officer may lay a protective taboo on all the King's fish, and the landlords' all around the island. But it is not proper that the officer should lay the taboo for a long time. The best course is for the officer to give previous notice to the fishermen, and then the common people and the landlords to fish on the same day. Thus the rights of all will be protected.

But no restrictions whatever shall by any means be laid on the sea without the reef even to the deepest ocean. Though the particular fish which the general tax officer prohibits, and those of the landlords which swim into those seas, are taboo. The fine of those who take prohibited fish is specified above. (1842:39) (ibid.)

Maly and Maly (2003) also report that on May 31st, 1841, several changes were made and signed into law regarding fisheries by the King and *ali'i*. One such section revised the punishment of a fisherman who breaks a *kapu* to state, “for two years he shall not fish at all on any fishing ground” and “if he take one fish criminally he shall pay five, and always at that rate. And if a canoe full be taken then five canoes full shall (1842:85) be paid, according to the amount taken, even to the farthest extent (1842:86)” (Maly and Maly 2003:245-246). In 1846, Article V of the “Statute Laws of His Majesty Kamehameha III” was published, which relates to fisheries and includes *kapu* on specific fish and/or entire fisheries, and is reproduced below:

ARTICLE V.—OF THE PUBLIC AND PRIVATE RIGHTS OF PISCARY (1846)

SECTION I. The entire marine space, without and seaward of the reefs, upon the coasts of the several islands, comprising the several fishing grounds commonly known as the Kilohee grounds—the Luhee grounds—the Malolo ground, and the fishery of the ocean, from said reefs to the limit of the marine jurisdiction in the first article of this chapter defined, shall be free to the people of these islands. The people shall not be molested in the enjoyment thereof except as hereinafter provided.

SECTION II. The fishing grounds from the reefs, and where there happen to be no reefs from the distance of one geographical mile seaward to the beach at low water mark, shall in law be considered the private property of the landlords whose lands, by ancient regulation, belong to the same; in the possession of which private fisheries, the said landholders shall not be molested except to the extent of the reservations and prohibitions hereinafter set forth.

SECTION III. The landholders shall be considered in law to hold said private fisheries for the equal use of themselves and the (1846:90) tenants on their respective lands; and the tenants shall be at liberty to use the fisheries of their landlords, subject to the restrictions in this article imposed.

SECTION IV. The landlords shall have power, each year, to set apart for themselves one given species or variety of fish natural to their respective fisheries, giving public notice by viva voce proclamation to their tenants and others residing on their lands, and signifying to the minister of the interior, in writing, through his agents in their districts, the kind and description of fish which they have chosen to set apart for themselves. The landlords shall respectively pay for such notification, the fees prescribed by the third part of this act; and it shall be the duty of the minister of the interior yearly to furnish the director of the government press with a list of said landlords, the districts and island of their residence, and the kind of fish specially set apart by each, in the form of a catalogue; which catalogue the said director shall cause to be once inserted in Hawaiian and English languages, in the Polynesian newspaper, for public information, at the expense of said minister to be included by him, according to a fixed rate, in the fees to be received at his department from the respective landlords.

SECTION V. The specific fish so set apart shall be exclusively for use of the landlords, if caught within the bounds of his fishery, and neither his tenants nor others shall be at liberty to appropriate such reserved fish to their private use; but when caught, such reserved fish shall be the property of the landlord, for which he shall be at liberty to sue and recover the value from any fisherman appropriating the same; and more over, if he take one fish criminally he shall pay five, and in the proportion shall he pay to the full amount of what he may have taken wrongfully. Whoever may have taken fish in violation of this law, without paying as about, shall be fined fifty dollars for each offence.

SECTION VI. The landlords shall not have power to lay any tax or impose any other restriction upon their tenants regarding the private fisheries that is in the preceding section prescribed, neither shall such further restrictions be valid. (1846:91)

SECTION VII. It shall be competent to the landlords, on consultation with the tenants of their lands, in lieu of setting apart some peculiar fish to their exclusive use, as hereinbefore allowed, to prohibit during certain indicated months of the year, all fishing of every description upon their fisheries; and, during the fishing season to exact of each fisherman among their tenants, one thirds part of all the fish taken upon their private fishing grounds. In every such case it shall be incumbent on the landlords to comply in like manner with the requirements of the fourth section of this article.

SECTION VIII. The royal fish shall appertain to the Hawaiian government, and shall be the following, viz:

- 1st. The bonito when off any part of the coast of Lanai.
- 2nd. The albacore of Hawaii.
- 3rd. The mullet of Huleia, Anehola [Anahola], and Hanalei; the squid and freshwater fish of Mana on Kauai.
- 4th. The shoal fish taken at the following places, noted for the abundance of fish frequenting them; off Oahu: 1, Kalia; 2, Keehi; 3, Kapapa; 4, Malaeakuli, and 5, Pahih.
- 5th. Off Molokai: 1, Punalau; 2, Ooia; 3, Kawai; 4, Koholanui; 5, Kaonini; 6, Aikoolua; 7, Waiokama, and 8, Heleiki.
- 6th. And off Maui; the kuleku of Honuaula; and the same whenever found off said island.
- 7th. All the following transient fish, viz:—1, the kule; 2, the anaeholo; 3, the alalauwa; 4, the uhukai; 5, the kawelea; 6, the kawakawa; 7, the kalaku.

These shall be divided equally between the king and fishermen. But on all the prohibited fishing grounds the landlords shall be entitled to one species of fish, and those who have walled fish ponds shall be allowed to scoop up small fish to replenish their ponds. If the prohibited fish of the landlord be mingled with the royal fish, then the landlord shall be entitled to one third of the whole of the fish taken, though this applies only to Molokai, Oahu and the rivers of Kauai.

All which shall be yearly protected by the king's taboo, to be imposed by the minister of the interior, by means of circular from his department, as prescribed in the act to organize the executive ministry; and during the specified season of taboo they shall not be subject to be taken by the people. (1846:92)

SECTION IX. At the expiration of the taboo seasons, all persons inhabiting these islands shall be at liberty to take the protected fish, accounting to the fishery agents of the respective districts off which the same shall have been caught, for the half or portion, so taken; and the minister of the interior shall make known through his agents by viva voce proclamation, the respective months or seasons of the year during which the said royal fisheries may be used and the said protected fish taken.

SECTION X. The minister of the interior shall appoint suitable and proper fishing agents in the several coast districts of the respective islands, to superintend the fisheries aforesaid, to whom he shall from time to time give directions through the respective governors, in regard to the sale or other disposition of the share of fish accruing to the government.

SECTION XI. It shall be the duty of the agents appointed, to exact and receive of all fishermen, for the use of the royal exchequer, during the legalized fishing seasons the one half part, or portion of all protected fish taken without the reefs, whether at the respective places in the eighth section of this article indicated, or in the channels and enclosed seas dividing these islands, or upon the high seas within the marine jurisdiction of this country. And if any officer or agent of this government shall exact more fish of the people than is in and by this section expressly allowed, he shall on conviction, forfeit his office, and be liable to pecuniary fine, in the discretion of the court, before which he shall have been convicted.

SECTION XII. It shall be competent for His Majesty, by an order in council, from time to time, to set apart any given portion, or any definite kind of the said protected fish, or any proportional part of the avails therefrom arising, for the use of the royal palace, to be delivered or paid over to the chamberlain of his household, created by the third part of this act.

SECTION XIII. It shall be incumbent on the minister of the interior to provide, by instructions to the respective governors, for the sale and disposal of all fish received by the said fishing agents, and to pay the avails thereof to the minister of finance. (1846:93)

SECTION XIV. If any person shall, in violation of this article, take out of season the fish protected by the king's taboo, or if any person shall, within the free fishing seasons, take any of the protected fish, without delivering to the agent appointed for that purpose the proportion accruing to the royal exchequer, he shall, on conviction, forfeit all fish found in his possession, and shall, in addition, pay fivefold for all fish thus taken, or he may be put in confinement, at the discretion of the court condemning him. (1846:94; HSA collection KFH 25 .A24 1825/46) (Maly and Maly 2003:246-248)

Soon, questions concerning the rights of the *konohiki* and the restrictions upon the *hoa'āina* in the matters of fisheries arose. Maly and Maly relate that "a number of communications clarifying the Laws cited above, were published" (2003:250). Among the communications was an Interior Department document (detailed below), which sought to resolve the issue:

FISHING RIGHTS, RESTRICTIONS AND LIBERATION

Interior Department Document Number 148

That, to whomsoever it may concern, the catching with hands of fishes and shrimps, etc., from the specified seas call, "Fishing grounds", for human consumption only are hereby liberated.

That, is the King or the Konohiki are lack in having the catch of a certain fish and wish to prohibit some of these fishes (unspecified fish: but freely given to citizens), it is well in doing so.

That, the Konohiki is hereby ordered to take only one fish; and that the main coral fishing grounds, or other coral fishing grounds are under the jurisdiction of the government. That, the Konohiki is hereby allowed to take only one fish from these coral fishing grounds; and that he is not to take two or three; not that much.

If the overseer or the Konohiki who is in charge of a fishing right knows that he is out of fish, and wishes to have some by sending his brother out to fish, it is at his discretion in doing so; but, not to accuse him after the fish is caught. (Maly and Maly 2003:250-251)

THE LEGACY OF THE *MĀHELE 'ĀINA* OF 1848

By the mid-19th century, the growing population of Westerners in the Hawaiian Islands forced socioeconomic and demographic changes that promoted the establishment of a Euro-American style of land ownership. By 1840, the first Hawaiian constitution had been drafted and the Hawaiian Kingdom had shifted from an absolute monarchy into a constitutional government. Convinced that the feudal system of land tenure previously practiced was not compatible with a constitutional government, King Kamehameha III and his high-ranking chiefs decided to separate and define the ownership of all lands in the Kingdom (King n.d.). In 1845, the legislature created the Board of Commissioners to Quiet Land Titles (more commonly known as the Land Commission) to adopt guiding principles and procedures for dividing the lands and granting land titles, and to act as a court of record to investigate and ultimately award or reject all claims of private individuals brought before them (Cannelora 1974). The influence of Western businessmen and missionaries furthered the change in land tenure, because they were generally hesitant to enter business deals on leasehold lands that could be taken from them at any time. This period of land tenure transformation is known as the *Māhele 'Āina*.

The *Mō'ī* and some 245 *ali'i* spent nearly two years trying unsuccessfully to divide all the lands of Hawai'i amongst themselves before the whole matter was referred to the Privy Council on December 18, 1847 (King n.d.; Kuykendall 1938). Once the *Mō'ī* and *ali'i* accepted the principles of the Privy Council, the *Māhele 'Āina* was completed in just forty days (on March 7, 1848), and the names of all of the *ahupua'a* and *'ili kūpono* of the Hawaiian Islands and the *ali'i* who claimed them, were recorded in the *Māhele Book* or *Buke Māhele* (1848; Soehren 2005). As this process unfolded, Kamehameha III, who received roughly one-third of the lands of Hawai'i, realized the importance of setting aside public lands that could be sold to raise money for the government and or to his subjects to live on. Accordingly, when the name the last chief was recorded in the *Buke Māhele*, Kamehameha III commuted about two-thirds of the lands awarded to him to the Hawaiian Kingdom Government (King n.d.). The lands surrendered to the government by the *Mō'ī* and *ali'i* became known as "Government Land," while the lands retained by Kamehameha III became known as "Crown Land," and the lands received by the chiefs became known as "Konohiki Land" (Chinen 1958); all three types of land were subject to the rights of the native tenants therein.

The *ali'i* and *konohiki* were required to present their claims to the Board of Commissioners to receive a Land Commission Award (LCAw.) for lands provided to them by Kamehameha III. They were also required to provide commutations to the government in order to receive royal patents on their awards. The lands were identified by name only, with the understanding that the ancient boundaries would prevail until the land could be surveyed. This process expedited the work of the Land Commission and subsequent land transfers (Chinen 1961). Native commoners could also register claims for land they actively lived on or farmed with the Land Commission, and if substantiated, they would receive a LCAw., often referred to as a *kuleana*; upon confirmation of a claim, a survey was required before the Land Commission could issue a *kuleana* award.

Kuleana claims had to be submitted during a two-year period that expired on February 14, 1848 to be considered. All of the land claimants were required to provide proof of land use and occupation, which took the form of volumes of native registry and testimony. The claims and awards were numbered, and the LCAw. numbers, in conjunction with the volumes of documentation, remain in use today to identify the original owners and their use of the *kuleana* lands. The work of hearing, adjudicating, and surveying the claims required more than the two-year term, and the deadline was extended several times for the Land Commission to finish its work. In the meantime, as the new owners of the lands on which the *kuleana* were located began selling parcels to foreigners, questions arose concerning the rights of

the native tenants and their ability to access and collect the resources necessary for sustaining life. The “Enabling” or “Kuleana Act,” passed by the King and Privy Council on December 21, 1849, clarified the native tenants’ rights to the land and resources, and the process by which they could apply for fee-simple interest in their *kuleana*.

According to Maly and Maly, as a result of the *Māhele ‘Āina* 646 of the *kuleana* claims made by native tenants mentioned fisheries (2003:252); a summary of the relevant claims that detail the use and unique methods employed to raise and gather marine resources is presented below. These claims include the following resources: *loko i‘a* (fishponds); *kio pua* (ponds for fish fry); *pu‘uone* (dune-banked ponds); government ponds; *muliwai* (estuarine systems); ocean fisheries (with defined limitations, such as to where the surf breaks at the reef); fish markets; coral flats; *loko kalo* (ponds where fish and taro are cultivated); *loko aka‘akai* (bulrush ponds); *ālialia pa‘akai*, *kai pa‘akai*, and *haha pa‘akai*, and *āina pa‘akai* (salt beds); *loko ho‘oholo i‘a* (a pond where fish are released); stream fisheries; *he‘e* (octopus) fisheries; *uhu* (parrot fish) fisheries; *lua hanai* (holes where fish are fed); *loko kai hinana* (ponds for young ‘o‘opu fish); *wahi pa‘akai* (salt making places); *kāheka pa‘akai* (salt making ponds); *loko koele* (ponds worked for the king); *kai kapu* (prohibited fisheries); *hā ‘o‘opu* (lattice traps for ‘o‘opu); and *loko manu* (ponds where birds rest and feed) (Maly and Maly 2003).

Concentrated areas of fishponds could be found in Waikīkī and ‘Ewa. Many of the Waikīkī claims yielded their use of *ki‘o pua* making it easy to access fish when needed. Wailupe at Waikīkī was the only area on O‘ahu with claims to a *loko ho‘oholo i‘a* or a holding pond for fish prior to release (Maly and Maly 2003:280). Many of the claims were centered in the ‘ili of Kālia as many fishponds could be found here but have since been filled in for development. Central O‘ahu claims consisted of more *pu‘uone* or nearshore ponds. These claims were concentrated in the Moanalua, Waiakele, and Kalihi areas.

Some claims included fish that were protected and set boundaries of protection. For example, Helu 387 to the American Board of Commissioners for Foreign Missions (ABCFM) were awarded land in Waialua, O‘ahu. However, the land came with stipulations such as, “...The steam [sic] is not conveyed with the land. It is, however, the boundary on this side. If the supplies of the school are taken on the stream this is not wrong, however, the fish are protected...” (Maly and Maly 2003:275). In other instances, certain species such as ‘o‘opu, ‘ōpae, *limu kala*, and *āhole* were allowed to be collected by individuals at any time. Whereas others such as the ‘anae, *he‘e*, and *āhole* could only be collected “in the windy times” (see Helu 2699, 7404, 7406, 8050, and 10199) (Maly and Maly 2003:281).

Other claims included the right to take fish under the *konohiki* such as Helu 2363 (Kukaaipahu at Waiale‘e, O‘ahu) and Helu 2365 (Kailiuli at Waialaeiki, O‘ahu). Others were allowed to take fish under these conditions, but included clauses (such as Helu 2366 Kahanu at Waialaeiki, O‘ahu) which states, “...The trees of the *kuahiwī* and the right to fish under those of the *konohiki* fall under my claim...” (Maly and Maly 2003:280). Helu 2940 was awarded to Kahooahano (at Puaena, Waialua, O‘ahu), which had the rights to claim fish from ‘Uko‘a pond, but also established quantity restrictions on certain species and their habitats such as *lua ula* (lobster holes), *lua kūmū* (goatfish holes), *lua he‘e* (octopus holes), and *ko‘a ‘ōpelu* (‘ōpelu fishing stations) (Maly and Maly 2003:282). Other claims gave the claimant the flexibility to choose which fish they wanted to protect, such as Helu 3159 awarded to Lapa in Waialua, O‘ahu (Maly and Maly 2003:283). Some claims outright put restrictions on fisheries (Helu 10215 to Mauae at Waimānalo, O‘ahu). In this case, the *kai kapu* (prohibited fishery) of Awaawamalu and Paka, banned collection of *uhu* at the former and *he‘e* at the latter (Maly and Maly 2003:292).

Another unique finding was the inclusion of fish markets to land claims. For example, Helu 777 awarded to Keala (w) in Honolulu, states the following: “...Claimant has lived in this house, making a business of selling fish...Keala and her husband, who was Paki’s man, continued to live there, appropriating part of the house to a fish market...” (Maly and Maly 2003:275). Other claims traded land labor for provisions such as Tute at Manoa, O‘ahu (Helu 3322), whom accepted payment of “two *lau* of *weke*; one *lau* of *uhu*; one *lau* of *kahala* and *ulua*” (Maly and Maly 2003:283).

In addition to the 646 *kuleana* claims awarded during the *Māhele*, thirty-one *ali‘i* awards were made which cover 568 *ahupua‘a* spanning across the entire *pae ‘āina* (Hawaiian archipelago). The *helu* or claim number and the corresponding claimant’s name, as well as the location of the award and the resources claimed for the 23 *ali‘i* awards located on O‘ahu are listed in Table 5, below.

Table 5. *Ali'i* awards of O'ahu.

<i>Helu</i>	<i>Claimant</i>	<i>Location on O'ahu</i>	<i>Resources</i>
135	Iona Pi'ikoi	Pualoalo, Honolulu; Kaluaoopu, Waiau; Mikiola, Kāne'ohe	Lands and fisheries
812	Asa Kaeo	Laimi, Honolulu	Lands and fisheries
4452	H. Kalama (w)	Unspecified	Lands and fisheries
5368	Akahi (w)	Kaaipu, Waikīkī	Lands and fisheries
5525	L. Konia (w)	Kalauao, O'ahu	Lands and fisheries
7712	M. Kekuaaoa	Unspecified	Lands and fisheries
7713	Victoria Kamamalu	Unspecified	Lands and fisheries
7714B	Moses Kekuaiwa	Unspecified	Lands and fisheries
7715	Lot Kapuaiwa Kamehameha	Unspecified	Lands and fisheries
7716	R. Keelikolani (w)	Unspecified	Lands and fisheries
8241	John 'Ī'ī	Waipi'o, 'Ewa	Lands and fishery
8452	A. Keohokalole (w)	Unspecified	Lands and fisheries
8516B	Kamaikui (w)	Halawa, 'Ewa	Lands and fisheries
8520	Iosua Kaeo	Unspecified	Lands and fisheries
8525B	Julia Kauwa Alapai (w)	Unspecified	Lands and fisheries
8559	C. Kanaina	Unspecified	Lands and fisheries
8559B	Wm. Lunalilo	Unspecified	Lands and fisheries
9971	Wm. P. Leleiohoku	Unspecified	Lands and fisheries
10474	N. Namaau for M. Kekuaaoa	Unspecified	Lands and fisheries
10613	A. Paki	Unspecified	Lands and fisheries
10806	Iona Pi'ikoi for Kauikeaouli, Kamehameha III	Unspecified	At least 159 Crown Lands spanning the <i>pae 'āina</i> along with fishing rights on all islands
11215	Kealiihonui	Unspecified	Lands and fisheries
11216	M. Kekauonohi (w)	Unspecified	Lands and fisheries

COMMERCIAL FISHING AFTER THE *MĀHELE* AND INTO THE TWENTIETH CENTURY

In the decades following the *Māhele 'Āina*, Kānaka Maoli sought to navigate their way through major transitions from their fisheries being strictly managed by appointed *ali'i* and *konohiki* to fee-simple ownership and broader public access rights (Maly and Maly 2003). As the foreigners began to own property in fee-simple many Kānaka Maoli were displaced from their ancestral lands, which severely disrupted the ancient system of land management (Kame'elehiwa 1992). Glazier suggests that during these challenging times, subsistence fishing remained an important part of the lifestyle of Kānaka Maoli, “certain beliefs and ways of living were not abandoned in full, but rather subverted” (2007:66), as fishing laws continued to be redefined to address a wide range of fishery-related issues including access rights, *konohiki* rights, and taxation. Maly and Maly report that by 1850, the traditional method of using plant-based poisons, specifically ‘*auhuhu* “or other substance deleterious to fish” (2003:312) was made illegal. Despite these changes, for close to 100 years—through the whaling era (1820-1865) and well into the 20th century—Kānaka Maoli continued to play the leading role in Hawai'i's commercial fishing industry and adapted their subsistence lifestyle and culture to meet the demands brought about by a market economy (Cobb 1905; Glazier 2007; Schug 2001).

The shift to fee-simple ownership of land ultimately paved the way for large-scale commercial sugar cultivation, which brought successive waves of American, Chinese, Portuguese, Filipino, and Japanese migrant contract laborers. Schug, who conducted historical research on Hawai'i's commercial fishing industry, reports that in 1872 the non-indigenous population of Hawai'i numbered around 5,366, but that by the turn of the 20th century, that number had increased to some 114,345 individuals of foreign descent (2001:17). Of all of the ethnic groups to arrive in Hawai'i to support the burgeoning sugar industry, the Japanese became the most involved in Hawai'i's commercial fishing industry. Schug explains:

When their plantation contracts expired many Japanese who had previously been skilled commercial fishermen in the coastal areas of Wakayama, Shizuoka, and Yamaguchi Prefectures remained in Hawai'i and turned to the sea for a living. The earnings of these fishermen were on average higher than those of plantation workers. (2001:17)

Many of the first generation Japanese migrant laborers, known as *issei*, become deeply invested in Hawai'i's commercial fishing sector. Gradually, these Japanese fishers introduced fishing gear and methods that were well suited for deep-sea and nearshore fishing. Some of the more popular technological introductions included long line fishing and the sampan fishing vessel, originally propelled by oar or sail (Glazier 2007; Schug 2001). Sampan fishing vessels were later outfitted with an engine, which gave access to previously unexploited deep-sea fisheries. Additionally, the introduction of the Japanese cast net (Figure 64) sometime around 1890, which was well-suited for nearshore fishing, was quickly adopted by Kānaka Maoli fishers, who then later dubbed it the *'upena ho'olei*, or throw net (Mitchell 2001; Pukui and Elbert 1986). During the late 19th century, Hawai'i's political system underwent a series of monumental changes as the Hawaiian Kingdom became a U.S. Territory. In summarizing the political climate of the islands during this time, and its impact on local fisheries, Maly and Maly write:

This system was radically altered in 1893, when the Hawaiian Monarchy was overthrown by foreign residents and American forces. Subsequently, the leaders of the parties responsible for the overthrow, made a steady move towards annexation of the Hawaiian Islands by the United States, which occurred in 1898. Then in 1900, the Hawaiian Islands became a "Territory" of the United States, and the resulting "Organic Act" set in place the legal parameters for freeing up the fisheries of Hawai'i. (2003:viii)

In 1901, John N. Cobb, Agent of the United State Fish Commission visited the islands to investigate the condition of the islands' commercial fisheries. Cobb (1905) compiled his findings in his 1903 report titled, *The Commercial Fisheries of the Hawaiian Islands*, which provided details about fishing practices of this time, as well as the changing cultural tapestry of the islands. In relating the demographic changes he observed among the fishers during his visit, Cobb wrote:

In numbers the native Hawaiian fishermen surpass all others combined, but this is partly because so many women and children engage in the hand fishery for octopus, algae, etc., and these have been counted in total. Some of the natives are at the head of quite important fisheries, and for many years held a monopoly of the industry, but more recently the Japanese have been engaging in it in large numbers and now occupy second place. The natives fish spasmodically, as a rule, while the Japanese give to it their whole time and attention, and as a result are profiting much more. They are especially numerous on Oahu and Hawaii, most of them being engaged in deep-sea line fishing, which they virtually monopolize. They have several companies at Honolulu, Lahaina, and Hilo, and in this way control certain features of the fishing industry, thus enhancing the cost of the products to the general public. (1905:718)

Furthermore, Cobb (1905) reported that much of the same fishing methods and apparatus used in early times were still being employed by Kānaka Maoli fishers in the early 1900s. These methods included fishing from canoes and from the shore using nets of various types, spears, basket traps, lures, hand lines, snares, and poles as presented earlier in this chapter. While Cobb provides a variety of statistical information on Hawaiian fisheries during the turn of the 20th century, most interesting is perhaps his detailed list of catch yields sorted by island. His detailed list indicates that nearshore reef species, particularly on O'ahu Island (2.7 million pounds), constituted a significant portion of the catch yields during 1900. Throughout the early part of the 20th century, the participation of Japanese in Hawai'i's commercial fishery continued to increase, while the participation of Kānaka Maoli gradually waned; and as the commercial fishing industry expanded to meet the demands of the growing consumer population in the islands, marine resources became scarce (Glazier 2007). Thus, as the twentieth century unfolded, marine resources were valued more for their economic potential, and little to no regard was paid to the myriad traditional mores that emphasized the spiritual, cultural, familial, and ecological significance of the fish and other marine species. Maly and Maly contend that "this trend has continued through the present-day and fostered the decline in health and well-being of the broad range and diversity of Hawaiian fisheries" (2003:ix).



Figure 64. Fisherman using the *'upena ho'olei* ca. 19th century (Source: Hawai'i State Archives Call No. PP-22-8-003).

Commercial Aquarium Fishing in O'ahu

This section echoes much of the introduction chapter but is included here as a means of refreshing the reader regarding the history of commercial aquarium fishing and subsequent legislation, which triggered the preparation of the current document. After the turn of the 20th century, on March 19, 1904, the Honolulu Rapid Transit and Land Company established the first public aquarium in Waikīkī, O'ahu. Known then as the Honolulu Aquarium, Frederick A. Potter (for whom the Potter's Angelfish; *Centropyge potteri* is named after), who worked as a clerk for the Honolulu Rapid Transit Company became the aquarium's first Director. During its early years, the Honolulu Aquarium showcased various marine animals that were collected by local fishermen (University of Hawai'i n.d.; Wiegell 2008). By the 1940s the collection of reef fish and other marine species to be used in aquariums had developed into a commercial fishery. Throughout the mid-20th century, the aquarium fish industry went through a period of expansion, moving from O'ahu to the outer islands. However, the industry wavered due to the lack of airline cargo connections and a lag in overseas flight times (Walsh et al. 2004:130).

In 1953, Act 154 was established by the territorial government of Hawai'i relating to Aquarium Fish and was later amended in 1979. The act authorized the then Board of Agriculture and Forestry to establish a permit system for the use of fine-mesh nets and traps for the taking of aquarium fish (Walsh 2000). Act 154 was amended several times, including in 1989, when a monthly count was required by the Board of Land and Natural Resources to monitor aquarium fish taken from Hawaiian waters for export. In 1959, the introduction of the commercial jet service made shipping aquarium fish easier for collectors. A decade later, there was a rapid increase in aquarium permittees with most permit holders citing non-commercial use. During this time, the aquarium fish industry went through an expansion period, moving from O'ahu to the outer islands, specifically Kailua-Kona on Hawai'i Island.

By 1973, commercial aquarium collecting on O‘ahu was well established and had become a controversial issue (Calado et al. 2017). Commercial aquarium collectors are required to report catches. Prior to 1973, commercial aquarium collectors and commercial fishermen reported catches on the same form, which resulted in unreliable data as it did not provide space for multiple species being collected. Due to growing public concern regarding the industry, a moratorium was placed on aquarium collecting by the Division of Fish and Game. In September 1973, the Division of Fish and Game met with marine scientists who recommended the establishment of marine sanctuaries and areas where collection was prohibited (Walsh 1999). After the moratorium was lifted, commercial aquarium collectors were required to report their catches monthly on a detailed form, if forms were not submitted in a timely manner, the penalty resulted in the revocation of the commercial permit and potential prosecution.

In 1973, after growing public concern over commercial aquarium practices, this prompted the Division of Fish and Game (now DLNR) to suspend the issuance of Aquarium Permits for one week while issues were considered and addressed (PIJAC 2018). As a result, Aquarium Permit holders were required to submit monthly catch reports. Because no studies were conducted at that time, there were also no protective measures in place. In 1987, a gentlemen’s agreement between dive/snorkel operators and commercial aquarium fishers were established. In 1991, three MLCDs were established including Hanauma Bay, Pūpūkea, and Waikīkī. In addition, ten marine locations on O‘ahu have fishing restrictions: Waikīkī-Diamond Head Shoreline FMA, Ala Wai Canal, Kapālama Canal, Coconut Island—Hawai‘i Marine Laboratory Refuge, He‘eia Kea Wharf, Honolulu Harbor, Pōka‘i Bay, Waialua Bay, and the ‘Ewa Limu Management Area.

In August 2011, O‘ahu commercial aquarium fishers developed a rule proposal for the management of the O‘ahu aquarium fishery, which they presented to DAR; subsequently, in December 2012, a public hearing was held regarding the proposed measure and Hawai‘i Administrative Rules (HAR) §13-77 was adopted in October 2014 (PIJAC 2018). This regulation is applicable to the collection of aquatic life for aquarium purposes from the nearshore waters of O‘ahu, within 3 nautical miles from the shore. Between 2000 and 2017, DLNR issued from 66 to 126 commercial aquarium permits annually, and aquarium fishers collected approximately 238 fish species (1,295,700 individual fish) under said permits in O‘ahu’s nearshore waters.

As previously mentioned, because of a Supreme Court ruling, DLNR has not renewed existing permits or issued new permits for aquarium collection using fine meshed traps or nets since September 2017 (DAR 2017, EISPN). The FEA proposed a Finding of No Significant Impact (FONSI) for the issuance of commercial aquarium permits for the Island of O‘ahu. However, in July of 2018, DLNR disagreed with that finding and determined that the project could have a significant impact on the environment, and therefore required the preparation of an EIS (PIJAC 2018). In her review letter, Suzanne Case, Chair of the DLNR, specifically requested that the EIS include further analysis of several significance criteria under HAR § 11-200-12. Specifically, the take of aquarium fish as an irrevocable commitment to loss or destruction of natural or cultural resources, and the impact of the take of aquarium fish on cultural practices in the state. To that end, the section that follows presents the methods and results of the consultation effort put forth as part of the preparation of this study.

4. CONSULTATION

Gathering input from community members with genealogical ties and long-standing residency or relationships to the study area is vital to the process of assessing potential cultural impacts to resources, practices, and beliefs. It is precisely these individuals that ascribe meaning and value to traditional resources and practices. Community members often possess traditional knowledge and in-depth understanding that are unavailable elsewhere in the historical or cultural record of a place. As stated in the OEQC Guidelines for Assessing Cultural Impacts, the goal of the oral interview process is to identify potential cultural resources, practices, and beliefs associated with the affected project area. It is the present authors’ further contention that the oral interviews should also be used to augment the process of assessing the significance of any identified traditional cultural properties. Thus, it is the researcher’s responsibility to use the gathered information to identify and describe potential cultural impacts and propose appropriate mitigation as necessary.

In an effort to identify individuals knowledgeable about traditional cultural practices and/or uses associated with the current subject property, a public notice was submitted to the Office of Hawaiian Affairs (OHA) for publication in their newspaper, *Ka Wai Ola*. Although the notice was submitted via email on May 28, 2019 with the intent that it would appear in the June 2019 issue, the notice was not published until the July 2019 issue. As of the date of the current report, no responses have been received from the public notice. A copy of the public notice can be found in Appendix A of this report.

4. Consultation

ASM staff contacted forty-two individuals via mail, email, and/or telephone with request for consultation. Table 6 (presented below) lists all the individuals and/or organizations contacted for consultation and presents brief comments concerning the outcome of the consultation effort.

Table 6. Persons/Organization contacted for consultation.

<i>Name</i>	<i>Initial Contact Date</i>	<i>Comments</i>
Ahupua‘a ‘O Kahana State Park/Huilua Fishpond	9/10/2019	No response
Aila Jr., William	7/31/2019	Interviewed 8/22/2019
Aiwohi, Lopaka	9/26/2019	Referred by A.P. Connelly; no response
Akutagawa, Malia	9/10/2019	No response
Au, Kawika	10/11/2019	No response
Auwae, David	10/11/2019	No response
Beirne, Ululani	10/11/2019	No response
Christensen, Makani	8/12/2019	Interviewed 8/13/2019
Connelly, Alex Puanani	9/10/2019	Referred H. Kawelo, L. Aiwohi, and K. Kupihea declined to be interviewed
Cramer, Chris	9/9/2019	Interviewed 9/20/2019
Crowell, Dean	9/9/2019	Interviewed 9/22/2019
‘Ewa-Pu‘uloa Hawaiian Civic Club	10/11/2019	No response
Farden, Hailama	9/10/2019	No response
Fukumitsu, Keoki	9/10/2019	Wrong address
Gomes, Domingo	9/9/2019	No response
Hale‘iwa Harbor	10/11/2019	No response
Hopfe, Hanale	10/11/2019	No response
Hui Mālama Loko I‘a	9/10/2019	No response
Ito, Wally	9/10/2019	No response
Jellings, Carl	7/31/2019	No response
KAHEA	7/31/2019	No response
Kaluhiwa, Rocky	9/9/2019	No response
Kane, Shad	10/11/2019	Repelied via email on 11/20/2019: “I am opposed to aquarium fishing. [And] opposed to gathering aquarium fishes.”
Kawelo, Hi‘ilei	9/9/2019	No response
KUA (Kua‘āina Ulu ‘Auamo)	9/9/2019	No response
Kupihea, Kehaulani	9/10/2019	Referred by A. P. Connelly; no response
Morgan, John	9/9/2019	No response
OHA	7/31/2019	No response
Pearl Harbor Hawaiian Civic Club	10/11/2019	No response
Puniwai, Noelani	9/10/2019	Interviewed 10/15/2019
Pyle, Richard L.	9/26/2019	Referred B. Bowen and the staff at Hawai‘i Institute of Marine Biology on Moku o Lo‘e; declined to be interviewed
Sedillo, Tony	9/10/2019	No response
Shirai Jr., Thomas	9/10/2019	No response
Solis, Ka‘ahiki	9/17/2019	No response
Suzumoto, Arnold Y.	9/26/2019	No response
Thompson, Troy	10/11/2019	No response
Waialua Hawaiian Civic Club	10/11/2019	No response
Wai‘anae Hawaiian Civic Club	10/11/2019	No response
Wai‘anae Small Boat Harbor	10/11/2019	Harbormaster said he will forward to appropriate and interested parties; declined to be interviewed
Waikalua Loko I‘a	9/10/2019	Interviewed 10/21/2019
Waimānalo Limu Hui	9/10/2019	No response
Wong, Ben	9/9/2019	No response

In all, a total of six individuals, representing various communities on O‘ahu and users of the FRCA (including cultural practitioners, aquarium collectors, subsistence and commercial fishers, divers, dive tour operators, and educators), participated in the consultation process. The consultation process commenced in July of 2019 with interviews being conducted in August of 2019 to October of 2019.

As part of the interview process and with the consent of the interviewees, ASM audio recorded some of the interviews for note taking purposes only (audio files are not available); ASM staff took detailed notes during the remaining unrecorded interviews. Upon completion of the interviews, ASM staff prepared interview summaries, and emailed them to the interviewees for review and approval before being included in the current document. The finalized versions of the interview summaries are presented below in chronological order by interview date.

WILLIAM J. AILA, JR.

On August 22, 2019, ASM staff, Teresa Gotay, completed an interview with Mr. William J. Aila, Jr., at the Department of Hawaiian Home Lands office in Kapolei, O‘ahu. Prior to initiating the interview, upon presenting him with the map showing the study area, Mr. Aila agreed to the interview as long as the following disclaimer was included: there is no legal basis for the yellow exclusion areas and that it doesn’t make sense to him as an aquarium fish collector because there is no difference between one area and the area adjacent to it. Thus, it was decided that the discussion would focus on the whole coastline of O‘ahu.

William J. Aila, Jr., was born in Kapi‘olani Hospital in Honolulu and was raised on the Wai‘anae coast of O‘ahu. He added that he had “literally collected fish all around the island of O‘ahu.” At the time of the interview, Mr. Aila, who was sixty-one years old, described being in the ocean since age three. His interest in the ocean began with family members. He was told that he would disappear all by his lonesome self to walk the reefs, and that his family would have to search for him. Mr. Aila went on to state “I was attracted to the ocean; it was in my genes” and that “as soon as I could pick up a bamboo pole I started collecting.”

Mr. Aila shared that although his father was a cowboy and not a fisherman, many of his paternal uncles and grandfathers were. When asked if his uncles influenced him as a young fisherman, he said that later in life they did, but as a child he had learned more about fishing from other people (non-family) that he met at the beach. He first learned how to fish with a bamboo pole, then a spinning rod, and then an *ulu* rod. Later in life, he used gill nets, fence nets, bag nets, and hand nets, as well as a spear. Mr. Aila explained that as a child he often went fishing alone; but, as he got older and went further offshore he often went in groups, accompanied by friends and family. Then, as he got older, he bought himself a boat. He characterized this sequence of events as the general evolution that all fishers go through when they decide to put on a mask and jump in the water. He started fishing on the Wai‘anae coast, but also fished with friends on the neighbor islands.

Mr. Aila described a sort of transitional phase for fishers and explained that you reach a point when you decide to seek out the fish instead of waiting for the fish to find you, and that to do this one needs to learn fish psychology. He added that “if you know how certain fish act you can predict their movements, and then you can be efficient at capturing them.” He expressed that in the early years, some of this knowledge was self-taught; but, as he grew up he would ask older folks for insight. According to Mr. Aila, some fishers shared their knowledge, and some didn’t. He continued by saying that if it’s a fishing technique that you’ve developed that gives you an advantage or a particular locale that has certain types of fish, you don’t share that with just anybody; because if you do, the fish will be gone. Instead, you share that information with people you can trust to fish responsibly. When asked how he defines fishing responsibly, Mr. Aila replied, taking what you need for that particular time and then making sure you rotate your fishing spots so that you don’t completely fish out an area. He explained that in the case of aquarium fishing, people use hand and fence nets because juveniles are the target fish, which led to the following discussion of the origins of the aquarium fish trade in Hawai‘i.

Mr. Aila shared that the aquarium fish trade probably started in the 1960s (when he was a little boy) in Wai‘anae. Although he could not remember the fisherman’s name, he remembered seeing his tanks at Pōka‘i Bay. Mr. Aila explained that as demand grew for aquarium fish species, other folks got into the fishery and became wholesalers. He added that many of the fishermen themselves became collectors/wholesalers and some of them set up their own aquarium fish export systems. He added that some aquarium collectors got more sophisticated and began importing fish that were not collected enough locally to meet the demand, from Majuro in the Marshall Islands and the Philippines. These imported fish, one of which included flame angels (*centropyge loricula*), would be shipped to Wai‘anae before being exported elsewhere. When asked who purchased the aquarium fish he replied: some were locals, but most of the buyers were in the U.S. mainland and later in Asia.

When asked how aquarium fishing expanded from Wai‘anae in the 1960s, Mr. Aila explained that it developed around the island as people figured out that they could catch live fish and export them. He added that when there are strong trade winds most of the windward and northern coast of O‘ahu is not fishable, so the majority of the collectors would come to Wai‘anae to harvest aquarium fish. When asked if you have to fish where you live, he stated that where you fish is mostly determined by the weather. He added that the majority of aquarium fish continued to be harvested from the island of O‘ahu until hurricane Iwa swept over O‘ahu in late 1982 and destroyed a great deal of finger coral. Mr. Aila explained that shortly after Iwa, the demand for yellow tangs increased and there were not many in the nearshore waters of O‘ahu because their habitat was in the finger coral, which was largely destroyed by the storm. As a result, he recalled that the fishermen from Wai‘anae eventually relocated to the Kona (west) side of Hawai‘i Island to capture yellow tangs.

In addition to commercial fishing in nearshore waters (with hand lines and spearfishing with SCUBA) and for large pelagics in the deep, Mr. Aila formerly held an aquarium permit until late 2017 when the judge ruled that all existing aquarium permits were illegal and void. Prior to this ruling, Mr. Aila had been aquarium fishing for ten or more years with a 4-year stint in which he gave up his commercial and aquarium permits when he became the chair of the DLNR, as it was seen as a conflict of interest; although he personally did not see it as such. Mr. Aila shared that he initially got into aquarium fishing when his wife became pregnant thirteen years after their last son was born, and they decided she would not return to work. At that time, he was the harbor master at the Wai‘anae boat harbor and aquarium fishing became a convenient way for him to support his family. Mr. Aila described how at the end of the workday he, along with two-four family members or friends, would pick a site as far away as Kailua, Kāne‘ohe, Hale‘iwa, or along the south shore and take the van to dive there. He stated that he pretty much went diving along every coastal stretch of the island of O‘ahu. He and his group would fill up tubs with water and then place the fish in the tubs and deliver them to wholesalers. During the week he would dive with 2-4 others for safety; while on the weekends, he often would dive alone because no one else was available—at such times he would dive with just a snorkel rather than SCUBA gear. When asked if the fishing techniques were the same or different from the techniques he learned as a boy when it came to targeting certain species for aquarium collection, he replied that aquarium collection is not that hard. He explained that it is a little bit easier because some aquarium fish are wide awake and some are not. He added that he applied the techniques he had learned for spearfishing but used nets instead of the spear on the night dives to collect aquarium fish.

Regarding life cycle knowledge, Mr. Aila shared the following information: there are generally two spawning times of year—summer and winter, depending on the species. The fish desired in the aquarium trade are generally those that spawn in late summer/early fall. After fertilization, the eggs get carried offshore where they develop. After they reach a certain size or stage, they return to shore at which time they are clear/transparent, with shiny stomachs, which Mr. Aila referred to as the pelagic stage of development. Mr. Aila also spoke of the importance of understanding the relationship between the pelagic and the nearshore species because their life cycles are in tune with each other. The fish that spawn in late summer/early fall, move offshore for eight months to a year where they mature, and come onshore (back into the nearshore waters) when the tuna and other pelagic fish come to lay their eggs. The reef fish feed on the eggs of the tuna and other pelagic fish; and the pelagic fish feed on the nearshore babies. He added that a lot of offshore fishers don’t realize how important the reefs are to them and offshore fishing in general. Mr. Aila shared that he learned the life cycle knowledge regarding times of the year from other people, but his knowledge of color variations during different maturation stages was gained through personal experience. For instance, he shared that during an offshore fishing trip he scooped up pelagic bait balls, which he kept alive for a week. During that time, he saw them change color. He also mentioned the *pāku‘iku‘i*, which like many other species are offshore and clear in the juvenile stage, and how they amazingly swim against the current to get to the reefs, and that over two to three days they take on their adult colors. He added that young fish show up in a number bigger than a trillion on the reefs and try to settle there, but almost all of them get eaten and only a few survive.

In regard to other species-specific knowledge, particularly within the top-fished species list, Mr. Aila shared the following information: the yellow tang is a popular aquarium fish species because it is one of the few yellow fish, besides butterflies, that people like for their tanks. Mr. Aila also stated that the prohibition against the small mesh nets is not a good thing because it results in mostly adults being taken, and it is better to take juveniles because most of them are going to die anyway. He explained that only three out of a million baby fish grow to adulthood, so if you’ve got billions of yellow tangs, taking 200,000 of them is not an issue. He also suggested that Potter’s angelfish (*Centropyge potteri*) should be on the top-fished species list immediately after yellow tangs, because based on his experience they are the second most-fished species. When asked about the accuracy of the Hawaiian fish names (see Table 4) or for any other names he would add to the list, he replied that different places have different names and that he was comfortable with what was listed.

When asked about specific knowledge regarding traditional, ritual, or medicinal uses of the aquarium fish species, Mr. Aila replied that all fish were eaten and that he did not know of any specific practices associated with any of the fish on the list. He went on to explain that the species that are generally offered for other ceremonies are not on the top-fished species list, such as *āweoweo* (bigeye fish), and *ū'ū* (*menpachi*; the soldierfish). However, according to Mr. Aila, *kole* (goldring surgeonfish; *Ctenochaetus strigosus*), which is on the top-fished species list is traditionally a highly desirable fish; so, if he went spear-fishing and saw a *kole* he would poke it and offer it because it is a favorite fish.

In response to being asked if he had encountered fishing shrines or seen people engaging in traditional cultural practices in the coastal area or nearshore waters, he said he knew of active fishing shrines where he has seen people leave *ho'okupu* (offerings). He then went on to highlight general locations of fishing shrines in places such as Makua, Pōka'i Bay, Nānākuli, Kahe Point, Hale'iwa, Waialua, Ka'ena Point, Kahana Valley—the locations of which are depicted in Figure 65, below. Mr. Aila also described participating in such practices and shared that he learned the practice of making offerings as part of the traditional knowledge that was passed down to him from his great-grandmother who *hānai* (adopted) him at birth.

With respect to traditional fishing practices and beliefs, Mr. Aila spoke of the recognition of *'aumakua* (family deities) as a practice that Hawaiians used to do and something that he is proud to say, he continues to do today. He added that unfortunately, most people have lost the names of their personal *'aumakua*. However, with respect to this knowledge, he explained that he was strictly schooled by his great-grandmother, Maryann Francis Keumi. Mr. Aila shared that Maryann's parents were from Nāpo'opo'o on Hawai'i Island and that she grew up in Kalihi on O'ahu but, when Mr. Aila was a young boy, she lived in Wai'anae. He recalled that she saw, at a very early age, there was nothing that was going to keep him out of the ocean, so she decided to share their family's names and past practices including their *'aumakua*. He went on to say that his great-great grandmother's grandfather was the last *kahu* of Kamohoali'i at Nāpo'opo'o who conducted ritualistic feedings, which is Mr. Aila explained is a practice he carries on but from the Island of O'ahu.

Mr. Aila recalled that his great-grandmother told him “this is what you need to know,” which included the practice of providing *ho'okupu* before he takes something from the ocean. He explained that the whole process is recognizing somebody who is looking out for you while you're in the ocean; it is also a recognition of a reciprocal relationship, for fishing isn't only one way—there has to be give and take. Mr. Aila shared that he is descended from his family's *'aumakua* who assumed a shark form and was tasked with protecting his family. He added that *'aumakua* reward you for good behavior and do not reward you for bad behavior like any parent or grandparent would do. Per Mr. Aila, *'aumakua* are related to you and you have to honor and maintain that relationship and providing *ho'okupu* is one way to maintain that relationship.

Mr. Aila explained that *ho'okupu* is typically something you wrap up and bring from your house as a general offering to Kanaloa, the *akua* (paramount deity) of the ocean, as a way to thank him for the opportunity. He added that the *ho'okupu* is left on land prior to entering the ocean. When asked if he also provided *ho'okupu* after fishing, he replied that it was complicated and further explained as follows: if you want, you can express gratitude by providing part of your catch on a good day of fishing, but not really in an aquarium fishing context. When in the context of fishing for pelagics, he would place a piece of the first ahi or marlin he caught for that year upon an *ahu*, a platform, a single large rock, or a temporary *lele* (altar or stand). When asked how he knows that a certain pile of rocks or a single upright stone is or isn't used as a fishing shrine on O'ahu, he responded that such knowledge is partially shared with you, but part of it is gained through research (Hawaiian language newspapers and books like *Sites of O'ahu*). He added that if there is no oral history you rely on your *na'au* (gut) and if you are unsure, you look for your own spot to leave your *ho'okupu*. He also stated that the traditional cultural information is out there, but often in fragments and that sometimes those fragments need to be brought together. He likened the process of weaving the separate bits of knowledge together as one would *haku* (to weave together/to compose) a *lei*, in order to more fully understand it.

He added that he was taught to leave the first fish that he spears. So, when spearfishing, after leaving the *ho'okupu* on land and jumping in the water, he leaves the first fish he spears in the ocean wherever he speared it as an offering directly to Kamohoali'i his family's shark *'aumakua*. He often places his first fish under a rock because some of his *haole* friends do not understand the practice and they have been known to bring the fish back to him; so he waits until they leave to put it back. Thus, the locations of such offerings move with him and are dependent on where he speared the first fish. When asked if his great-grandmother had a term for that practice, he shared that he did not recall her using any certain word for offerings, or saying *ho'okupu*; rather, the term *ho'okupu* was something he learned later in life.

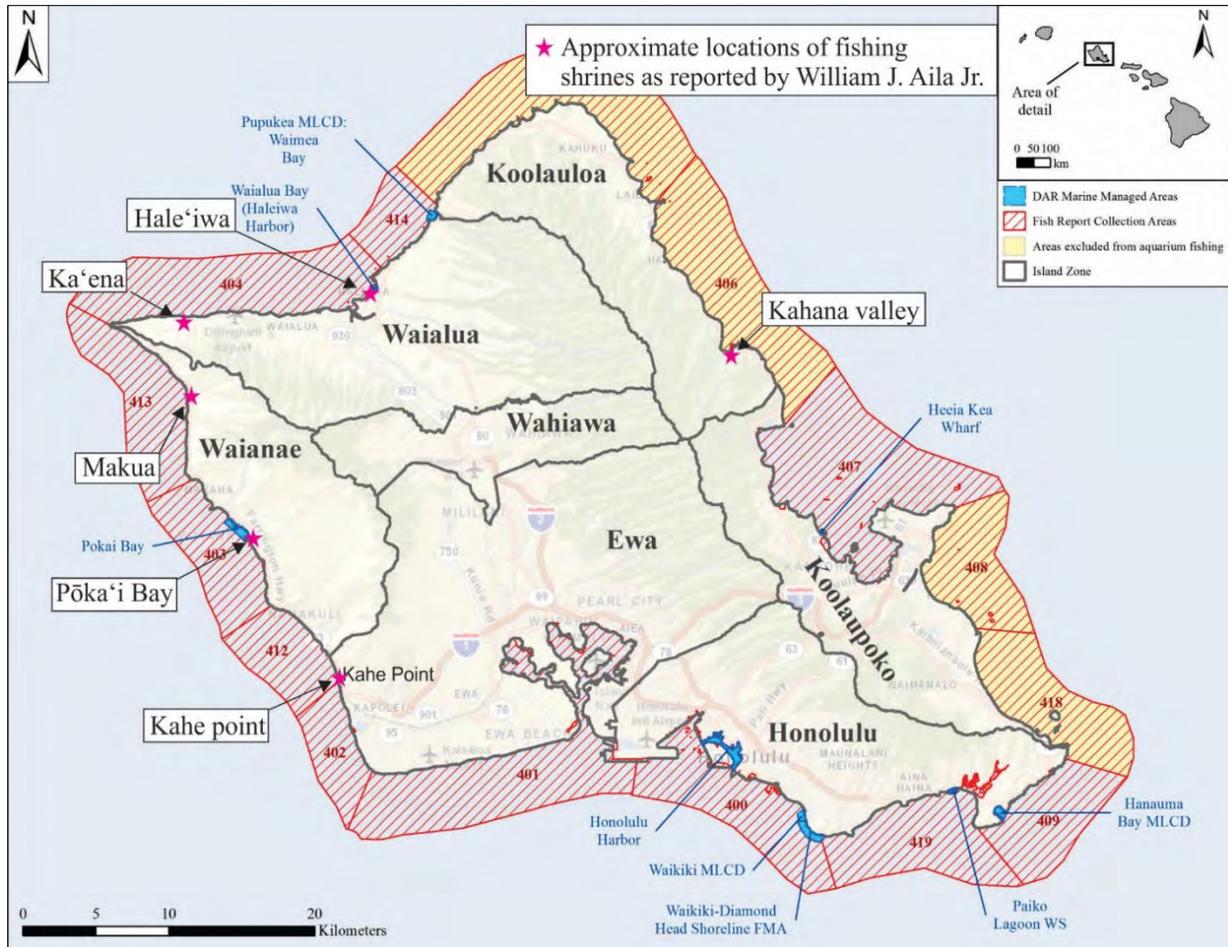


Figure 65. Locations of fishing shrines.

Mr. Aila further explained that in aquarium fishing the first offering would be on land because there was no fishing *ko'a* for long-nosed butterflies, they were not targeted, but the concept of the reciprocal relationship still remained. Thus, he would take fruit that was grown on his property wrapped in a *ti* leaf bundle and would leave it on land or in the ocean. Mr. Aila made such offerings on behalf of the group before each trip to collect aquarium fish. In contrast to spearfishing or deep-sea fishing, he stated that he would not offer an aquarium fish species to Kamohoali'i.

When asked if he had knowledge of *ko'a*, he said that they are typically species-specific spots in the open ocean, the locations of which he learned from other fishermen and through trial and error. He added that *ko'a* locations can change depending on the flow of the current. Mr. Aila stated that the concept of a *ko'a* can also work in nearshore waters. He then shared the following example regarding Potters angelfish and some of the *hīnālea* species, whose habitat can only be found at the bottom of drop-offs (typically at 40 or 80 feet below the ocean surface) in areas where coral rubble has accumulated. Some fish depend on food sources that reside in the rubble and these fish generally remain in the same place, much like a *ko'a*; and someone who has knowledge of the rubble patches can find certain fish species in great numbers.

When asked if he is engaged in sharing his knowledge of traditional cultural practices with his children, he responded that it is absolutely his responsibility to transmit his knowledge. His sons and grandsons (he has no daughters or granddaughters) have all been trained by him. He added that he shows each of them several times and if they want to keep the knowledge, they keep it and if not, that choice is up to them.

When asked about the indirect impact of modern technology for highly efficient catch methods on traditional harvest capabilities, Mr. Aila responded by providing an explanation of aquarium collection technique. He shared that people use hands nets and rely on fish psychology, or if there is a concentration of fish they will put up a fence net and then use the hand nets to collect the individual fish. He added that nobody uses slurp guns (vacuum-like contraptions) because they are too inefficient and that he does not consider SCUBA as modern technology. However,

he did offer two instances in which modern technology impact catch efficiency. The first, is the use of GPS to relocate your fishing areas faster. The second is the use of rebreathers, which allow access to deeper waters and fish that are harder to find in shallower waters, such as the tinkers butterfly, which prior to rebreathers you might only see one in fifty years time. Per Mr. Aila, as a result of the use of rebreathers, species that we have little knowledge of their reproductive and growth rates are being harvested.

In response to whether the proposed action to reinstate the issuance of permits for aquarium collection would have any impacts on traditional cultural practices or traditional cultural properties, he responded that if the current effort remains the same, it will have no impacts on other traditional forms of fishing. He went on to explain that every year more than a trillion fish are redeposited along the shoreline; and even if you took out 200,000 fish of a certain species state-wide, there are still more than a trillion of those same fish out there in the ocean. He added that there is currently no aquarium fishing going on Maui, Kaua'i, or Moloka'i, so when one considers how much excess fish there is right now floating around there is minimal impact.

When asked to clarify if he was talking more about the impact on the fish population than the impact on traditional cultural practices, he responded that there is no impact on traditional customary practices. Mr. Aila then went on to explain that even in ancient times there was no prohibition against taking aquarium fish species. For instance, there was no prohibition against taking yellow tangs and that they were eaten all the time. The aquarium fishing of 200,000 yellow tangs taken annually out of the Kona coast of Big Island did not stop anyone from eating yellow tang, so in his opinion there is no impact on traditional customary practices. Mr. Aila emphasized that at the current effort, the number of fish that are available for traditional practices is and would still be available if commercial aquarium permits were reinstated.

Mr. Aila shared that he has read a lot about different fishing techniques and believes that Precontact Hawaiian fishermen were not opposed to eating juvenile fish in great numbers. For instance, during a certain time of year baby *manini* (convict tang) known as *hua* (young fish/also known as '*ohua*) show up in numbers larger than a trillion along the shoreline and tidepools before they transition from the clear state and become striped. Apparently, in ancient times, for one or two months, people would feast (dry them and cook them) on *hua* and it never had any impact on the resource. In his opinion, based on the numbers of fish collected by the aquarium fishing industry, the concept of harvesting juvenile fish for aquariums would not be something that early Hawaiians would consider an issue. However, Mr. Aila maintained that whether or not early Hawaiians would be opposed to keeping fish alive is open to interpretation. He added that early Hawaiians caught fish and put them in fish ponds to watch them grow; and opined that if someone had given King Kamehameha an aquarium and fish to put in it, he imagines Kamehameha would have loved to watch that fish swim around the aquarium.

When asked what would trigger an impact if at the current effort there is no impact, he replied "nothing other than people's emotional objection." He went on to say that in the ocean there is no emotion/no empathy and stated that there are just three rules: 1) eat; 2) avoid being eaten; and 3) if you are lucky enough, you live to create the next generation. He added that when a person jumps in the ocean, they agree to be part of the food chain, which is why you should always look behind you because you can be mistaken for prey and eaten. Mr. Aila went on to mention that the surrounding and capturing of adult fish, particularly the herbivores (*pāku'iku'i*, *pualu*, and *palani*) on the top-fished species list, has a greater impact on reef fish. In so doing, commercial fishing has a greater impact than aquarium collection because it removes the reproductive potential.

MAKANI CHRISTENSEN

On August 13, 2019, ASM staff, Teresa Gotay completed an interview with Mr. Makani Christensen at his home in Kaimuki, O'ahu. Makani Christensen was born on Maui in 1980. He began fishing with his father at age two on Maui and took to it more than his siblings did. His father's family were farmers; however, his mother's side of the family (Wedemeyer, Kaono, Keaumoku, and Keawe) descends from a long line of fisherfolk from Puakō-Lālāmilo on Big Island. At age six, his family moved to the Big Island, and he moved to O'ahu in tenth grade to attend Kamehameha Schools. Throughout those years he was involved in casting clubs and engaged in surfing and different fishing activities, including shoreline fishing. In 1998, he was accepted to the Naval Academy in Annapolis, Maryland and graduated with a B.S. in Oceanography in 2003. Shortly after, Makani joined the Marine Corps and fought in Iraq and Afghanistan and was active duty until 2008.

In 2004, Makani started commercial fishing around O'ahu along the southeast coast of the Kona and Ko'olaupoko districts. When asked if he had engaged in aquarium collection, he said no but that he has caught a lot of small fish, which could be considered aquarium fish. In 2008, after exiting the Marines, Makani started operating tours as his main source of income and continues to do so, running Keawe Adventures and Fly Fishing Hawaii.

In 2012/2013, Makani founded the Hunting Farming and Fishing Association (HFF) a volunteer organization that strives to bring balance between hunters, farmers, fishers, and environmentalists. Per Makani, the scales are currently tipped towards the environmentalists and conservationists who target commercial fishing and aquarium fishing. He added that conservationists have powerful backers and funding. These backers have utilized the media and educational outlets to push their agenda, which in his opinion, has caused a panic that there are “no fish” and led to the current state of things; including the proposed action that prompted the preparation of the current document. The HFF advocates for fishermen and seeks to mitigate the rules and regulations that put people out of business. According to Makani, since 1998, environmentalists have been setting the narrative without collaborating with the people who are on the ocean all the time and without a full understanding of the ocean. Thus, HFF use their limited resources, which consist primarily of knowledge based on data collected from fishermen, when they testify to fight regulatory constraints. Per the HFF’s website www.huntfarmfish.com, their game plan “is pretty basic” and is called “the ACE plan: Advocate, Collaborate, and Educate” through which they advocate for all food producers. Makani also stated that “we are all environmentalists” and that “we do not want the resources to deplete” because people’s livelihoods depend on it.

As an experienced commercial fisherman, when asked if he was familiar with the nearshore fishing areas within the study area, Makani indicated that since 2004, he has frequently fished in the following areas: from Pearl Harbor eastward around the southeastern tip of O‘ahu and along the Ko‘olaupoko coast to include He‘eia and beyond (Fish Report Collection Areas 401, 400, 419, 409, 418, 408, and 407—see Figure 1). When asked about ongoing or former traditional cultural practices along the southeastern and northeastern coast of O‘ahu, Makani replied that there were none that he knew of and continued by asking what was meant by traditional cultural practices. He then added that you don’t see people using massive amounts of nets because those are illegal now. Upon clarifying the term to include traditional fishing techniques prior to the ban on small mesh nets and fishing shrines, etc., he replied “no, not one,” and added that he is out in that area almost daily. Makani went on to question the definition of cultural practices and stated that it is a loaded term. Per Makani, if you are looking into the past when Hawaiians were 100 percent sustained by our own resources—everybody fishing and using fishponds to sustain a community—that’s one thing; compared to today’s fishponds that are set up and used to educate people. Makani then explained that unless you are using the fishpond to feed the people you are missing the big part of culture, which is to feed the people, and in turn sustain the community and perpetuate the culture.

Makani discussed how Hawaiian culture has evolved over time. In particular, he mentioned that Kamehameha ushered in the transition from “everyone needs to live off what they have” to “a money-driven economy” in the Hawaiian Islands. He continued by speaking of the subsequent arrival of commercial farmers and immigrant laborers that combined with huge population decline to change Hawaiian culture. Per Makani, during this time the dependence on the land for survival evolved into a surplus of sugar and pineapple for export; then, when Hawai‘i became a state, they had to import more food to support the surplus of people, which increased the islands’ dependence on imports from the outside for survival.

According to Makani, all Hawaiians fished in prehistory (even those who were farmers) and people continue to survive off the ocean: “anytime you see somebody fishing in the area—that is part of culture; the methods have changed but it’s still a part of Hawaiian culture.” When asked if fishing is an expression of culture, he responded “fishing is culture.” He emphasized the evolution of fishing culture, and how Hawaiians are currently engaged in feeding the people through commercial fishing. Per Makani, modern Hawaiians are getting into commercial fishing to generate money to feed and provide for their families. He insisted that one has to look at it that way—not separate culture and fishing, because fishing is culture that sustains livelihoods and families. Makani also mentioned that when fisherfolk testify at legislative sessions and community meetings they do not talk about traditional practices being impacted by regulations, they talk about the potential impacts to their lives, families and livelihoods.

When asked about ongoing spiritual customs that fed into fishing practices, Makani responded that people have different belief structures and learn such customs on an individual basis. He shared how his family had been seen to call in fish using their *‘aumakua* on the Kona coast of Big Island. He recalled that when his great-great-grandfather used to call in fish at Pūako it was more a thought or feeling than an actual prayer. Makani further explained that his great-great-grandfather would chant and the fish would come right in; and that he would bring two stones together as part of his practice. These stones were not referred to as *kū‘ula* specifically, but they held *mana* and were passed down through Makani’s family over several generations. He then went on to say that he does not know of anyone that does it on O‘ahu; but if they do, they are not going to broadcast it to everybody. Makani then spoke of the essential need to really “be in touch with the ocean” because without a certain deep level of understanding of the ocean you can have *kū‘ula* stones, but they will just be stones. Makani also shared that from personal experience (on Big Island and O‘ahu) there are signs that put things into perspective. For instance, during his waking life Makani reports that he has had

thoughts/visions about fish coming in, and his intuition is made manifest on the same day or the day after the vision. In another instance, he saw one of his *'aumakua* in a dream and the next day “a 1,400-pound marlin found us 22 miles outside of Maui.” Upon sharing that experience he emphasized that the spiritual side is the individual’s story.

Makani was also knowledgeable about *ko‘a*, which he referred to as fish-houses. When asked how he finds them—if he had been taught or just went out to look for them, he responded that the most important thing is to know how to find them. He continued thusly, one must “unlock what fish associate with other fish” in order to find the fish-house and stressed that it can take a long time to find a fish-house. He stated that he has experience using points on the land to triangulate the location of known fish-houses and said that it is best to take four points (buildings or natural landforms), located right behind each other and not too high so clouds won’t block them. He said relocating *ko‘a* this way was much easier than finding them and that there were plenty fish-houses in the study area. He also mentioned how nowadays people use GPS to relocate the fish-houses. When asked if he shares fish-house information with others, Makani responded no, and explained that you keep that knowledge close to protect the assets and you don’t boast of it because you would be giving up something that it might have taken you years to find.

When asked about the cultural knowledge regarding the fish on the top-fished species list, Makani said he had not seen any references that included them. He added that Hawaiians ate *hīnāleas* and that “it didn’t mean anything to them [early Hawaiians] to eat small fish.” When asked if he knew of any traditional/medicinal uses of the fish species, he suggested that some of the fish may have been *'aumākua*; specifically, the *humuhumunukunukuāpua‘a*, which is how Kamapua‘a travelled between islands according to legendary accounts; he added that other fish species, such as the table boss or *'a‘awa* (*Bodianus bilunultus*) were also believed to be *'aumākua*. Makani also brought up the concept of *pono* and how the mentality seemed to have changed over time. He explained that there were times when Hawaiian fishers would bring in nets and eat thousands upon thousands of baby fish, all while maintaining harmony and balance between the people and the resources. He added that traditionally, the whole village got involved in the gathering of marine resources. He maintained that they were *pono* but the survival of the people was the center of it.

When asked how important the knowledge of the lifecycle of the different fish is to the fishers, he replied that it is “super important” and reported that some of that knowledge was passed down to him; or gained through experience. For instance, one learns the proper intervals to harvest the same fish-house and awareness of the max capacity for fish-houses. In addition to the life cycle knowledge (spawning times), Makani also mentioned the importance of understanding the tides, the differences between summer and winter, and understanding the reefs when catching fish, and how that knowledge informs fishers on when and where to go to fish.

When asked about the proposed action’s potential impacts to traditional cultural practices or properties, Makani replied that the only cultural impact he could think of would be if you rid individuals of the opportunity to use the resources to provide food for their families. He added that in the hundreds of testimonies he had witnessed, not once had he heard anyone mention *'aumākua* or the use of certain marine species for medicinal or traditional purposes. He also expressed concern over protecting the environment to a point at which you forsake the people and their needs; and asked, “Where in Hawaiian culture does it say we are going to protect the environment so much that our people won’t eat?” He went on to say that although some folks might argue that aquarium fishing isn’t for eating—you can eat them, and that the amount of fish that aquarium fishers catch is negligible. Makani suggested that it is actually good for the environment to have fish and dolphins in captivity, because they are kept alive and one can see the wonders of Hawai‘i and be inspired to learn from them. He also expressed concern that denying permits for aquarium fishing will be just one of many such actions that will spread to impact commercial fishing and result in 100% dependency on another land.

Makani opined that the proposed action to reinstate permits for aquarium fishing is not going to have a negative impact on culture or traditional cultural practices. The negative impact would be getting rid of aquarium fishing and not issuing the permits. He explained that although some aquarium fishers have other jobs, for some of the permit holders, aquarium fishing is all they know how to do. Furthermore, some aquarium fishers are older (in their sixties and seventies) and have no safety net because it is so expensive to live here. He suggested that as aquarium fishers they contribute to the culture and society, but if their livelihood is taken away, they will become a drain on society, which would not be *pono*.

When asked about the indirect impact of modern technology for highly efficient catch methods on traditional harvest capabilities, Makani responded that technology results in less bycatch. He further explained that now, one is able to target their catch more efficiently compared to back in the day, when folks used huge nets to catch everything. Using masks and fins and SCUBA gear helps fishers zero in on aquarium fish. Thus, modern technology had a positive impact overall. In contrast, he mentioned how the banning of small mesh nets has resulted in people using larger gauge nets, which often leads to unintended bycatch and causes injury to the fish. Thus, in his opinion, outlawing small mesh nets is wrong.

When asked for an alternative to mitigate potential impacts if the State chooses the no action option or if there is some sort of middle ground that could be reached between the aquarium fishing industry and the State, Makani stated “there is no middle ground for this.” He went on to say that it is all or nothing, because they lose everything and have already lost a lot during the last legislative session.

CHRIS CRAMER

On September 20, 2019, ASM staff, Nicole Ishihara, met with Chris Cramer of the Maunaloa Fishpond Heritage Center (MFHC) at the Kānewai Spring and Loko I‘a located *makai* of Kalaniana‘ole Highway in the Niu-Kuli‘ou‘ou area of O‘ahu. Mr. Cramer serves as the president, a teacher, and historian of the fishpond and heritage center that *mālama* (to take care of, tend) Kānewai and Kalauha‘iha‘i. The organization educates youth on the fishponds, but also the *mauka-makai* connection that is necessary for the *loko* to thrive.

Kānewai Spring (Figure 66) was recently acquired by MFHC through a partnership with the Trust for Public Land, and fundraising effort. MFHC is also the *kia‘i* (guardian, caretaker) of Kalauha‘iha‘i and is working on funding to allow for long term stewardship. Following their efforts which included the passage of Act 210, prohibiting sale of state-owned *loko i‘a*, they became the *kia‘i* of Kalauha‘iha‘i. They are currently working with the State of Hawai‘i on restoring the freshwater flow into the pond by drilling *mauka* of the highway as it was cut off by the Kalaniana‘ole Highway widening project in the mid-1990s.

Kānewai Spring consists of one *mākāhā* that enters into Kānewai Loko I‘a, which eventually empties into Paikō Lagoon. Although Paikō Lagoon is part of the State of Hawai‘i’s - Division of Aquatic Resources (DAR) Marine Managed Area, it is excluded from this study as a region to collect aquarium fish. Mr. Cramer noted that he does not see marine collection occur during the daytime. However, he has seen boats come in the evening with lights in the water outside the reef. One morning he came upon hundreds of *loli* (sea cucumber) scattered along the grass at nearby Kawaiku‘i Beach Park from people night harvesting. *Loli* is a food resource and traditionally used in *lā‘au lapa‘au* (Hawaiian healing medicine). The *loli* is being harvested, dried, and shipped to China. He has spoken with scientists who collect the Hawaiian bobtail squid, known for its bright glow, for specimen samples. Mr. Cramer relates that the Paikō area is being targeted by continental research labs as well as local scientists to collect the Hawaiian bobtail squid. It should be noted that both animals—the *loli* and the Hawaiian bobtail squid—are not on the Top 20 Species list for O‘ahu.

Mr. Cramer related that starting in World War II, military landing craft turned swathes of coral reef into rubble along the nearshore of Maunaloa Bay. This was followed by large dredging projects that erased hundreds of acres of coral reef and fishponds. Later development projects on the land and hillsides overlooking the area, also greatly impacted the nearshore environment.

The purpose of the *huaka‘i* (trip, voyage) was to visit the *wiliwili* (*Erythrina sandwicensis*) grove that can be observed on Kūlepeamo Ridge and *wiliwili* scattered throughout the sides of the ridge that separates Niu from Kuli‘ou‘ou. Mr. Cramer pointed out the *mauka* to *makai* connection of the *lauwiliwili* (Milletseed [Lemon] Butterflyfish) and *wiliwili* tree and highlighted the vanishing *wiliwili* trees in the valley. In 2005, the tree was on the brink of possible extinction from the *Erythrina* gall wasp. The insect is known to sting young leaves and stem tissue infecting the tree, drying it out, and eventually leading it to its death (Heu et al. 2008; Native Plants Hawai‘i 2009). Three years later, the State of Hawai‘i’s, Division of Forestry and Wildlife (DOFAW), Native Ecosystems Protection & Management project released a biocontrol agent—the *Eurytoma erythrinae*--to counteract with the gall wasp which proved to be successful. The *Eurytoma* is also a wasp that is a natural predator to the *Erythrina* wasp. However, Mr. Cramer shared two resin blocks made by Sean Moura which contain *wiliwili* seeds with black specks of a different invasive pest (Figure 67). Some of the bright orange-red seeds appear to be healthy, but upon closer inspection contain borings from a tiny, black beetle. Mr. Cramer shared that this bug was identified as the bruchid beetle.

Although the Kūlepeamo Trail is overgrown below, once we hit a clearing, the view boasts a commanding 180-degree view of Paikō Lagoon and beyond (Figure 68). Other native plants observed on the trail include *anapanapa* (*Colubrina asiatica*), *‘ilima* (*Sida fallax*), and *‘a‘ali‘i* (*Dodonaea Viscosa*). *Haole koa* (*Leucaena Leucocephala*) was also spotted along the trail.



Figure 66. Photo of Kānewai Spring that feeds into Kānewai Loko I‘a located within the Paikō Lagoon Wildlife Sanctuary, view to the southeast.



Figure 67. Photo of bruchid beetles and infected *wiliwili* seeds.



Figure 68. Photograph of Paikō Lagoon, view to southeast.



Figure 69. Photo of *wiliwili* leaf in Niu Valley, view to east.

Upon closer inspection, the *wiliwili* appeared dormant with bare branches and sparse leaves. Although there was a minimal amount of leaves, the connection to the *lauwiliwili* is evident. The leaves are the same ovate shape (Figure 69) as the fish and are similar in color with a striking yellow-green (Figure 70). Mr. Cramer offered insight that the leaves were most likely visible from the shoreline, especially in this area as the hillside is arid and the contrast of the bright yellow-green would be an indicator of some sort, whether a change of season, spawning phase, etc. He shared

the following annotated *‘ōlelo no ‘eau*: “When the *wiliwili* tree blooms, the shark bites.” An expanded version can be found below:

Pua ka wiliwili nanahu ka manō; pua ka wahine u‘i nanahu ke kānāwai.

When the wiliwili tree blooms, the sharks bite; when a pretty woman blossoms, the law bites.

A beautiful woman attracts young men—sharks—who become fierce rivals over her. The law prevents, the rivalry from getting out of hand—it can “bite.” It is said that when the *wiliwili* trees are in bloom the sharks bite, because it is their mating season. (Pukui 1983:295)



Figure 70. Photo of *lauwiliwili* (courtesy of Waikīkī Aquarium, n.d.)

Mr. Cramer shared that the wood from the *wiliwili* was used for surfboards and fishing net floats as it is incredibly light and buoyant. He also pointed out an *ahupua‘a* boundary wall that is located at the summit of the Kuli‘ou‘ou Ridge. It begins approximately 100-ft. prior to the Board of Water Supply tank that is perched on the ridge and stops about 1/3 of the way towards the Ko‘olau.

As we reviewed the Top 20 Species list for O‘ahu, Mr. Cramer shared that the *kala* and *kole* are fish that are traditionally and currently gathered for consumption. He stated that he is unsure if the *kala* on the list is the same species that is being gathered for eating. He adds that *limu kala* (*Sargassum echniocarpum*) is associated with bait for the *kala* fish. Over the last five years he has watched the *limu kala* disappear from a once plentiful reef in Portlock. He can no longer find it in Maunalua Bay. He shared that *kala* is also used for *lā‘au lapa‘au* purposes but did not indicate how it is utilized. The skin of the *kala* is used for *pahu* (drum) but the fish needs to be particularly large. The fish is enjoyed grilled on the *hibachi* (Japanese barbecue grill). He sees the juvenile *kala* come to shore to feed on a soft brown wispy *limu*, possibly *L. Majuscula*. The *hīnālea* were broiled and used in some *lā‘au* remedies, but also did not indicate what it treated or the modalities.

In terms of where fish from the list can be found, Mr. Cramer indicated that he occasionally sees species such as *kihikihi* in the area along shore. Usually he sees them by rock jetties in low quantities of 1-2. Many of the species are also seen at Hanauma Bay, which is excluded from the study due to it being a DAR Marine Managed Area that is also a Marine Life Conservation District (MLCD)

Regarding impacts and recommendations, Mr. Cramer is concerned about *mauka* to *makai* connections. He is particularly concerned with the *mauka* region as it affects what is *makai*. He recalls a large storm that passed through the Maunalua area a few years ago, which caused “chocolate water” (brown water) to lay idle along the southeastern shores up to the breakers (approximately 0.5-miles out to sea). He adds that cementing streams cause the water from *mauka* to travel faster to the ocean, which transports silt quickly and settles atop of the reef. Due to the geological

formation of the east side, the brown water remains stagnant on the reef. Mr. Cramer adds that it took approximately 1.5-years after the last storm for the brown water and silt to settle and the water to clear. He points out that there are *mauka* counterparts to *makai* resources and it should be observed closely. If a resource is extinct, it loses its meaning and significance to the counterpart.

DEAN CROWELL

On September 22, 2019, ASM staff, Nicole Ishihara, met with Dean Crowell at Starbucks in Kailua, O‘ahu. Mr. Crowell was born and raised in Waimānalo Hawaiian Homestead. His parents are Harold and Mary Ann Crowell. The youngest of four children, Mr. Crowell has two brothers and one sister. He is the only child of the Crowell’s born in Waimānalo at the homestead, while his older siblings were born in Kaimukī. Today he teaches carpentry at Hawai‘i Community College and is the Cultural Advisor to the Waimānalo Limu Hui.

Mr. Crowell remembers spending a lot of time with his mother while growing up, often producing Hawaiian crafts; visiting and learning about *wahi pana* (storied and celebrated places); and would regularly *mālama* Ulupō Heiau in Kailua prior to it being a part of the State of Hawai‘i’s Division of State Parks. His mother also taught him *lā‘au lapa‘au* (Hawaiian healing medicine) and they would often visit Keaīwa Heiau located at Keaīwa Heiau State Recreation Area in the *mauka* region of ‘Aiea. The *heiau* is considered a *heiau ho‘ōla* or a place for treating sick patients. He recalls the *heiau* once having a variety of medicinal plants surrounding the perimeter. However, in recent years *lā‘au* plants are now sparse around Keaīwa Heiau. He once had a conversation at the park with a *kupuna* (elder) who lived nearby and asked if he could replant *lā‘au* plants in the area. The *kupuna* replied that visitors take the plants home for personal use leaving the area bare, which made Mr. Crowell question if it was worth reestablishing a *māla* (garden) for its intended use.

It wasn’t until Mr. Crowell was a little older that he joined his brothers and father to *holoholo* (to go for a walk, ride, or sail; to fish). He learned how to fish, dive, and gather aquaculture from his father with Waimānalo being their primary grounds. He continues to practice traditional subsistence methods and has since passed this knowledge onto his own children.

Mr. Crowell first learned about the Waimānalo Limu Hui through various community members. He learned about their mission, which is to restore *limu* in Waimānalo Bay and rebuild Pāhonu Pond. Feeling that he could be an asset to the team based on his past experiences in *limu* restoration and *pā* construction, he joined the *hui* (club, association) and now serves as the Cultural Advisor. During the 1980s, he was part of a *limu* replanting project and worked on restoring fishponds.

Although Areas 408 and 418 are excluded from the proposed project, Mr. Crowell was able to share his *‘ike* (knowledge) and insight regarding the project, as well as background on the Limu Hui. The *hui* is currently propagating *limu manuea* (*Garcilaria coronopifolia*). He adds that the *limu līpoa* (*Dictyopteris plagiogramma*) and *limu kala* (*Sargassum echinocarpum*) varieties were once prevalent in Waimānalo but are no longer present. Many *limu* varieties can be used for *lā‘au* and consumption. For example, *limu kohu* needs to be washed thoroughly until there is no sand then it is salted and chopped. Mr. Crowell prefers to mix *limu kohu* with his favorite fish, *enenuē* (pilot fish; *Kyphosus bigibbus*), to create a *poke* (to slice into pieces, as fish). *Limu hā‘ula* is a little more cleaner than *limu kohu* in terms of retaining sand but still needs to be washed and cleaned. *Hā‘ula* is eaten as a *pūpū* (relish, appetizer). *‘Ele‘ele* is very fine and hair-like, which makes it difficult to clean. Once clean, it can be eaten as a *pūpū* or as a side dish to stews, soups, and curries.

In regard to the varieties of fish on the Top 20 Species list, Mr. Crowell has seen *hīnālea*, *kala*, *kole*, *lauwiliwili*, *kihikihi*, and *lā‘ī pala* at Kaiona Beach Park, where the *hui* gathers regularly. Although this is an exempt area, Mr. Crowell has seen people in the area gathering marine life but he is unsure if it is aquarium collectors or not. He recalls when he resided on Moloka‘i during the 1990s to the early 2000s that he would be at Kaunakakai Harbor in the evenings and would see aquarium collectors scooping fish with ease. Because Moloka‘i has a relatively small population of residents, he pointed out that he did not recognize the aquarium collectors and indicated they were not local. Mr. Crowell took it upon himself to police the collectors and “had to act authoritative” so there was some type of checks and balances as there were no game wardens or DOCARE (Division of Conservation and Resource Enforcement) officers present because it was off hours. He recalls the collector’s schedules: fly in for a few days; collect aquarium fish in the evenings; and then they would ship the fish out before leaving the island.

In terms of uses for fish on the Top 20 Species list, he pointed out that *kole* and *kala* are food items. *Kole* is prepared by frying. *Kala* can be broiled, grilled, or dried in a dry box followed by frying. If *kala* is dried, it needs to be treated similar to *pipi kaula* (jerked beef)—half dried then fried. The skin of the *kala* is also used for the *pūniu* (knee drum).

In general terms of Waimānalo’s ocean life, he adds that it is good squid grounds, but fish are not as prolific as before. Mr. Crowell states the decline of fish can be attributed to overfishing and bad practices. He notes that many fishermen and divers are taking illegal sized fish (below the State of Hawai‘i’s, Division of Aquatic Resources regulations) for consumption. Because of this, a neighborhood watch has been created to oversee that park goers are practicing *pono* (right, correct or proper procedure) behavior in and out of the water. Another issue are invasive species that wipe out native populations of aquaculture, such as the *roi* (Peacock Grouper; *Cephalopholis argus*). One *roi* can eat 150 native fish per year. Mr. Crowell describes the *roi* as a cannibal and a very aggressive fish that eats anything including the ‘*ū*’*ū* (*Myripristis spp.*), commonly known as *menpachi* which is a favored eating fish. He pointed out that *roi* most likely eat the aquarium fish on the Top 20 Species list and in general, all of the aquarium fish listed are docile and easy prey. *Roi* can grow up to 18” in length and is known to cause ciguatera poisoning when ingested. Mr. Crowell states the meat of the *roi* is good but knows people who have contracted ciguatera from eating it. Ciguatera can cause pain, nausea, and can affect the neurological system. He recalls a friend’s wife being hospitalized and sick for a few months. He suggests testing the fish for ciguatera prior to consumption, but personally avoids eating the fish all together. Tournaments such as the *Roi Roundup*, where each island hosts their own event, helps control invasive species that compete with native species for habitat and food resources.

Mr. Crowell feels that all Native Hawaiian fish should not be allowed to be harvested for aquarium purposes, especially the state fish, the *humuhumunukunūāpua‘a* (*Rhinecanthus rectangulus*) and the *lauwiliwilinukunuku‘oi‘oi* (Forcepsfish, Common longnose butterflyfish; *Forcipiger flavissimus*). The latter is on the Top 20 Species list. He points out that there are many other Native Hawaiian reef fish that have significant cultural and religious purposes to Native Hawaiians that was not listed, such as the *moi* (threadfish; *Polydactylus sexfilis*), ‘*āweoweo* (*Priacanthus*), and ‘*ū*’*ū*. He adds that reef fish for consumption include the *kala*, *pualu* (surgeonfish; *Acanthurus xanthopterus*), *uhu* (parrot fish; *Scarus perspicillatus*), *kūmū* (goatfish; *Parupeneus porphyreus*), *kole*, *manini* (convict tang; *Acanthurus triostegus*), *kūpīpī* (*Abudefduf sordidus*), *maiko* (surgeonfish; *Acanthurus nigroris*), etc. Because these fish are considered a food resource, he feels they should not be collected for aquarium purposes. He indicates that there are other fish such as the *ta‘ape* (snapper; *Lutjanus kasmira*), *roi*, and *to‘au* (blacktail snapper; *Lutjanus fulvus*)—all of which are invasive to Hawai‘i—that could be collected for aquarium purposes. These three fish are not on the Top 20 Species list. He adds that if he were to allow at least one native fish to be collected for aquarium purposes, it would be the *hīnālea* because they are abundant. There are multiple varieties of *hīnālea* on the Top 20 Species list.

Mr. Crowell finds it acceptable to exhibit Native Hawaiian fish in aquariums for educational purposes, however, he finds it unacceptable for native fish to be displayed in private collections and after much contemplation, concluded that the fish population will be depleted if allowed to be used for any aquarium purpose. He closed his interview with the following statement, “Again, I oppose all Native Hawaiian fishes for aquarium purpose.”

NOELANI PUNIWAI

Noelani Puniwai was interviewed via video conference call on October 15, 2019 by ASM Affiliates Cultural Specialist, Nicole Ishihara. Ms. Puniwai was born and raised in the Puna District on Hawai‘i Island. She grew up in Kapoho and spent a considerable amount of time diving in the tidepools of Wai‘ōpae and camping with her ‘*ohana* (family). Ms. Puniwai’s father was a scientist and her mother was a teacher. She emphasized that her parents felt it was important for their children to experience the different landscapes of Hawai‘i, therefore, they spent much of their time outdoors. Ms. Puniwai’s love for the ‘*āina* and *kai* are woven throughout her personal and professional experience. She holds a B.A. in Marine Science from the University of Hawai‘i at Hilo; a M.S. in Environmental Science from Washington State University; and a Ph.D. in Natural Resources and Environmental Management from the University of Hawai‘i at Mānoa. She was also a Research Assistant with the West Hawai‘i Aquarium Project (WHAP) where she served as a SCUBA diver and data collector. She was also the Marine Gap Coordinator for the Hawai‘i Natural Heritage Program where she was responsible for processing marine data statewide. She is currently an Assistant Professor at Kamakūokalani Center for Hawaiian Studies at the University of Hawai‘i at Mānoa. Her current work focuses on Mālama ‘*Āina/Kai* (to take care of the land and ocean) and striving to create healthy ecosystems. Her experience and body of scholarly work touch on traditional Hawaiian knowledge, coastal ecosystems, *aloha ‘āina* (love of the land), and methodologies to conduct *pono* science practices.

After reviewing the Top 20 Species list, Ms. Puniwai was asked if she was aware of any information on traditional Hawaiian knowledge and/or practices of each fish. Topics covered include, but were not limited to, knowledge of *mo‘olelo*; religious and/or spiritual beliefs associated with any of the species listed; *lā‘au lapa‘au* uses; *mauka* to *makai* connections; use of fish in *hula* practices and subsistence purposes.

In regard to subsistence use, she explicitly stated that the *na'ena'e*, *hīnālea*, *kole*, and *kala* are used in this manner. With respect to the *hīnālea*, Ms. Puniwai explained that larger wrasses were more commonly consumed. In reflecting on the subsistence use of *kole*, she shared that there are some O'ahu families who consistently fish for and eat *kole*. She added that many of the *'ōhua* (young fish stage) were also used for food purposes as well as bait to catch larger fish. Ms. Puniwai also shared that there were some fish that were not typically consumed, such as the small wrasses as well as the butterflyfishes.

When asked if she knew of any *mauka* to *makai* connections of the fish, she related that there are many counterparts as stated in the Kumulipo. One of them being the *lauwiliwili* fish (which is on the Top 20 Species list) and the *wiliwili* tree (*Erythrina sandwicensis*). She reiterated that although many of these small reef fish may not be utilized for food purposes, they are integral to a healthy marine ecosystem. Referring back to the Kumulipo, she explained how this genealogy provides a framework for understanding the importance of existence and function within the ecosystem. She went on to add that “The fact that they are present says something about the entire area. So without their presence...you can't have an *'āina momona* (fertile lands)...”

Ms. Puniwai shared that the *kala* is another culturally important fish and noted that it is specifically used in the customary practice of *ho'oponopono* (conference where relationships were set right through prayer and open discussion), *lā'au lapa'au*, and *hula* (traditional dance). She noted that the word “*kala*” has multiple meanings, with one of them being “to release.” She went on to add that the *kala* is an important component of *ho'oponopono* practices as it symbolizes the act of releasing different energies or *ma'i* (sickness, illness) from the afflicted individuals. Ms. Puniwai also specified that the cultural use of *kala* varies according to the nature of the ceremony. With respect to its use in *hula*, she shared that tough skin found on larger *kala* are used to make *pūniu*, a small coconut shell knee drum. She explained that while the tough skin of the *kala* is suitable for the *pūniu* covering, it is also used because of its cultural symbolism and meaning.

In terms of *mo'olelo*, Ms. Puniwai shared that the cultural value of *hīnālea* is often overlooked, however, she explained that this fish is a *kinolau* of Kanaloa. She indicated that Kanaloa is a central figure in the Kū'ula story and although the *hīnālea* may not be a common food source, it is recognized in *mo'olelo* and in the *mo'okū'auhau* (genealogy) of the Kumulipo. She pointed out that many of the fish on the Top 20 Species list are in the Kumulipo.

Another topic that was discussed was the ceremonial uses of the fish on the Top 20 Species list, which she has also connected to genealogy. Ms. Puniwai indicated that the species used as an offering at the *ko'a* was dependent upon the nature and purpose of the ceremony or the function of that specific *ko'a*. She continued:

If it's a *ko'a* dedicated to Kanaloa, in general, then these species that are his *kinolau* would be used. Yeah, the skin of the *kala* is important in a lot of different ceremonies and it has a similar quality as the *manō* (shark) does and so they're interchangeable a little bit that way...Just as we've revived a lot of our land-based practices, we're looking at a lot of these ocean-based practices as well...Without those ceremonies and practices we can't think of abundance happening...I think until you call them out, people may not highlight these species but that doesn't mean they're not important. You know those things that you take for granted may not be written about all the time, but it doesn't mean they are any less important than species that are sought for food.

Ms. Puniwai also spoke about the ongoing practice of building and maintaining relationships with Hawaiian *akua* such as Kanaloa, and posed the question: How do you bond with these energies that are the *akua*? In order to answer the question and understand how Kanaloa can be activated, Ms. Puniwai emphasized that one must have a more holistic point-of-view. This includes striving to have a fully functioning marine ecosystem available with various species including small fish like *hīnālea* and large fish such as the *manō* and *koholā*. She shared that when you begin to examine each species through the lens of how Kanaloa works, we have a macro understanding of function and our own interactions with places and ecosystems. Without all these factors—an abundant, fully functioning ecosystem, and understanding these synergies—“we don't have that natural, cultural experience with Kanaloa.”

Ms. Puniwai also discussed the biological effects on reef fish from run-off, pollutants, and diverted water. Regarding the fish on the Top 20 Species list, Ms. Puniwai shared that each species live in specific, complex habitats during the various stages of their lives and each habitat is greatly affected by what occurs on land. She shared that runoff from land, the presence of freshwater, and water health are key factors that impact the survival of fish larvae, especially during the recruitment process (referring to when a juvenile fish joins a population via birth or migration.) She explained that fish are most vulnerable when they are in the zooplankton stage where various chemicals and water constituents can hinder growth or possibly lead to death. Another biological *mauka-makai* connection described by Ms. Puniwai was the importance of freshwater input which promotes fish growth. She explained that some fish species spend their larval stages within the estuarine, where freshwater and saltwater mix. Freshwater flowing from the land

carries nutrients to the ocean. However, Ms. Puniwai presents the challenges and impacts of pollution. She explained that chemical fertilizers and other pollutants are known to leach into freshwater sources thereby introducing excess nutrients into the ocean. Another issue regarding freshwater is water diversion, which inhibits the natural flow of freshwater to the ocean. She added that sites of freshwater in the ocean are areas of abundance and without those sites, “the ocean can’t be healthy.”

Ms. Puniwai went on to explain that depending on the species, some fish may have three to four different larval stages before reaching the stage where they are clearly identifiable. She added that culturally, “That’s why there’s so many names for these specific fish,” as each name represents the different life stages. She explained that there are certain things that these fish are vulnerable to during each life stage. When fish are in their larval stages they are impacted within three nautical miles (the current project boundaries) on O’ahu and should be protected as they recruit back inshore naturally by gyres (ring-like ocean currents that rotate clockwise and counterclockwise). However, she indicated that there are many determining factors for each species spanning from the distance zooplankton travels inshore to the ocean currents. Normally fish will spawn and stay out to sea for approximately three months in the zooplankton before they recruit back to the reef. However, Ms. Puniwai mentioned that to better understand these intricate ecosystems researchers are still examining fish larval stages and recruitment off the shores of O’ahu. She provided insight on the recruitment process explaining that fish are not static and that where fish grew at one larval stage may not necessarily be where they were originally sourced from:

It’s a very, very connected ecosystem and if you’re fishing in one spot and you’re taking the adults from one spot, you might be impacting the ability to recruit to another site. And they don’t study these species enough to know these types of life cycles...So I think we don’t even understand the impact that we have by fishing at one site. Say we’re fishing like North Shore—yeah, there might be an MLC (Marine Life Conservation District) where you can’t fish and you can’t collect aquarium fish, but maybe that’s a sink site where fish are being recruited to but it might not be the place where they’re coming from and so being able to collect aquarium fish from somewhere else might impact the ability to actually have fish at the MLC if that’s not where its larvae go. And I don’t know of any larval studies of these specific aquarium fish to know if we know what’s happening. I think—West Hawai’i has had some because of the aquarium industry has been so much more active there for the last 30 years that they’ve been doing some of these studies but I don’t believe they’ve done any of these studies on O’ahu to know what the recruitment and the transport of the larvae around the island.

She explained that in general there has been minimal marine research conducted. Most of the ocean research pertaining to Hawai’i has been conducted at Kāne’ohe Bay, which covers half of the Ko’olaupoko District study area. Ms. Puniwai shared that Kewalo Basin is another area where chemical pollutant studies have been conducted and is part of the Honolulu District study area. She emphasized that the Division of Aquatic Resources (DAR) has never had the capacity to execute that type of specific research but she feels that it is necessary for certain industries, including the commercial aquarium fish collection industry, to have access to that data. Ms. Puniwai expressed that because fish are collected at a young stage with varying life spans and depending on the species needs to be examined individually as each fish is different. An example that Ms. Puniwai shared was the life cycle of a *menpachi* that can live up to 50 years, however, she pointed out that a *hīnālea* does not live as long. Because fisheries are incredibly complex, Ms. Puniwai spoke about the difficulties in assessing direct impacts because the island-wide scale is just too large of an area to thoroughly and effectively assess.

Ms. Puniwai knows of a student at the University of Hawai’i at Mānoa who has been conducting research to identify various land-based pollutants in fish tissue, as fish can accumulate and store these toxins in their bodies. Sadly, the results are yielding that toxins are present in fish bodies and are identifiable. The conversation led to the topic of ciguatera as it is a common issue with reef fish in Hawai’i. Ms. Puniwai shared that ciguatera is a dinoflagellate, a single celled protist, that is a naturally occurring toxin in the water. However, she emphasized that “metals or carcinogens or estrogens, different kind of human and land-based” substances are contributing factors that can be accumulated in fish bodies “that you may not get sick from but it still doesn’t mean that they won’t affect you.” She juxtaposed ciguatera to mercury in pelagic fish:

So just like how they talk about mercury in the open ocean. So open ocean fish accumulate those in their bodies. So the more *ahi* you eat, that’s from the open ocean, the more mercury you have in your body. But they haven’t really done those similar kind of studies in reef fish, because they figure *ahis* are more bigger, they have a lot more body mass. But if you’re eating *kole* regularly, on a weekly level—I don’t think we even know what our exposure is to those toxins yet. And the potential for that exposure. So on O’ahu it is these issues that no one has been really paying attention to, I

think they just look at fisheries and they study fisheries a lot but they're not really studying the health of these ecosystems enough. And the health of the individual species.

In regard to the condition of Hawai'i reefs, Ms. Puniwai shared her personal experience on knowing what a healthy reef looks like. She reminisced about her time diving as a youth seeing the coral reefs of O'ahu and Wai'ōpae. She recalled the interactions of various species and their soundscapes and stated, "By taking away all these key pieces of that, of these ecosystems you're really leaving a hole in understanding the entire ecosystem."

Continuing our conversation on reef health, she expressed that we should not blame the aquarium industry or overfishing for the decline of fish. Instead, attention should be directed to the larger, overarching issue: the ecosystem.

If it was all to do with overfishing—then why is there isn't any *hīnālea* on the reef? Why isn't there *lauwiliwili* on the reef? Why don't we have all these butterfly fish and *anthias*, which people aren't eating but they're still not present and you can't blame them on fishermen. So that's one thing that—like I'm not going to blame aquarium fishermen why we don't have wrasses on the reef. We don't have wrasses on the reef because the reef is unhealthy. Because the *'āina* is unhealthy, but that doesn't mean we can still continue to collect these things because how do we start rebuilding the reefs. We need all of these different players. So I think most of the impacts on O'ahu is land-based...we talk about it but we haven't actually figured out how to deal with the source of the impact being land-based. The other major impact I feel is that we've forgotten to have those interactions with these species and in these areas. And a lot of what Hawaiian cultural values show is, you need to give respect and be present for these things to continue. And so we haven't been present in a lot of these spaces because they are not healthy. But because we aren't there, they haven't had the ability or need to become healthy again. And so reconnecting people to these species, in their places, is very important in securing their abundance in the future...it's really sad to see how empty the reefs are on O'ahu. Compared to what I grew up seeing and knowing what should be present and abundant.

To create a healthy ecosystem, mitigation begins with the prevention of runoff. She pointed out that all drains lead to the ocean. Instead, runoff needs to be filtered and cleaned. In addition, the time frame of what is occurring on land before reaching the ocean is so short, there is no mediation for the pollutants. When the topic on the recent ban of oxybenzone came up, Ms. Punwai presents the dilemma of other chemicals still present in sunscreen and how that still greatly affects our reefs:

Sunscreen was an easy thing for people to target and understand. It took a long time...It's all those different kind of chemicals, that we're putting that and we're still, if you still use sunscreen, you're still putting other kind of chemical pollutants in the ocean. And we just never thought of that being serious before but none of those chemicals were present and they're all really important in the larval and...in the reproduction of every species pretty much in the ocean when they're larval—before they hit the egg and sperm stage, it cannot even combine into eggs if there's too much of these chemical pollutants around there.

She closed her interview with the following statements in regard to impacts on traditional Native Hawaiian cultural practices and traditions,

I do believe that the practice of aquarium fishing will have an impact on traditional cultural practices in these areas. And I think with the ocean—and it's not just the ocean—I think in general, traditional and cultural practices is not really a site assessment that I can give. It's just that broader impact and the ability for these things to be considered abundant...The value of the ability for a species to live in its own environment. I have a hard time seeing how taking a *hīnālea* and putting it in a tank in Nevada can allow that being to continue being a *hīnālea*. So the traditional practice of our species being able to have their own *'ōiwi* is being affected through the practice of aquarium collecting and having live pets.

ROSALYN "ROZ" DIAS CONCEPCION

On October 21, 2019, ASM staff, Nicole Ishihara, conducted a telephone interview with Roslyn "Roz" Dias Concepcion. Since 2011, Ms. Concepcion has worked with Waikalua Loko I'a as the Alaka'i Loko I'a Manager and serves as the primary *kia'i* of the fishpond where she oversees the daily operations. Waikalua Loko I'a is located in the southern portion of Kāne'ohe Bay nestled between Kāne'ohe Stream to the north and Kawa Stream to the south. Prior to working at Waikalua Loko I'a, Ms. Concepcion was an Operations Manager at Bank of Hawai'i for fifteen years. She explained that the change from a corporate position to *'āina*-based (land-based) stewardship was motivated

by her need to work outdoors, to be more connected with the land, and to work with children. After working at a *lo'i* (irrigated terrace) in Waipi'o Valley on Hawai'i Island, Ms. Concepcion made the decision to transition full-time into *'āina*-based stewardship. She shared, "I'm a Hawaiian, a Hawaiian woman with this education and I'm not really applying it to my culture in any way and so it was that lightbulb that went off and I went to a fishpond shortly after." Ms. Concepcion met with Ka'ohua Lucas, who was managing Waikalua Loko I'a at that time and in 2011, Ms. Lucas retired from the *loko i'a* and Ms. Concepcion assumed her role.

Ms. Concepcion's mother is from Maui and her father is from Hawai'i Island, specifically the Hāwī area in the Kohala District. Her maternal grandparents are of Hawaiian and Filipino ancestry and her paternal grandparents are of Puerto Rican and Spanish ancestry. She grew up in Pālolo and later moved to Hawai'i Kai where she resided until she graduated from high school. Ms. Concepcion has been living in Kāne'ohe for the last decade.

When asked if she grew up learning traditional Hawaiian cultural practices, she pointed out that her parents came from a generation when they were taught not to speak Hawaiian and learn Hawaiian ways of life. Ms. Concepcion shared that the idea back then was that "it was better for them to connect to the Western part of the world" as it was believed that this would help them "get ahead in life." Because of this, she was also raised without learning Hawaiian values or exposed to traditional Hawaiian cultural practices. She shared that she eventually began to paddle canoe for Hui Nalu in her adolescent years and because of this connection to the ocean, Ms. Concepcion began to fish and pick *limu* (general name for seaweed). Eventually these newly acquired skills would stay with her for the remainder of her life.

As a self-taught fisher, Ms. Concepcion engages in onshore and offshore fishing and recalled episodic fishing trips with an uncle who often invited her to fish on his boat. In describing those fishing experiences, Ms. Concepcion shared:

I'd meet him like 5PM and we'd go out and he'd troll. Or he'd go out to a certain point, out at the harbor at night. And we'd just drop our lines and fish for *akule* (big-eyed scad; *Selar crumenophthalmus*) and stuff like that. Come back at the next morning at like 5. I used to love to do that. But as a little kid I would just whip or use floater. And then that kind of evolved to go fishing with my uncle on his boats. And then go to Alaska to go fishing for salmon, halibut, and codfish. Yeah, so I can clean my fish. I don't have a problem with doing that. I can make my own hooks. But working at the fishpond, it's funny cause I'm just so busy at the pond, I really don't have the time to fish. Unless I stop and make a point to do it, you know? I just don't really have that chance. I can throw net too if I wanted to. It's all self-taught.

She also shared that another uncle who was a "big-time fisherman" taught her how to cast her line and how to mend her throw net. Because she paddled, she often saw him at Ala Moana Beach Park and the Sand Island area. She shared that this uncle (as well as her own mother) spent a lot of time at Mokauea, a traditional fishing village and fishery, and would often reminisce about the island. Mokauea Island is the last Hawaiian fishing village in Ke'ehi Lagoon, between Honolulu Harbor and the Daniel K. Inouye Airport.

Even as a recognized cultural practitioner, Ms. Concepcion pointed out that prior to assuming her position at Waikalua Loko I'a she did not know anything about fishponds. She shared that she learned through the practice of *kilo* (observation), talking to *kūpuna*, and being exposed to other cultural practitioners associated with Kua'āina Ulu 'Auamo (KUA), a grassroots organization that supports community initiatives. She added, "I've learned like, the science part of it and then really nailed down the cultural practices associated to the *loko i'a*." Ms. Concepcion shared that prior to 1995, the *kia'i* of Waikalua Loko I'a was Uncle Henry Wong, who is related to Kumu Hula Frank Kawaikapuokalani Hewett a *kama'āina* (native-born) of Kāne'ohe. She explained that Uncle Henry obtained the land from the former Kaneohe Ranch Management Limited, a company that managed the real estate of Harold K. L. and Alice H. Castle, in the late 1950s-early 1960s. Uncle Henry was one of the key supervisors at the time for Kaneohe Ranch. After Uncle Henry passed away in the 1980s, the fishpond fell to the wayside and in 1995, The Pacific American Foundation (PAF) came across the *loko i'a* by sheer luck. Ms. Concepcion explained that:

My ED (Executive Director) at the time was working with Bay View Golf Course, so whoever the golf course owners were then...came to the backside of the golf course and came across the fishpond and it was in that moment felt that he had this responsibility, this *kuleana* to take care of the pond. So yeah, 1995 is when the Pacific American Foundation...formed the 501(c)3, they didn't really become landowners, they didn't get title until this year. That's how long it's taken.

After sharing a bit about her background, Ms. Concepcion was then asked to review the Top 20 Species list. After reviewing the list, she was asked if she was aware of any traditional cultural knowledge associated with any of the fish species. These include (but are not limited to) knowledge of *mo'olelo* regarding each species; religious and

spiritual beliefs and practices associated with any of the fish species listed; *lā'au lapa'au* uses; *mauka* to *makai* connections; use of fish in *hula* practices; and food resources. In light of this inquiry, Ms. Concepcion mentioned that most of her *kilo* is done while she is working on the fishpond wall. She noted that the 'o'opu hue or Hawaiian Whitespotted Toby is a species that can be found within and just outside the fishpond. She also describe seeing an occasional *kala* in the pond on occasion. Although has not observed any angelfish in the fishpond or in the vicinity of the fishpond, she described seeing the following fish as well as an abundance of *limu* during the summer months:

When I'm walking around the wall, the main ones that I see are *manini* (convict tang; *Acanthurus triostegus*), *moi* (threadfish; *Polydactylus sexfilis*), pufferfish...There's a lot of tilapia around our bay and in the stream and in the pond...We have *pāpio* (juvenile crevalle) from time to time that we'll see. And the *pāpio* we get is the *pa'opa'o* (a species of crevalle; *Caranx spaciosus*). So we do have that.

Ms. Concepcion spoke extensively about tilapia, which poses several issues to fishpond managers. The first is issues of disposal. Ms. Concepcion shared that aquarium owners often throw their tilapia and other fish into the stream, which eventually makes its way downstream into the *loko i'a* and the ocean. She shared that the majority of tilapia are the Blackchin variety, but the Hawaiian Gold variety is present as well. Prior to her time at the *loko i'a*, she recalled when an aquaculture specialist felt compelled to add tilapia into the pond. In June 2019, a *paepae* (support, prop) activity was employed to get a sampling of fish species in the pond. The activity yielded a total of approximately 220-pounds of fish with 200-pounds being strictly tilapia, thus demonstrating that there are far fewer native fish in the fishpond. She continued describing the *paepae* sampling activity:

So although we know what kind of fish, we have a good idea of what type of fish we have in the pond... So we did a sampling and we're going to do another sampling on November 30th... And it was a 50% sampling, just to see what we had in the pond...So we definitely had a lot of tilapia, we had a lot of barracuda. 'ō'io [bonefish; *Albula Vulpes*], surprisingly. We had a lot of 'ō'io and umm...not too much mullet, sadly. And then we didn't catch anything else because all of the smarter fishes [giggling], they you know, went straight to where our mangrove is and they kind of hid there. And that's what we kind of got in the first sampling and we did get some pufferfish so that's how I know we have that for sure.

When asked if any of the fish on the Top 20 Species list were used for subsistence purposes, Ms. Concepcion shared that the only fish that she knows of used as a food resource are the *kala* and 'o'opu hue. She shared that *kala* can be prepared on the grill using "...a fish cage that you just put the fish inside. You just put the fish inside and then put it straight on the grill, salt and pepper. The skin is tough. So once you get past the skin, the meat is nice and white and it's 'ono (delicious, tasty). That's how I eat it." In regard to the 'o'opu hue, it is to her understanding you need to know how to clean the fish very well as it known to contain toxic sacs. When asked how this fish was prepared, she shared:

...you eat it like *sashimi* (Japanese delicacy consisting of fresh raw fish) but you would have to remove the chemical—like a poison bag in the fish that you will have to be very careful before cutting out and removing before you eat it. Cause if you didn't do it properly, that [poison] would get released into the fish meat...it's a delicacy in Japan for sure. I don't know about culturally how we ate pufferfish but I assume it's the same thing. They probably did the same thing—like Japanese, you know? Ate it sashimi style.

Ms. Concepcion shared that in addition to being raised in Waikalua Loko I'a, 'o'opu hue was also raised in Moli'i Fishpond in Kualoa. She expressed that between the 1960s and 1970s the former owners of the Waikalua Loko I'a raised pufferfish for food, however, with the onset of development and urbanization they stopped cultivating the fish.

Regarding the Top 20 Species being used for spiritual and religious practices, Ms. Concepcion was aware that the 'āweoweo (Priacanthus), *menpachi* (Holocentridae), and *kala* are fish that are typically placed on a *ko'a* or *ahu* as an offering. Although the 'āweoweo and *menpachi* are red reef fish that are not on the Top 20 Species list, she added that the 'āweoweo is a *kinolau* of Kanaloa. She also knows of an 'ohana on the windward side of O'ahu that continues to leave offerings at a *ko'a*, thereby exemplifying that certain fish are still used in traditional Native Hawaiian cultural practices today.

Ms. Concepcion also described a *mauka-makai* relationship associated with the *kala* fish sharing that this fish has a land counterpart, the *kala* plant, commonly known as Hawaiian prickly poppy. Other names for the *kala* plant include *naule* and *puakala*. She did not specify the use of the plant or any specific connections.

Ms. Concepcion offered no comments or concerns, nor identified any impacts from the proposed permit issuance.

5. IDENTIFICATION AND MITIGATION OF POTENTIAL CULTURAL IMPACTS

The OEQC guidelines identify several possible types of cultural practices and beliefs that are subject to assessment. These include subsistence, commercial, residential, agricultural, access-related, recreational, and religious and spiritual customs. The guidelines also identify the types of potential cultural resources, associated with cultural practices and beliefs that are subject to assessment. Essentially these are natural features of the landscape and historic sites, including traditional cultural properties. A working definition of a traditional cultural property is provided.

“Traditional cultural property” means any historic property associated with the traditional practices and beliefs of an ethnic community or members of that community for more than fifty years. These traditions shall be founded in an ethnic community’s history and contribute to maintaining the ethnic community’s cultural identity. Traditional associations are those demonstrating a continuity of practice or belief until present or those documented in historical source materials, or both.

The origin of the concept of traditional cultural property is found in National Register Bulletin 38 published by the U.S. Department of Interior-National Park Service. “Traditional” as it is used, implies a time depth of at least 50 years, and a generalized mode of transmission of information from one generation to the next, either orally or by act. “Cultural” refers to the beliefs, practices, lifeways, and social institutions of a given community. The use of the term “Property” defines this category of resource as an identifiable place. Traditional cultural properties are not intangible, they must have some kind of boundary; and are subject to the same kind of evaluation as any other historic resource, with one very important exception. By definition, the significance of traditional cultural properties should be determined by the community that values them.

It is however with the definition of “Property” wherein there lies an inherent contradiction, and corresponding difficulty in the process of identification and evaluation of potential Hawaiian traditional cultural properties, because it is precisely the concept of boundaries that runs counter to the traditional Hawaiian belief system. The sacredness of a particular landscape feature is often cosmologically tied to the rest of the landscape as well as to other features on it. To limit a property to a specifically defined area may actually partition it from what makes it significant in the first place. However offensive the concept of boundaries may be, it is nonetheless the regulatory benchmark for defining and assessing traditional cultural properties. As the OEQC guidelines do not contain criteria for assessing the significance for traditional cultural properties, this study will adopt the state criteria for evaluating the significance of historic properties, of which traditional cultural properties are a subset. To be significant the potential historic property or traditional cultural property must possess integrity of location, design, setting, materials, workmanship, feeling, and association and meet one or more of the following criteria:

- a Be associated with events that have made an important contribution to the broad patterns of our history;
- b Be associated with the lives of persons important in our past;
- c Embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; or possess high artistic value;
- d Have yielded, or is likely to yield, information important for research on prehistory or history;
- e Have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group’s history and cultural identity.

While it is the practice of the DLNR-SHPD to consider most historic properties significant under Criterion d at a minimum, it is clear that traditional cultural properties by definition would also be significant under Criterion e. A further analytical framework for addressing the preservation and protection of customary and traditional native practices specific to Hawaiian communities resulted from the *Ka Pa’akai O Ka ‘Āina v Land Use Commission* court case. The court decision established a three-part process relative to evaluating such potential impacts: first, to identify whether any valued cultural, historical, or natural resources are present; and identify the extent to which any traditional and customary native Hawaiian rights are exercised; second, to identify the extent to which those resources and rights will be affected or impaired; and third, specify any mitigative actions to be taken to reasonably protect native Hawaiian rights if they are found to exist.

This study focused on the culture-historical context of O‘ahu’s nearshore waters and the Top 20 Collected Aquarium Fish Species for O‘ahu. Six oral interviews were conducted with individuals from various communities and areas of expertise including (but not limited to) cultural practitioners, aquarium collectors, subsistence and commercial fishers, charter boat operators, *loko i‘a* managers, and educators. Many of the consulted parties identified with more than one area of expertise and may identify with another user group not listed above. Based on a review of background research in concert with the results of the consultation efforts, the nearshore waters of O‘ahu have served as a foundation for a subsistence lifestyle of Kānaka Maoli since Precontact times and continues to be a resource amongst Native Hawaiians, *kama‘āina*, and visitors today. Kānaka Maoli of all ages and genders practiced *lawai‘a* in various capacities. Women and children congregated at the nearshore collecting *limu*, shellfish, and urchins while men tended to the nearshore and offshore fisheries. Traditional harvesting methods varied from carefully engineered *loko i‘a*, to small handheld apparatuses such as *hīna‘i*, *‘upena* of various shapes and sizes, hand collection, hook and line, plant-based poisons, snaring, and spearing. While all of these harvesting methods are still employed, the apparatuses used in that process have certainly evolved from their original prototypes. Through the consultation efforts, it was expressed that *loko i‘a* today are not used exclusively for sustainability but serve as important culture-educational resources, especially on the island of O‘ahu where many fishponds are being restored and actively cared for. Although the methods described above are tangible, as demonstrated in the background research, there is also a spiritual element to the practice of *lawai‘a* and to O‘ahu’s nearshore waters. Additionally, the naming of eco-zones from the mountain peaks to the seashore and out to the distant horizon demonstrates the intimate connection Kānaka Maoli had with nature. Their sole reliance on local fisheries necessitated deliberate and careful resource management strategies that were reinforced at a sociopolitical and familial level.

Kānaka Maoli anchored their beliefs in the natural elements—*‘āina*, *wai*, *lewa*, and *kai*. As discussed in the culture-historical background, Kānaka Maoli believe that each natural element was a physical embodiment of an *akua*. The ocean is considered a pathway for the ancient *akua* and early inhabitants who migrated from Kahiki to Hawai‘i. Research and consultations yielded that the ocean is an embodiment of the deity Kanaloa, one of the four paramount male gods worshipped in Hawai‘i and throughout Polynesia, who also assumes various *kinolau* including the *‘āweoweo*, *he‘e*, *mūhe‘e*, *koholā*, and *palaoa*. These species are also mentioned in the Kumulipo, a cosmogonic chant consisting of sixteen *wā* or eras deriving from a time of darkness and progresses to the introduction of cosmic energies, light, and living organisms. In the second *wā*, fish and their forest counterparts are enumerated, however, Kānaka (humans), according to the Kumulipo are not born until the eighth *wā*. This informs the reader that Kānaka evolved from the same source as other living creatures but arrived much later thereby establishing them as subordinate to the natural elements. The Kumulipo serves as a reminder of the symbiotic relationship between *‘āina*, *kai*, and their worldly inhabitants. The consulted parties also pointed out the validity of the Kumulipo today as it highlights the importance of the natural elements to the fecundity of all life and illustrates the importance of maintaining balance with nature.

The practice of offering *ho‘okupu* for *akua* and *‘aumakua* was another attribute of maintaining spiritual balance. The nearshore waters were associated with various deities including the goddess Hina (Hinapukui‘a), Kū‘ula (Kū‘ulakai), and their son ‘Ai‘ai, all of whom contribute tremendously to the spiritual aspect of Hawaiian fishing practices and the creation of *loko i‘a*. The traditional practice of leaving the first catch at a *ko‘a*, *ahu*, or on the shore for a deity or *‘aumakua* is still exercised as mentioned by a number of interviewees. This practice honored *akua*, spiritual forces (such as *‘aumakua*) that protect you while in the ocean, and recognized the reciprocal relationship of giving and taking. Interviewees acknowledged *ko‘a* and *ahu* that are still used today in Wai‘anae and Kāne‘ohe in the water and on land, although there may be others in use that are undocumented or not widely discussed. Another ritual of maintaining balance was through *pule* and *oli* with consulted parties also employing thoughts, visions, and intuition to the practice of *lawai‘a*.

The practice of *kilo* or observation was a traditional method still used today to locate schools of fish and to record changes in elements, distinctions, and correlations. *‘Olelo no‘eau* shared by a consulted party regarding the *lauwiliwili* fish and *wiliwili* tree demonstrates how Kānaka Maoli used the art of *kilo* to deduce the interconnections of land, ocean, and balance. The taking of resources was implemented on an as-needed basis and traditional laws imposed conservation-stewardship practices governed by the *kapu* system that maintained law and order. Although the *kapu* system was abolished in 1819, these traditional practices that were established set the foundation for customary gathering rights that were later codified into some of the early laws. A majority of the consulted parties continue to practice the art of *kilo* with the inclusion of community policing to enforce *pono* resource management practices in conserving and protecting natural resources and the environment. One reason for the community policing was due to the fact that conservation and resource enforcement officers are inadequately staffed and were unable to police on a regular basis. Besides policing the overtaking of resources, examples relayed in consultation pertaining to

environmental issues on land impacting the ocean include run-off entering the *kai* affecting reef health; water diversions prohibiting stream nutrients from entering the ocean to assist with the spawning process; and pollutants hindering fish populations. It should be noted that although these factors are impacting the ocean's ecological system, this is a larger issue outside of the study's current scope of work. One interviewee discussed the biological effects on reef fish stemming from pollution and insufficient data to truly understand each of the species listed in terms of habitat, life spans, and their recruitment processes (referring to when a juvenile fish joins a population via birth or migration). This led to the discussion that fish are not static and that they move through their growth stages in different parts of the nearshore waters. Another consulted party shared that fish are redeposited annually along the shoreline and took into consideration that there is no aquarium collecting in Maui County hinting that there is an excess population. Invasive species such as roi and tilapia were addressed in consultation as these species prey on native fish, reproduce at a rapid rate, and are sometimes used as aquarium fish that are later dumped into streams that carries them to the ocean.

Based on the summary of findings described above, it is evident that the nearshore waters of O'ahu, along with all of its contributing tangible and intangible elements and associations, could be considered a traditional cultural property significant under Criteria a and e. Additionally, *loko i'a*, which were also identified as another significant cultural resource could also be considered significant under Criterion c. Having a comprehension of the traditional cultural significance of the nearshore waters of the Island of O'ahu by all of its user constituencies, is a first step in ensuring that the activities of any one user group does not in any significant way conflict with the activities of another user group. As part of any future permitting processes associated with the nearshore waters of O'ahu, it is recommended that DLNR-DAR provide to potential permit holders a document that provides a synopsis of the traditional cultural significance of the fishery.

As previously mentioned, this study focused on the Top 20 Species. The list was created from data collected under commercial aquarium permits spanning from 2000 to 2017. The fish listed on the Top 20 list make up 80% of what is gathered off the shores of O'ahu with the remaining 20% of unknown collected species. A review of background research and information provided by consulted parties resulted in the identification of traditional names, and/or past and/or ongoing cultural uses for thirteen of the Top 20 Collected Aquarium Fish Species of O'ahu. Identified cultural uses for marine resources include subsistence, medicinal, ritual, ceremonial, and *hula*. Some of the consulted parties identified that all of the fish on the Top 20 list were once used for subsistence purposes, while others made explicit reference to certain species including *na'ena'e*, *kala/umaumalei*, larger *hīnālea*, *kole*, and *'o'opu hue*. The *'o'opu hue* was later banned for sale and consumption due to it being poisonous and the possible health risk if not prepared properly and ingested. The *kala/umaumalei* was discussed at length amongst several of the consulted parties as a culturally significant fish as the skin is used as the covering for the *pūniu* (knee drum) which is used in certain *hula* performances; it is used in *ho'oponopono* practices to signify the releasing (another definition of *kala*) of unwanted energies; in *lā'au lapa'au* practices; subsistence; and as a *ho'okupu*. The *kole* was also mentioned frequently in consultation, and was identified as being used for subsistence and as *ho'okupu*.

Given that the species described above are important to maintaining and perpetuating the above-described cultural practices, if the issuance of commercial aquarium permits leads to a significant depletion of the populations of the species mentioned above through direct or indirect habitat disruption, then the result would be a cultural impact. Conversely, if the biological assessments (conducted by qualified biologist) indicate that the issuance of the twenty commercial aquarium permits will not have a significant impact on either the fishes or their habitat, then the issuance of the commercial aquarium permits would not result in a cultural impact.

All interviewees expressed a connection to the ocean; shared a degree of traditional knowledge involving the ocean; and that they continue to engage in traditional cultural practices associated with the ocean (whether nearshore or offshore). Many of the consulted parties recalled their introduction to the nearshore waters of O'ahu from a young age and generally with family members who provided guidance on how to employ traditional fishing apparatuses and sustainable harvesting practices. As a result, interviewees shared that during their youth they were taught to some degree about traditional cultural knowledge and values. Many continued to learn about the ocean and gain a deeper understanding of traditions and practices from non-family (i.e. community members, *hui*, academia, professions) throughout the years adding to their breadth of knowledge. It is apparent that all participants continue to apply traditional methods to the practice of *lawai'a* today with evolved prototypes and techniques. Some participants expressed specific cultural concerns related to the Top 20 Collected Aquarium Species of O'ahu, while others discussed reef species not on the list. Interviewees stressed the ecological importance of fish, life cycles, and ecosystems/reef health; the overtaking of resources; and the issue of invasive species that feed on and compete with native species for resources and habitat. One interviewee expressed her concern when fish are removed from their native habitat they lose their *'ōiwi*, but also their ecological purpose. Some expressed frustration with the lack of

5. Identification and Mitigation of Potential Cultural Impacts

studies to understand the ecological importance of each fish species; inadequate staffing of DOCARE officers to assist in the policing, management, and conservation of aquatic resources; and acknowledged a division between different user groups.

If the analyses in the EIS determine that the conditions of effect are met with respect to the potential cultural impacts described above, then the following recommendations for mitigation are offered. As stated by an interviewee, there is a lack of data and studies to understand the habitat, life spans, recruitment processes, etc. for each species listed on the Top 20 list. If the public and the decision making authorities are privy to this information to comprehend species, increase fish populations, and improve the overall management and sustainability of the O‘ahu fishery, then it could potentially lead to an improve understanding of the various fish species and inform decision makers on appropriate and sustainable management strategies. It is therefore recommended that PJAC and DLNR-DAR develop partnerships with other organizations, institutions, and governmental agencies to support the undertaking of additional studies of the fish on the Top 20 list.

To further curtail the potential for cultural impacts and to assist in the overall management of the O‘ahu fishery, it is recommended that existing bag limits and no-take areas within the study area remain in effect. However, with respect to bag-limits, it is recommended that such limits be adjusted periodically to account for changes in local fish stock. Additionally, to improve inter-user group relations and management of O‘ahu’s nearshore fishery, it is recommended that DLNR-DAR consider developing a local fisheries council that would be tasked with developing a list of approved species similar to the “white-list” that has been created by the West Hawai‘i Fishery Council. Reducing the species from the estimated 238 would allow for more detailed species specific studies and inform decision makers on the appropriate management strategies. As discussed in the background section of this report, underreporting (i.e. DAR confidentiality statute) and inconsistent catch data reports (i.e. general group reporting rather than species-specific reporting) are current fisheries management issues that should be rectified. Improving the existing reporting system so that catch data is more accurately represented is necessary to sustainably manage O‘ahu’s fishery.

DLNR-DAR plays a significant role in managing and enforcing the rules and regulations intended to support the sustainability, viability, and productivity of the O‘ahu nearshore waters. As voiced by several of the consulted parties, the lack of support and funding has hampered DLNR-DAR’s ability to fulfill its fiduciary duty, namely to enhance, protect, conserve, and manage Hawai‘i’s natural resources. Various ocean user groups have observed the shortage of DOCARE officers and have either taken advantage of this shortcoming by not complying with rules, while other communities have taken matters into their own hands by enforcing the rules themselves. While it is everyone’s responsibility to utilize Hawai‘i’s marine resources responsibly, having adequate enforcement remains a crucial component of proper management. To minimize conflict within the various user groups and the community, it is recommended that additional funding to improve DOCARE’s capacity be allocated to better manage O‘ahu’s fisheries.

In summary, the recommendations provided above are intended to ensure that the proposed issuance of twenty commercial aquarium permits for O‘ahu considers the knowledge, concerns, and thoughts shared by the consulted parties and identified through the culture-historical background research. Overall, all consulted parties are users of the ocean and desire the same outcome for the nearshore waters, which is for it to be abundant. If all ocean user groups assume ownership of their *kuleana* to utilize marine resources in a sustainable way through the acts of *mālama* and enriching the resources, then potential cultural impacts will be lessened. Understanding the cultural resources, cultural practices, cultural beliefs, and current issues will ultimately help ensure that no such resources, practices, or beliefs are adversely affected by the proposed issuance of the twenty aquarium permits for O‘ahu’s nearshore waters.

REFERENCES CITED

- Abbott, I.
1992 *Lā'au Hawai'i, Traditional Hawaiian Uses of Plants*. Bishop Museum Press, Honolulu.
- Achiu, J. K.
2002 Ke Kumukānāwai o ka Makahiki 1839 a me ka 1840. *Ka Ho'oilina: Journal of Hawaiian Language Sources* 1(1):30-59.
- Apple, R., and W. Kikuchi
1975 *Ancient Hawaii Shore Zone Fishponds: An Evaluation of Survivors For Historical Preservation*. Prepared for Office of the State Director, National Park Service, United States Department of the Interior, Honolulu.
- Athens, J. S., T. Rieth, and T. S. Dye
2014 A Paleoenvironmental and Archaeological Model-Based Age Estimate for the Colonization of Hawai'i. *American Antiquity* 79(1):144-155.
- Beamer, K.
2014 *No Mākou Ka Mana: Liberating the Nation*. Kamehameha Publishing, Honolulu.
- Beckley, E.
1883 *Hawaiian Fisheries and Methods of Fishing with an Account of the Fishing Implements Used By the Natives of the Hawaiian Islands*. Minister of Foreign Affairs, Honolulu.
- Beckwith, M. W.
1932 *Kepelino's Traditions of Hawaii*. Bernice P. Bishop Museum Bulletin 95. Bishop Museum Press, Honolulu.
1951 *The Kumulipo A Hawaiian Creation Chant*. University of Hawaii Press, Honolulu.
1970 *Hawaiian Mythology*. University of Hawai'i Press, Honolulu.
- Buck, E.
1993 *Paradise remade: The politics of culture and history in Hawai'i*. Temple University Press, Philadelphia.
- Buck, P. H.
1957 *Arts and Crafts of Hawaii*. B. P. Bishop Museum Special Publication 45. Bishop Museum Press, Honolulu.
- Buke Māhele
1848 *Buke Kakau Paa no ka mahele aina i Hooholoia iwaena o Kamehameha III a me Na Lii a me Na Konohiki ana, Hale Alii*, Honolulu.
- Calado, R., I. Olivotto, M. P. Oliver, and G. J. Holt
2017 *Marine Ornamental Species Aquaculture*. John Wiley & Sons Ltd., The Atrium, Southern Gate, Chichester, West Sussex, UK.
- Campbell, A.
1967 *A Voyage Around the World from 1806 to 1812*. University of Hawai'i Press, Honolulu.
- Cannelora, L.
1974 *The origin of Hawaii land titles and of the rights of native tenants*. Security Title Corp.
- Chinen, J. J.
1958 *The Great Mahele: Hawaii's Land Division of 1848*. University of Hawaii Press, Honolulu.
- Clark, J. R. K.
2004 *Beaches of O'ahu*. University of Hawaii Press, Honolulu.

References Cited

- Cobb, J.
1902 *Commercial Fisheries of the Hawaiian Islands*. In *U.S. Fish Commission Report for 1901*. Department of Commerce and Labor Bureau of Fisheries, Washington.
- 1905 *Commercial Fisheries of the Hawaiian Islands in 1903*. Department of Commerce and Labor Bureau of Fisheries. Government Printing Office, Washington.
- Cordy, R.
2002 *The Rise and Fall of the O'ahu Kingdom*. Mutual Publishing, Honolulu.
- Crabbe, K. o., K. Fox, and H. K. Coleman
2017 *Mana Lāhui Kānaka Mai nā kupuna kahiko mai a hiki i kēia wā*. Office of Hawaiian Affairs, Honolulu.
- CruiseMapper
n.d. *Honolulu (Oahu Island, Hawaii), Crusise Port Schedule, Live Map, Terminal, News*. CruiseMapper. Electronic document, <https://www.cruisemapper.com/ports/honolulu-port-84>, accessed December 13, 2019.
- DAR (Department of Aquatic Resources)
2018 *Update of Court Rulings Regarding Aquarium Fishing, Including FAQs*. Electronic document, <https://dlnr.hawaii.gov/dar/announcements/update-of-supreme-court-ruling-regarding-aquarium-fishing/>, accessed December 16, 2019.
- Department of Parks and Recreation
2019 *Ala Moana Regional Park*. City and County of Honolulu. Electronic document, <http://www.honolulu.gov/parks/default/park-locations/182-site-dpr-cat/30221-ala-moana-regional-park.html>.
- Devaney, D., M. Kelly, P. Lee, and L. Mottelerm
1982 *Kāne'ohē—A History of Change*. updated edition Revised. Bess Press, Honolulu.
- DLNR (Department of Land and Natural Resources)
2019 *Ka'ena Point State Park*. Division of State Parks. Electronic document, <https://dlnr.hawaii.gov/dsp/parks/oahu/kaena-point-state-park/>.
- DLNR/DAR (Department of Land and Natural Resources, Division of Aquatic Resources)
2005 *Marine Protected Areas in Hawaii*. Advertising supplement included in the March 9, 2005 edition of the *Honolulu Star Advertiser*. Custom Publishing Group of The Honolulu Advertiser, Honolulu.
- Earle, T.
1978 *Economic and Social Organization of a Complex Chiefdom: The Halele'a District, Kaua'i, Hawaii*. Anthropological Papers. Museum of Anthropology, University of Michigan, Michigan.
- Earthjustice
2012 *Citizens and Conservation Groups File Suit to Protect Hawai'i's Reef Ecosystems. State issuance of aquarium collection permits without environmental review poses danger to already-stressed coral reefs*. Electronic document, <https://earthjustice.org/news/press/2012/citizens-and-conservation-groups-file-suit-to-protect-hawai-i-s-reef-ecosystems>, accessed December 19, 2019.
- Ellis, W.
1831 *Polynesian Researches During a Residence of Nearly Eight Years in the Society and Sandwich Islands*, vol. IV. Fisher, Son, & Jackson, Newgate Street, London.
- Else, I.
2004 *The Breakdown of the Kapu System and Its Effect on Native Hawaiian Health and Diet. Hūlili: Multidisciplinary Research on Hawaiian Well-Being* 1(1):241-255.
- Emerson, N. B.
1915 *Pele and Hiiaka; a myth from Hawaii*. Honolulu Star Bulletin Limited, Honolulu.

- Fornander, A.
 1916 *Fornander Collection of Hawaiian Antiquities and Folklore*. 9 vols. Bishop Museum Press, Honolulu.
 1916-1917 *Fornander Collection of Hawaiian Antiquities and Folklore*. Memoirs of the Bernice Pauahi Bishop Museum, vol. IV. Bishop Museum Press, Honolulu.
 1919 *Fornander Collection of Hawaiian Antiquities and Folklore*. Memoirs of the Bernice Pauahi Bishop Museum, vol. IV. Bishop Museum Press, Honolulu.
 1969 *An Account of the Polynesian Race: Its Origins and Migrations, and the Ancient History of the Hawaiian People to the Times of Kamehameha I*. John F. G. Stokes. Charles Tuttle & Co., Inc., Tokyo.
- Glazier, E. W.
 2007 Hawaiian Fishermen. In *Case Studies in Cultural Anthropology*. Thomas Wadsworth, Belmont, CA.
- Glidden, C., D. Hu, L. Carter-Schuster, and B. Camara
 1997 Evidence of Human Induced Impacts on Dark-rumped Petrel (*Pterodroma phaeopgia*) Breeding Populations on the Island of Hawai'i. 10th Annual Society for Hawaiian Archaeology Conference. Paper, Kaua'i, Hawai'i, accessed 1997.
- Green, R.
 1980 *Mākaha Before 1880 AD Mākaha Valley Historical Project Summary*. Pacific Anthropological Records No. 31. Department of Anthropology, B.P. Bishop Museum, Honolulu.
- Gutmanis, J.
 1991 *Pohaku Hawaiian Stones*. Brigham Young University, La'ie, HI.
- Handy, E. S., K. Emory, and Bryan
 1981 *Ancient Hawaiian Civilization: A Series of Lectures Delivered at the Kamehameha Schools*. Revised ed.
- Handy, E. S. C., E. G. Handy, and M. K. Pukui
 1991 *Native Planters in Old Hawaii: Their Life, Lore, and Environment*. Bernice P. Bishop Museum Bulletin 233. Bishop Museum Press, Honolulu.
- Handy, E. S. C., and M. K. Pukui
 1998 *The Polynesian Family System in Ka'u, Hawai'i*. Mutual Publishing, Honolulu.
- Hawaiian Lifeguard Association
 2019 *O'ahu Beaches*. Hawai'i Beach Safety. Electronic document, <http://hawaiibeachsafety.com/oahu>.
- Heu, R., D. Tsuda, W. Nagamine, J. Yalamar, and T. Suh
 2008 *Erythrina Gall Wasp, *Quadrastichus erythrinae* Kim (Hymenoptera: Eulophidae)*. State of Hawaii Department of Agriculture New Pest Advisory 05-03.
- Ho'oulumāhiehie
 2006 *The Epic tale of Hi'iakaikapoliopole*. Translated by M. Puakea Nogelmeier. Awaiaulu, Honolulu.
- Hommon, R.
 1976 The Formation of Primitive States in Pre-Contact Hawaii. Ph.D. Dissertation, Department of Anthropology, University of Arizona, Tucson.
 1986 Social Evolution in Ancient Hawai'i. In *Island Societies: Archaeological Approaches to Evolution and Transformation*, edited by Patrick Kirch, pp. 55-88. Cambridge University Press, Cambridge, Massachusetts.
 1992 The Butterfly Effect in Ancient Hawaii. Paper presented at the 5th Conference at Hawaiian Archaeology, Kaua'i Community College.
- Honolulu Star-Bulletin
 1931 Natives Here Fished Under Strict Tabus. *Honolulu Star-Bulletin*. December 12, 1931:9.

References Cited

- Hoover, J. P.
2007 *Hawai'i's Fishes: A Guide for Snorkelers and Divers*. Second ed. Mutual Publishing, Honolulu.
- Ii, J. P.
1959 *Fragments of Hawaiian History*. Dorothy Barrère. Translated by Mary Kawena Pukui. B.P. Bishop Museum Special Publication. Bishop Museum Press, Honolulu.
- Jokiel, P., K. Rodgers, W. Walsh, D. Polhemus, and T. Wilhelm
2011 Marine Resource Management in the Hawaiian Archipelago: The Traditional Hawaiian System in Relation to the Western Approach. *Journal of Marine Biology* 2011:1-16.
- Jokiel, P. L.
1991 Jokiel's Illustrated Scientific Guide to Kane'ohē Bay, O'ahu. ed: *Hawaiian Coral Reef Assessment and Monitoring Program, Hawaii Institute of Marine Biology, Kaneohe, Hawaii*:1-65.
- Kahā'ulelio, D.
2006 *Ka 'Oihana Lawai 'a, Hawaiian Fishing Traditions*. Translated by Mary Kawena Pukui. Bishop Museum Press, Honolulu.
- Kalaaukumuole, S. Z.
1866 Hoomana i ka Ia. *Ka Nupepa Kuokoa*. November 24, 1866:4. Honolulu.
- Kamakau, S.
1964 *Ka Po'e Kahiko: The People of Old*. B.P. Bishop Museum Special Publication 51. Bishop Museum Press, Honolulu.
1976 *The Works of the People of Old, Na Hana a ka Po'e Kahiko*. B.P. Bishop Museum Special Publication 61. Bishop Museum Press, Honolulu.
1979 *Ka Po'e Kahiko: The People of Old*. Translated by Mary Kawena Pukui. B.P. Bishop Museum Special Publication 51. Bishop Museum Press, Honolulu.
1992 *Ruling Chiefs of Hawaii*. Revised ed. Kamehameha Schools Press, Honolulu.
- Kame'eleihiwa, L.
1992 *Native Land and Foreign Desires: Ko Hawaii 'Āina a Me Nā Koi Pu 'umake a Ka Po'e Haole, Pehea lā e Pono ai? How Shall We Live in Harmony?* Bishop Museum Press, Honolulu.
- Kanaka'ole Kanahēle, P., H. Kanahēle-Mossman, A. K. Nu'uhiwa, and K. Keli'ikanaka'ole
2009 *Kūkulu Ke Ea A Kanaloa: The Culture Plan for Kanaloa Kaho'olawe*. Prepared for the Kaho'olawe Island Reserved Commission.
- Keala, G., J. Hollyer, and L. Castro
2007 *Loko I'a, A Manual on Hawaiian Fishpond Restoration and Management*. Prepared for College of Tropical Agriculture and Human Resources, University of Hawaii at Manoa.
- Keliipio, L., and M. Nakuina
1900 Hawaiian Fish Stories and Superstitions. In *Hawaiian Almanac and Annual for 1900: A Handbook of Information and Statistics Relating to the Hawaiian Islands, of Value to Merchants Tourists and Others*. Hawaiian Gazette Co., Honolulu.
- Kent, H. W.
1986 *Treasury of Hawaiian Words in One Hundred and One Categories*. Masonic Public Library of Hawaii, Honolulu.
- Kent, N.
1983 *Hawaii: Islands Under the Influence*. University of Hawai'i Press, Honolulu.
- Kihe, I. W. H.
1924 Na Hoonanea O Ka Manawa. *Ka Hoku O Hawaii*. January 24, 1924:4. Hilo.

- King, R.
n.d. *Hawaiian Land Titles*. Electronic document, <https://ags.hawaii.gov/wp-content/uploads>, accessed.
- Kirch, P.
1984 *The Evolution of the Polynesian Chiefdoms*. Cambridge University Press, New York.
1985 *Feathered Gods and Fishhooks: An Introduction to Hawaiian Archaeology and Prehistory*. University of Hawaii Press, Honolulu.
2010 *How Chiefs Became Kings: Divine Kingship and the Rise of Archaic States in Ancient Hawai'i*. University of California Press, Berkeley.
2011 When did the Polynesians Settle Hawai'i? A Review of 150 Years of Scholarly Inquiry and a Tentative Answer. *Hawaiian Archaeology* 12:3-26.
- Lam, M.
1985 The Imposition of Anglo-American Land Tenure Law On Hawaiians. *Journal of Legal Pluralism and Unofficial Law* 23:104-128.
- Langlas, C.
2003 Kau Lā'au and Ma'ama'a: Traditional Hawaiian Ulua Fishing. Video, Pili Productions.
- Lee, M. K.
2017 Hawaiian Cultural Practitioner Mike Lee Comments on Navy's Barbers Point Toxic Chemical Landfill. In *Ewa Hawaii Karst*. Kanehili Cultural Hui, Kapolei, HI.
- Liliuokalani
1978 *An Account of the Creation of the World According to Hawaiian Tradition, Translated from Original Manuscript Preserved Exclusively in Her Majesty's Family*. Pueo Press, Kentfield.
- Lyons, C. J.
1875 Land Matters in Hawaii. *Islander* 1(19):111.
- MacKenzie, M. K.
1991 *Native Hawaiian Rights Handbook*. Native Hawaiian Legal Corporation, Honolulu.
- Maguire, E.
1926 *Kona Legends*. Paradise of the Pacific Press, Honolulu.
- Malo, D.
1951 *Hawaiian Antiquities*. Second ed. Translated by Nathaniel B. Emerson. B. P. Bishop Museum Special Publication 2. B. P. Bishop Museum Press, Honolulu.
- Maly, K.
2001 *Mālama Pono I Ka 'Āina—An Overview of the Hawaiian Cultural Landscape*. Kumu Pono Associates.
- Maly, K., and O. Maly
2003 *Volume I: Ka Hana Lawai'a A Me Nā Ko'a O Na Kai 'Ewalu, A History Of Fishing Practices of the Hawaiian Islands, Compiled From: Native Hawaiian Traditions, Historical Accounts, Government Communications, Kama'āina Testimony And Ethnography*. Kumu Pono Associates, LLC HiPae74 (080103). Prepared for The Nature Conservancy.
- Manu, M., S. M. Kamakau, and E. M. Nakuina
2006 *Hawaiian Fishing Traditions*. Kalamaku Press, Honolulu.
- McAllister, J. G.
1933 *Archaeology of Oahu*. Bernice P. Bishop Museum Bulletin 104. B. P. Bishop Museum, Honolulu, Hawaii.
- Mitchell, D.
2001 *Resource Units in Hawaiian Culture*. Revised ed. Kamehameha Schools Press, Honolulu.

References Cited

- Nakuina, M.
2005 *The Wind Gourd of La'amaomao (translated by Esther T. Mookini & Sarah Nākoa)*. University of Hawai'i Press, Honolulu.
- National Oceanic and Atmospheric Administration (NOAA)
2018 *What is a marine protected area?* National Ocean Service. Electronic document, <https://oceanservice.noaa.gov/facts/mpa.html>.
- National Research Council
2001 Historical Background and Evaluation of Marine Protected Areas in the United States. In *Marine Protected Areas: Tools for Sustaining Ocean Ecosystems*, pp. 145-173. The National Academies Press, Washington, DC.
- Native Plants Hawai'i
2009 *Erythrina sandwicensis*. University of Hawai'i. Electronic document, http://nativeplants.hawaii.edu/plant/view/Erythrina_sandwicensis.
- Newman, T. S.
1970 *Hawaiian Fishing and Farming on the Island of Hawaii in A.D. 1778*. Department of Land and Natural Resources, Division of State Parks, State of Hawaii, Honolulu.
- OEQC (Office of Environmental Quality Control)
1997 *Guidelines for Assessing Cultural Impacts, as Adopted by the State of Hawaii Environmental Council in 1997 and amended in 2000*. Electronic document, http://oeqc2.doh.hawaii.gov/OEQC_Guidance/1997-Cultural-Impacts-Guidance.pdf, accessed May 21, 2019.
- Pacific Islands Fisheries Science Center
2019 *Coral Reefs in the Pacific*. Electronic document, <https://www.fisheries.noaa.gov/pacific-islands/ecosystems/coral-reefs-pacific>, accessed 10/03/2019.
- PIJAC (Pet Industry Joint Advisory Council)
2018 *Final Environmental Assessment Issuance of Commercial Aquarium Permits for the Island of O'ahu*. KL Gates. Prepared for Hawai'i Department of Land and Natural Resources, Honolulu.
- Pogue, J. F.
1978 *Moolelo of Ancient Hawaii*. Translated by Charles W. Kenn. Topgallant Press, Honolulu.
- Pukui, M. K. (editor)
1983 *Ōlelo No'eau: Hawaiian proverbs & poetical sayings*. Bishop Museum Press, Honolulu.
- Pukui, M. K., and S. H. Elbert (Library of Congress ISBN)
1986 *Hawaiian Dictionary: Hawaiian-English, English-Hawaiian*. Revised and english ed. University of Hawaii Press, Honolulu.
- Pukui, M. K., S. H. Elbert, and E. Mo'okini
1974 *Place Names of Hawaii*. Revised and Expanded ed. University of Hawaii Press, Honolulu.
- Pukui, M. K., E. W. Haertig, and C. A. Lee
1972 *Nānā I Ke Kumu (Look to the Source)*, vol. 1. Hui Hānai, Honolulu.
- Rosendahl, P. H.
1972 *Archaeological Salvage of the Hapuna-Anaehoomalu Section of the Kailua-Kawaihae Road (Queen Kahumanu Highway), Island of Hawaii*. Department of Anthropology Departmental Report Series. 72-5. B. P. Bishop Museum.
- Sato, V. T., and C. S. Lee
2007 *Keeper of Mōli'i Pond, An Informal Account of George Uyemura And His Amazing Hawaiian Fishpond*. Prepared for The Ocean Institute, Waimānalo, HI.

- Schug, D. M.
2001 *Hawai‘is Commercial Fishing Industry: 1820-1945. The Hawaiian Journal of History* 35:15-34.
- Soehren, L.
2005 *A Catalog of Hawai‘i Place Names Compiled from the Records of the Boundary Commission and the Board of Commissioners to Quiet Land Title of the Kingdom of Hawaii. Part 4: Ka ‘ū.* Electronic document, <http://ulukau.org/cgi-bin/hpn?>, accessed September 14, 2016.
- (State of Hawai‘i)
2011 *Sentate Bill No. 987, A Bill for an Act, Relating to Environmental Impact Statements.*
- Stender, K., and Y. Stender
2019 *MarinelifePhotography.com.* Electronic document, <https://www.marinelifephotography.com/default.htm>, accessed August 2, 2019.
- Sterling, E., and C. Summers
1978 *Sites of Oahu.* Bishop Museum Press, Honolulu.
- Summers, C.
1964 *Hawaiian fishponds.* B.P. Bishop Museum Special Publication 52. B. P. Bishop Museum Press, Honolulu.
- Tatar, E.
1982 *Nineteenth Century Hawaiian Chant.* Pacific Anthropological Records. Prepared for Department of Anthropology, B.P. Bishop Museum.
- Thrum, T. (editor)
1907 *Hawaiian Folk Tales: A Collection of Native Legends.* A. C. McClurg & Co., Chicago.
- Titcomb, M.
1972 *Native Use of Fish in Hawaii.* University of Hawaii Press, Honolulu.
- UHM SOEST (University of Hawai‘i Manoa, School of Ocean & Earth Science & Technology)
2005 *Shoreline Imagery for Oahu.* Hawaii Coastal Geology Group, Honolulu. Electronic document, <http://www.soest.hawaii.edu/coasts/data/oahu/obliquephoto.html>, accessed December 13, 2019.
- University of Hawai‘i
n.d. *History of the Waikiki Aquarium.* Waikiki Aquarium. Electronic document, <https://www.waikikiaquarium.org/>, accessed August 9, 2019.
- USACE (U.S. Army Corps of Engineers)
n.d. *Haleiwa Small Boat Harbor.* U.S. Army. Electronic document, <https://www.poh.usace.army.mil/Missions/Civil-Works/Civil-Works-Projects/Haleiwa-Small-Boat-Harbor/igphoto/2000753904/>, accessed December 13, 2019.
- Valeri, V.
1985 *Kingship and sacrifice: ritual and society in ancient Hawaii.* University of Chicago Press, Chicago.
- Walsh, W. J.
1999 Community-Based management of a Hawai‘i aquarium fishery. *Proceedings of the Marine Ornamentals ‘99.* Waikoloa, HI, November 16-19, 1999.
2000 *Aquarium Collecting in West Hawaii: A Historical Overview.* State of Hawaii, Department of Land and Natural Resources, Division of Aquatic Resources, Island of Hawaii.
- Walsh, W. J., S. S. P. Cotton, J. Dierking, and I. D. Williams
2004 The Commercial Marine Aquarium Fishery in Hawai‘i. In *Status of Hawai‘i’s coastal fisheries in the new millennium, revised*, pp. 129-156. A.M. Friedlander ed. Proceeding of the 2001 fisheries symposium sponsored by the American Fisheries Society, Hawai‘i Chapter, Honolulu.

References Cited

- Weltman, R.
2013 *Fish Resources Gill Nets (Laynets) and Aquarium Collecting*. Sierra Club of Hawai'i, Maui Group, accessed December 10, 2019.
- Westervelt, W. D.
1910 *Legends of Ma-ui--A Demi God of Polynesia and of His Mother Hina*. The Hawaiian Gazette Co., Ltd., Honolulu.
- Wiegel, R. L.
2008 Waikiki Beach, Oahu, Hawaii: History of its transformation from a natural to an urban shore. *Shore & Beach* 76(2):3-30.
- Wilmshurst, J., T. Hunt, C. Lipo, and A. Anderson
2011 High-Precision Radiocarbon Dating Shows Recent and Rapid Colonization of East Polynesia. *Proceedings of the National Academy of Sciences* 108:1815-1820.
- Wise, J. H.
1911 He Moolelo No Ka Hookumuia Ana o na Paemoku o Hawaii Nei ame Ka Hoolaukanaka Ana i Hoikeia ma na Mele Hawaii Kahiko. Ka I'a Puku. *Ke Au Hou*. 8 February.
- Young, D. M.
1999 *Nā Mea Makamae: Hawaiian Treasures*. Palapala Press, Kailua-Kona, HI.

APPENDIX A
***KA WAIOLA* PUBLIC NOTICE**

This page is intentionally left blank

HO'OLAHA LEHULEHU

PUBLIC NOTICE

July 2019 18

PUBLIC NOTICE

ASM Affiliates is preparing a Cultural Impact Assessment (CIA) in advance of the preparation of an Environmental Impact Statement for the proposed issuance of commercial aquarium permits for the Island of O'ahu, excluding the following areas: Pūpūkea Marine Life Conservation District (MLCD), Hanauma Bay MLCD, expanded Waikiki MLCD, Coconut Island Hawai'i Marine Laboratory Refuge Fisheries Management Area (FMA), Waikiki-Diamond Head Shoreline FMA, Ala Wai Canal, Kapālama Canal, He'eia Kea Wharf, Honolulu Harbor, Pūka'i Bay, Waialua Bay, and the 'Ewa Limu Management Area, as well as report collection areas 405 and 406, extending from Pūpūkea Ahupua'a to Kualoa Point, and report collection areas 408 and 418, extending from the easternmost point of the Kāne'ōhe Marine Corp Base to the Makapu'u lighthouse.

We are seeking consultation with any community members that might have knowledge, or who are involved in, any ongoing cultural practices that may be occurring in any of the places outside of the

restricted areas listed above. If you have and can share any such information please contact Teresa Gotay tgotay@asmaffiliates.com, phone (808) 439-8089, mailing address ASM Affiliates 820 Mililani St. Suite 700, Honolulu, HI 96813.

WAIKĪKĪ AHUPUA'A

Persons having information concerning an unmarked burial on a portion of TMK: (1) 3-6-023:006 in the Waialae Iki portion of Waikiki Ahupua'a, Kona District, Island of O'ahu. Interested parties are requested to contact Bob Rechtman, ASM Affiliates, (808) 969-6066, 820 Mililani Street, Suite 700, Honolulu, HI 96813, and/or Regina Hilo, DLNR-SHPD Burial Specialist (808) 692-8026, 601 Kamokila Blvd., Rm. 555, Kapolei, HI 96707.

Appropriate treatment of the remains will occur in accordance with HRS, Chapter 6E, respective to this burial site in consultation with any identified descendants and with the approval of the O'ahu Island Burial Council. All interested parties should respond within thirty (30) days of this notice. ■

APPENDIX B

Collection Data for Additional SGCN Species

Final Environmental Impact Statement
 Issuance of Commercial Aquarium Permits for O’ahu
 Appendix B – Collection data for additional SGCN species

Appendix B: Collection data for additional SGCN species

As stated in the EIS, the analysis in the EIS focused on the Psychedelic Wrasse, Fisher’s Angelfish and Bandit Angelfish. However, additional SGCN have been collected on O’ahu (but are not in the top 20 fish species collected or otherwise regulated), and the collection data are summarized in Table B-1 below.

Table B-1. Summary of additional SGCN species collected by commercial aquarium collectors from O’ahu since 2000 (DAR 2018, 2019b), including the average (including only years with reported catch) and maximum annual collection for all fishers and for the 20 fishers who would be issued Aquarium Permits under the Preferred Alternative (who released all their catch data from 2000, including data previously protected by non-disclosure). n.d. = Not Disclosed (Section 5.1 of the EIS)

Species Name	Hawaiian Name (DLNR 2015)	Number of years collected		Number of years with data	Number of years n.d.	Average collection per year		Maximum collection per year	
		All fishers	20 fishers	All fishers	All fishers	All fishers	20 fishers	All fishers	20 fishers
Spotted Cardinalfish (<i>Apogon maculiferus</i>)	<i>‘upāpalu</i>	8	6	0	8	n.d.	29	n.d.	56
Hawaiian Orbicular Velvetfish (<i>Caracanthus typicus</i>)	none	5	2	0	5	n.d.	2	n.d.	2
Hawaiian Flame Angelfish (<i>Centropyge loricula</i>)	none	17	18	16	1	45	22	182	185
Bluestriped Butterflyfish (<i>Chaetodon fremblii</i>)	<i>kīkākapu</i>	18	18	18	0	340	190	713	388
Tinker’s Butterflyfish (<i>Chaetodon tinker</i>)	none	16	14	9	7	16	9	40	28
Hawaiian Morwong (<i>Cheilodactylus vittatus</i>)	<i>kīkākapu</i>	2	1	0	2	n.d.	1	n.d.	1
Chocolate-dip Chromis (<i>Chromis hanui</i>)	none	13	6	7	6	59	28	125	58
Oval Chromis (<i>Chromis ovalis</i>)	none	15	13	6	9	132	51	320	162
Yellowstripe Coris (<i>Coris flavovittata</i>)	<i>hilu</i>	18	16	16	2	76	12	759	47
Elegant Coris (<i>Coris venusta</i>)	none	18	17	17	1	147	63	351	200
Hawaiian Knifefish (<i>Cymolutes lecluse</i>)	none	7	1	0	7	n.d.	1	n.d.	1

Final Environmental Impact Statement
 Issuance of Commercial Aquarium Permits for O’ahu
 Appendix B – Collection data for additional SGCN species

Species Name	Hawaiian Name (DLNR 2015)	Number of years collected		Number of years with data	Number of years n.d.	Average collection per year		Maximum collection per year	
		All fishers	20 fishers	All fishers	All fishers	All fishers	20 fishers	All fishers	20 fishers
Redstripe Pipefish (<i>Doryrhamphus baldwini</i>)	none	18	17	3	15	38	46	60	95
Marbled Blenny (<i>Entomacrodus marmoratus</i>)	<i>pāo’o</i>	4	0	1	3	309	0	309	0
Masked Angelfish (<i>Genicanthus personatus</i>)	none	3	3	0	3	n.d.	2	n.d.	2
Steindachner’s Moray (<i>Gymnothorax steindachneri</i>)	<i>pūhi</i>	7	0	0	7	n.d.	0	n.d.	0
Blackside Razorfish (<i>Iniistius umbrilatus</i>)	<i>lae-nihi</i>	15	11	5	10	6	2	12	5
Hawaiian Flagtail (<i>Kuhlia xenura</i>)	<i>āholehole</i>	2	0	0	2	n.d.	0	n.d.	0
Sunset Bass (<i>Liopropoma aurora</i>)	none	1	1	0	1	n.d.	1	n.d.	1
Whitesaddle Goatfish (<i>Parupeneus porphyreus</i>)	<i>kūmū</i>	5	0	0	5	n.d.	0	n.d.	0
Hawaiian Rock Damselfish (<i>Plectroglyphidodon sindonis</i>)	none	1	0	0	1	n.d.	0	n.d.	0
Hawaiian Anthias (=Thompson’s Anthias) (<i>Pseudanthias thompsoni</i>)	none	17	16	11	6	538	229	1,039	908
Hawaiian Turkeyfish (<i>Pterois sphex</i>)	<i>nohu pinao</i>	18	17	15	3	39	11	132	27
Titan Scorpionfish (<i>Scorpaenopsis cacopsis</i>)	<i>nohu</i>	11	7	2	9	9	2	13	5

APPENDIX C

Comments and Applicant Responses

05/29/2020

Aloha ,

This written testimony is regarding the Moratorium on aquarium fishing and the need of an Environmental Impact Statement (EIS) AND a Cultural Impact Assessment (CIA) prior to issuance of Aquarium fishing permits.

I was appalled to learn that Governor Ige, vetoed Senate Bill 1240 introduced by Sen. Karl Rhoads (D-Oahu) in 2017, which would have halted the issuance of new aquarium permits, limited the ability to transfer valid permits and essentially phased the industry out of existence.

The bill introduced would have required an EIS prior to approval of all aquarium fishing permits. How can the government stand behind so called "scientific evidence " to determine that the practice is sustainable **without studying those impacts? Where is the evidence? How can the industry be self monitored and have no bag limit or] assessment of what our ocean resources are and what impacts this industry has on Native peoples ability to feed their families?**

I can testify that I have personally witnessed aquarium fish collector who had approximately 800 (his estimate) fish in his fish box and bragged about his catch. When questioned why so many, he replied, they have to collect as much as they can, because 80% of the fish will die before or during transport to the buyers. To me that is travesty as those that died could have been someones dinner or were part of the oceans healthy ecosystem feeding other fish or other carnivores in the natural balance of nature.

There are not enough DOCAR officers to monitor all sites where these practices are happening. This is evidenced by the recent aquarium fisher caught in Kawaihae with illegal numbers and types of fish . Without the call from a private citizen reporting the fisher to DLNR, that aquarium fisher would have not been caught and there would be no consequences. He got away to do it again and again.

That incident is just a sample of what happens in this industry which is impossible to monitor. The amount of money they make with little to no oversight outweighs the risk of getting caught.

I believe that an EIS and CIA needs to be done and to be objective, with no inherent conflict of interest or bias and therefore should not be done under DLNR.

I am concerned about the State spending of tax dollars up to \$500,000 for the EIS and CIA conducted by the University of Hawaii in support of the Office of Hawaiian Affairs, the Aha Moku Advisory Council and the Hunting, Farming and Fishing Association. Why are our tax dollars paying for the EIS and CIA at 100% when it should be the **Aquarium Fishing industry playing for it themselves??** Asking a state department to spend a half a million dollars on a **private industry** with so many other more important issues that can be supported such as supporting land based food production, water development, fire prevention activities, infrastructure for families, community self-sufficiency efforts. I believe the aquarium fisheries should pay for at least 50% of the funds and use of public money to insure there is no conflict of interest. DLNR needs to create a Marine Aquarium Fishing Advisory Group "to monitor activities addressed by this act" as well as to assist in the development of the aforementioned EIS and CIA partially paid for by the Aquarium fishery association.

It is my understanding that recreational permits allow for the capture of nearly 2,000 fish annually using fine mesh nets or traps. Considering the number of active permits in 2018, upward of 250,000 fish could potentially be caught and sold every year since the Aquarium fishing permits were not capped.

The State Supreme Court suspended aquarium fishing in September 2017. The decision served as resolution to a five-year legal battle after plaintiffs sued the DLNR for failing to comply with the Hawaii Environmental Policy Act by not adequately documenting environmental impacts of aquarium fishing before issuing permits.

Subsequent rulings by Hawaii's First Circuit Court, as the Environmental Court, upheld the Supreme Court's decision and took further steps to halt the practice until the DLNR came into compliance. **Is the DLNR now in compliance?**

Is the Hawaii Environmental Policy Act in compliance documenting the environmental impacts of aquarium fishing **before issuing permits?** **If so, how are the impacts being measured?** The Industry representatives have said they take only about 20 percent of relevant tropical fish species. **20% is huge** when you look at how many ocean users, gathers and harvesters there are on this island alone. I may not have scientific evidence regarding the decrease of fish but we can no longer fish to feed our families due to the obvious reduction of food fish, which is also documented by DLNR statistics indicating aquarium fish populations are on the decline.

Popular opinion has proven heavily skewed to one side of the issue. The Humane Society of the United States and for the Fishers conducted a survey in 2017, which found that 83 percent of residents polled said they were in favor of a **permanent ban on aquarium fishing in Hawaii.** I totally agree this **IS** the ultimate solution.

Hawaii's native communities depend on our ocean for connections, food, recreation and education. Whereas; Hawaiians fed over a million people without outside imports for thousands of years prior to Statehood. If cared for, and harvested for subsistence, we can sustain ourselves on our island and it's natural; resources. The ocean is our refrigerator and through rule making, compliance and enforcement following the **Native Hawaiian practices**, it would provide us the opportunity **to fish and feed our families**, and not for the enjoyment of people watching them in an aquarium. This is where the CIA comes into play and **must be taken into consideration** of the impacts these aquarium harvesting practices have on the host culture off Hawaii.

This industry needs to stop exploiting our natural resources or **at least** have much improved oversight by DLNR officers by **increasing the number of officers available to monitor every catch.** Permits updated annually and approved based on their **compliance to the rules as well as accurate reporting of their catch.** The reporting should include : the numbers, site, species and sizes every time they go out. If they are found to be **non-compliant, their license be revoked and banned from commercial harvesting of aquarium fish forever.**

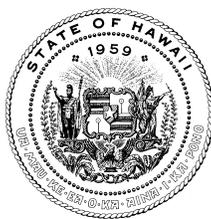
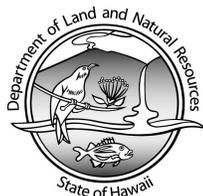
I truly believe that **if the penalties for violating the rules set forth are significant, there would be less violations and more self-regulating fishers.** We ALL must be held accountable to the same standards to insure the fish populations can sustain the needs for food for our people, in particular our Native people who were dependent upon the ocean as it was the main source of protein. We see fish as our food source and need to keep the natural ecosystems balanced.

Mahalo for allowing me the opportunity express my thoughts and respectfully ask that a full EIS and CIA be completed prior to issuing any permits for Moku O Hawai'i.

Sincerely,

Diane M. Kanealii
Executive Director
Kailapa Community Association

DAVID Y. IGE
GOVERNOR OF
HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF AQUATIC RESOURCES
1151 PUNCHBOWL STREET, ROOM 330
HONOLULU, HAWAII 96813

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
FIRST DEPUTY

M. KALEO MANUEL
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

June 22, 2020

Pet Industry Joint Advisory Council
c/o Mr. James Lynch
925 Fourth Ave., Suite 2900
Seattle, WA 98104

Comments on Draft Environmental Impact Statement: Issuance of Commercial Aquarium Permits and Commercial Marine Licenses for the Island of O‘ahu

The Department of Land & Natural Resources (DLNR), Division of Aquatic Resources (DAR) submits the following comments on the Draft Environmental Impact Statement (DEIS) on the Issuance of Commercial Aquarium Permits and Commercial Marine Licenses for the Island of O‘ahu.¹

Comments Regarding Population Estimates

- The DEIS seems to rely on data from the Coral Reef Ecosystems Program (CREP). Please provide a detailed explanation of how CREP survey data was used to produce the population estimates used in the DEIS, including how data outputs from CREP were converted, extrapolated, or otherwise utilized to provide the island-wide abundance estimate.
- The DEIS reports that the total hardbottom area for O‘ahu is 16,840 ha. DAR believes this is the estimated hardbottom of the island of Hawai‘i, not O‘ahu. If this is correct, please make the necessary recalculations and edits. Please provide citations for any data used.
- The applicant calculated island-wide abundance by multiplying observed fish densities by a single hardbottom estimate. DAR notes that fish density can vary widely across hardbottom habitat and can be largely influenced by other factors, such as rugosity. Rugosity and other

¹ As the approving agency, DLNR is responsible for determining whether the Environmental Impact Statement (EIS) adequately discloses the reasonably anticipated impacts of the proposed action. The EIS need not be exhaustive to the point of discussing all possible details bearing on the proposed action but will be upheld as adequate if it has been compiled in good faith and sets forth sufficient information to enable the decision-maker to consider fully the environmental factors involved and to make a reasoned decision after balancing the risks of harm to the environment against the benefits to be derived from the proposed action, as well as to make a reasoned choice between alternatives. Finding that the EIS adequately describes the environmental impacts of a project does not mean that the project must be approved. As stated above, it just provides information on which the agency can make a reasoned decision.

factors may be used to provide a more accurate estimated abundance beyond using hardbottom presence alone.

- In section 3.5 (Alternatives Considered but Dismissed), the applicant states that a moratorium on species experiencing population declines was not considered further because population trend data at the species level were not available. Throughout the DEIS, no population trends on the species or species group level are shown or discussed. The DEIS could have provided some analysis of species population trends using CREP data and life history characteristics. In the absence of any population trend analysis, it is improper to dismiss consideration of a moratorium on certain species. The Final Environmental Impact Statements (FEIS) should consider an alternative that proposes a moratorium on certain species based on the precautionary principle and lack of sufficient data.

Comments Regarding Total Allowable Catch (TAC), Daily Bag Limits, and Take

- The DEIS proposes no limits on the annual take of any species. Daily bag limits put an annual cap on the total number of fish taken by the 20 collectors alone but cannot safeguard against unlimited take unless the fishery will limit the entry of any additional collectors. For O'ahu, please provide a proposed "white list" that includes all marine species authorized for collectors to take under this permit. Proposed take limits for each species on the list would help DAR to understand the potential impacts of the proposed action.
- The DEIS does not adequately consider the impacts of the proposed action on a number of species (e.g., non-top 20, non-regulated species). If these species will be subject to collection under the proposed action, the applicant must analyze the impacts to these species. Alternatively, the proposed action could exclude collection of these species.
- The applicant uses the 2006 Ochavillo and Hodgson study to set the acceptable TAC range of 5%-25%. The DEIS only accounts for the take of commercial aquarium collection. The applicant's take estimates should include the combined harvest of all fisheries.
- In 2017, collections from the West Hawai'i Regional Fishery Management Area (WHRFMA) made up 65% of the statewide commercial aquarium fishery ex-vessel value. Following the closure of the WHRFMA to all aquarium collection, the importance of the O'ahu fishery in meeting market demand has increased. So too have the economic incentives to increase the take of species previously harvested in the WHRFMA, like yellow tang and kole. If granted fine mesh permits, the 20 collectors will have a near-monopoly on the collection of smaller fish species and size classes. The DEIS does not sufficiently analyze the potential for increased take on O'ahu to meet the increased demand created by the WHRFMA closure. The FEIS should provide an analysis of the historic levels of effort of the 20 collectors and propose limits, such as a TAC for each species, to enable DAR to understand the potential impacts of the proposed action.
- DAR recognizes that CREP data may not cover the preferred habitat of flame wrasse and other species found in waters beyond the Recreational Dive Limit. However, until deep-

water surveys occur, CREP estimates of abundance offered in the DEIS remain the best available data. The projected take of flame wrasse under the preferred alternative is 9.4% - 24.5%. It is improper to conclude that this level of take is less than significant. Please propose a TAC for the species.

- In section 5.2.1.3 of the DEIS, the applicant suggests that a daily bag limit of ten flame wrasse would result in a catch reduction of approximately 60%. This was based on an analysis of data reports starting in 2012, which found average catch to be 25.2 flame wrasse per trip. Aquarium fishers, especially those using fine mesh barrier nets, often work in groups of two or more permitted divers. Dive teams typically combine a day's catch into a single report instead of reporting per person. It is doubtful that the proposed daily bag limit of 10 flame wrasse per collector will reduce the amount of fish taken per trip by 60%. A team of three divers could take a combined 30 flame wrasse per trip under the proposed limit. To avoid this uncertainty about the impacts of a daily bag limit, DAR suggests proposing a TAC.
- The applicant suggests applying Ochavillo and Hodgson's (2006) TAC range of 5%-25% will ensure sustainable take. However, there is little discussion regarding the population health of the species in which this range should be applied to. The 2017 study by Friedlander et al.² suggests that fish biomass around the Main Hawaiian Islands (MHI) shows a significant negative correlation with population density. As expected, the biomass of "resource fish" species in O'ahu's nearshore waters was markedly lower than other areas in the MHI. Can a TAC of 5%-25% be applied to a depleted or overfished population and still be considered sustainable? Please provide discussion of the population statuses of commercially harvested aquarium species. Note any species collected by the O'ahu aquarium fishery that have been identified previously as overfished, in a state of overfishing, or otherwise population depleted.

Comments Regarding Collection Methods and Gear

- The use of fine mesh barrier nets seems conducive for the collection of species like kole and yellow tang which tend to occur in aggregations. Are fine mesh barrier nets also used to collect solitary or less abundant species like wrasses and butterflyfish? For example, would a 30 ft barrier net be used to target a single flame wrasse or hawkfish that hide within coral when threatened? If not, what methods are used? Please describe in detail any and all methods that may be used, even if the method does not involve the use of fine mesh net.
- The applicant cites Hawai'i Administrative Rules (HAR) § 13-77 as an existing limit on fine mesh collection. HAR § 13-77 sets bag limits and size restrictions on some species, but only if fine mesh is used. The effectiveness of this set of regulations is limited by the fact that a fisher possessing a fine mesh permit can also use non-fine mesh methods without the

² Friedlander AM, Donovan MK, Stamoulis KA, et al. Human-induced gradients of reef fish declines in the Hawaiian archipelago viewed through the lens of traditional management boundaries. *Aquatic Conserv: Mar Freshw Ecosyst.* 2017; 1-12. <https://doi.org/10.1002/aqc.2832>

specified limits. For example, fishers can plausibly use a fine mesh net to target juvenile yellow tang on one day, and larger mesh to target larger conspecifics without limit the next day. If granted fine mesh permits, the 20 collectors would, therefore, be able to collect without any size limits. Please suggest additional measures to eliminate the ability to take all size classes.

- Despite the ban on fine mesh nets, kole and yellow tang are still being collected with legal gear. For example, in area 412, yellow tang and kole take increased after the fine mesh ban. Are all or some of the 20 collectors currently using legal mesh ($\geq 2''$) to collect kole and yellow tang? Are the 20 collectors taking daily amounts of certain species or size ranges otherwise prohibited under HAR § 13-77? Will targeting of larger yellow tang and kole by the 20 collectors discontinue if fine mesh permits are granted?
- The applicant cites Tissot and Hallacher (2003) to support the claim that no significant coral damage occurs as the result of commercial aquarium collection. While DAR is aware of the study's findings, it seems unlikely that the methods described do not pose a threat to corals. DAR has received multiple photos of collectors in West Hawai'i setting nets directly on and moving close to live corals in addition to pictures showing coral damage resulting from anchoring. Whether the applicant agrees with the accounts of previous damage or not, the act of operating around live corals in this manner creates a risk of contact. Further, significant bleaching events occurring since the 2003 study have left many corals in degraded states, potentially lowering resilience to trauma. In the requested detailed description of collection methods, the applicant should include specific actions that will be taken to prevent contact with live coral including contact by anchors.

Comments regarding the Waikiki Marine Life Conservation District (MLCD) Expansion

- In the Expanded Waikiki MLCD and Flame Wrasse Conservation Alternative and the preferred Limited Permit Issuance Alternative, the applicant proposes that the existing Waikiki MLCD be expanded to the mouth of Honolulu Harbor's main basin. The applicant states that within the expanded MLCD, all commercial aquarium collection would be prohibited, and no additional regulations would be placed upon other fisheries. Currently, the Waikiki MLCD is a no-take zone with any type of commercial or non-commercial harvest of marine life prohibited (HAR § 13-36). If the current Waikiki MLCD is included in this expanded area, its current level of protection would be lost, as it would then be open to non-commercial aquarium take and other fishing activity. Is the applicant proposing that current protections of the Waikiki MCLD be lost as a part of this expansion? It may be more appropriate to characterize the proposed management measure as a permit condition and the eventual establishment of a new Marine Managed Area where commercial aquarium collection is prohibited.
- HAR § 13-36 defines the outer boundary of the existing Waikiki MLCD as "from the highwater mark seaward a distance of 500 yards or to the edge of the fringing reef, whichever is greater." Though not stated in the DEIS, Figure 2 seems to suggest that the proposed expanded Waikiki MLCD will have the same definition regarding its outer

boundary. Though this expansion would protect nearshore waters from collection, it would not protect areas just outside of its outer boundary. Deepwater species such as flame wrasse will still be open to collection with little to no protection given by the expanded MLCD. Assuming the protection of fish from aquarium collection is the goal, an expansion of the proposed MLCD border out to the Exclusive Economic Zone (3nm) or the entire closure of DAR fish report collection area 400 to commercial aquarium collection, may more effectively achieve this goal.

- DAR fish report collection area 400 (shown in figure 1 of the DEIS) includes the proposed expanded Waikiki MLCD area. In 2017 (pre-fine mesh ban), area 400 accounted for 4% of the total O'ahu finfish commercial aquarium catch. In 2018 (post-fine mesh ban), area 400 accounted for 5% of the total O'ahu finfish commercial aquarium catch. Considering that the proposed expanded Waikiki MLCD makes up only a portion of area 400, it is safe to assume fishery contribution from the proposed MLCD was less than 4%-5%. The proposed MLCD expansion area is not a commonly used area for commercial aquarium collectors, and its closure will likely have little positive impact.

Comments Regarding Population and Fishery Trends

- Please provide a discussion of how the O'ahu commercial aquarium fishery changed following the 2017 fine mesh ban. In the discussion, please address the following questions:
 1. How did finfish species composition change?
 2. Was there a change in the ratio of vertebrate to invertebrate catch?
 3. Were small-bodied fish species caught less frequently? Larger species targeted?
 4. How did gear use change?
- Please provide information regarding the historical fishing effort of the 20 collectors. Include a discussion of any previous changes in effort over time, and how it is expected to increase moving forward.
- DAR notes that unlike West Hawai'i, O'ahu does not have Fish Replenishment Areas (FRAs) in addition to MLCDs. With less inshore refugia, impacts due to aquarium harvest in O'ahu's nearshore waters may be more severe than in West Hawai'i. DAR recommends the applicant consider proposing the creation of a network of FRAs on O'ahu as an alternative or in addition to the Waikiki MLCD expansion.

Comments Regarding Endemism

- Of the top 20 fish species collected by the O'ahu commercial aquarium fishery, 10 are endemic to Hawai'i. Because these species are found nowhere else, it would seem prudent to offer them increased protection or at least provide a more in-depth consideration of the potential impact of take, especially if harvested by other fisheries (e.g., kole).

Comments Regarding Climate Change

- The extreme threat of climate change on our reefs warrants extreme caution in reviewing activities that may affect them. The FEIS should further discuss potential effects of present

and future levels of climate change including ocean warming, ocean acidification, coral bleaching, extreme storms, and resulting reef destruction and algae growth, and the potential for mitigating harm (i.e. further regulation) if the proposed fishery has unanticipated or greater negative effects due to climate change.

Comments Regarding Cultural Impacts

- The applicant notes that, regarding the Cultural Impact Assessment (CIA), “some interviewees expressed the belief that collection for aquarium purposes, regardless of impact or sustainability, is a violation of traditional beliefs.” This sentiment was heard in the interview of O’ahu cultural practitioner Noelani Puniwai, and numerous others interviewed in the West Hawai’i CIA. Yet, the applicant asserts that cultural resources are not under threat because a significant population decline in collected species is not anticipated. This ignores the fact that these individuals believe that any take for commercial marine purposes is unacceptable. In light of this belief, it is improper for the DEIS to conclude that the impact to cultural resources is less than significant.

General Comments

- The Board of Land and Natural Resources (Board) recently declined to accept a FEIS regarding aquarium collection in the WHRFMA (see attached Findings and Reasons for Non Acceptance of FEIS). DAR echoes many of the concerns noted by the Board and notes that the Board’s rationale for rejecting the FEIS may similarly apply to this DEIS. DAR suggests the applicant consider the Board’s reasoning to inform the applicant’s forthcoming FEIS.

Attached:
Findings and Reasons for Non Acceptance of FEIS

DAVID Y. IGE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

JADE T. BUTAY
DIRECTOR

Deputy Directors
LYNN A.S. ARAKI-REGAN
DEREK J. CHOW
ROSS M. HIGASHI
EDWIN H. SNIFFEN

IN REPLY REFER TO:
STP 20-032
STP 8.2910

May 15, 2020

TO: SUZANNE D. CASE, CHAIRPERSON
DEPARTMENT OF LAND AND NATURAL RESOURCES

ATTN: DAVID SAKODA, FISHERIES PROGRAM MANAGER
DEPARTMENT OF LAND AND NATURAL RESOURCES,
DEPARTMENT OF AQUATIC RESOURCES

FROM: JADE T. BUTAY 
DIRECTOR OF TRANSPORTATION

SUBJECT: OAHU COMMERCIAL AQUARIUM FISHING PERMIT
DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS)
OAHU, HAWAII

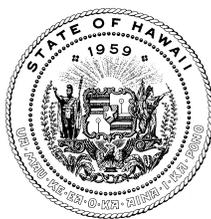
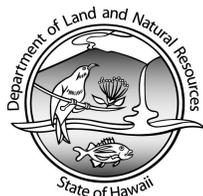
The Hawaii Department of Transportation (HDOT) understands the Pet Industry Joint Advisory Council (PIJAC) has prepared the subject DEIS to evaluate the impacts of issuing 20 Commercial Aquarium Permits on the island of Oahu.

In general, HDOT has no comments on the proposed permitting for commercial aquarium fishing; however due to United States Department of Homeland Security requirements and HDOT safety requirements for our commercial harbors, the HDOT is opposed to any permitting for the commercial collection of aquarium fish within any HDOT commercial harbor.

If there are any questions, please contact Mr. Blayne Nikaido of the HDOT Statewide Transportation Planning Office at (808) 831-7979 or via email at blayne.h.nikaido@hawaii.gov.

c: Terry VanDeWalle – Stantec Consulting Services Inc.

DAVID Y. IGE
GOVERNOR OF
HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
DIVISION OF AQUATIC RESOURCES
1151 PUNCHBOWL STREET, ROOM 330
HONOLULU, HAWAII 96813

SUZANNE D. CASE
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
FIRST DEPUTY

M. KALEO MANUEL
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

June 22, 2020

Pet Industry Joint Advisory Council
c/o Mr. James Lynch
925 Fourth Ave., Suite 2900
Seattle, WA 98104

Comments on Draft Environmental Impact Statement: Issuance of Commercial Aquarium Permits and Commercial Marine Licenses for the Island of O‘ahu

The Department of Land & Natural Resources (DLNR), Division of Aquatic Resources (DAR) submits the following comments on the Draft Environmental Impact Statement (DEIS) on the Issuance of Commercial Aquarium Permits and Commercial Marine Licenses for the Island of O‘ahu.¹

Comments Regarding Population Estimates

- The DEIS seems to rely on data from the Coral Reef Ecosystems Program (CREP). Please provide a detailed explanation of how CREP survey data was used to produce the population estimates used in the DEIS, including how data outputs from CREP were converted, extrapolated, or otherwise utilized to provide the island-wide abundance estimate.
- The DEIS reports that the total hardbottom area for O‘ahu is 16,840 ha. DAR believes this is the estimated hardbottom of the island of Hawai‘i, not O‘ahu. If this is correct, please make the necessary recalculations and edits. Please provide citations for any data used.
- The applicant calculated island-wide abundance by multiplying observed fish densities by a single hardbottom estimate. DAR notes that fish density can vary widely across hardbottom habitat and can be largely influenced by other factors, such as rugosity. Rugosity and other

¹ As the approving agency, DLNR is responsible for determining whether the Environmental Impact Statement (EIS) adequately discloses the reasonably anticipated impacts of the proposed action. The EIS need not be exhaustive to the point of discussing all possible details bearing on the proposed action but will be upheld as adequate if it has been compiled in good faith and sets forth sufficient information to enable the decision-maker to consider fully the environmental factors involved and to make a reasoned decision after balancing the risks of harm to the environment against the benefits to be derived from the proposed action, as well as to make a reasoned choice between alternatives. Finding that the EIS adequately describes the environmental impacts of a project does not mean that the project must be approved. As stated above, it just provides information on which the agency can make a reasoned decision.

factors may be used to provide a more accurate estimated abundance beyond using hardbottom presence alone.

- In section 3.5 (Alternatives Considered but Dismissed), the applicant states that a moratorium on species experiencing population declines was not considered further because population trend data at the species level were not available. Throughout the DEIS, no population trends on the species or species group level are shown or discussed. The DEIS could have provided some analysis of species population trends using CREP data and life history characteristics. In the absence of any population trend analysis, it is improper to dismiss consideration of a moratorium on certain species. The Final Environmental Impact Statements (FEIS) should consider an alternative that proposes a moratorium on certain species based on the precautionary principle and lack of sufficient data.

Comments Regarding Total Allowable Catch (TAC), Daily Bag Limits, and Take

- The DEIS proposes no limits on the annual take of any species. Daily bag limits put an annual cap on the total number of fish taken by the 20 collectors alone but cannot safeguard against unlimited take unless the fishery will limit the entry of any additional collectors. For O'ahu, please provide a proposed "white list" that includes all marine species authorized for collectors to take under this permit. Proposed take limits for each species on the list would help DAR to understand the potential impacts of the proposed action.
- The DEIS does not adequately consider the impacts of the proposed action on a number of species (e.g., non-top 20, non-regulated species). If these species will be subject to collection under the proposed action, the applicant must analyze the impacts to these species. Alternatively, the proposed action could exclude collection of these species.
- The applicant uses the 2006 Ochavillo and Hodgson study to set the acceptable TAC range of 5%-25%. The DEIS only accounts for the take of commercial aquarium collection. The applicant's take estimates should include the combined harvest of all fisheries.
- In 2017, collections from the West Hawai'i Regional Fishery Management Area (WHRFMA) made up 65% of the statewide commercial aquarium fishery ex-vessel value. Following the closure of the WHRFMA to all aquarium collection, the importance of the O'ahu fishery in meeting market demand has increased. So too have the economic incentives to increase the take of species previously harvested in the WHRFMA, like yellow tang and kole. If granted fine mesh permits, the 20 collectors will have a near-monopoly on the collection of smaller fish species and size classes. The DEIS does not sufficiently analyze the potential for increased take on O'ahu to meet the increased demand created by the WHRFMA closure. The FEIS should provide an analysis of the historic levels of effort of the 20 collectors and propose limits, such as a TAC for each species, to enable DAR to understand the potential impacts of the proposed action.
- DAR recognizes that CREP data may not cover the preferred habitat of flame wrasse and other species found in waters beyond the Recreational Dive Limit. However, until deep-

water surveys occur, CREP estimates of abundance offered in the DEIS remain the best available data. The projected take of flame wrasse under the preferred alternative is 9.4% - 24.5%. It is improper to conclude that this level of take is less than significant. Please propose a TAC for the species.

- In section 5.2.1.3 of the DEIS, the applicant suggests that a daily bag limit of ten flame wrasse would result in a catch reduction of approximately 60%. This was based on an analysis of data reports starting in 2012, which found average catch to be 25.2 flame wrasse per trip. Aquarium fishers, especially those using fine mesh barrier nets, often work in groups of two or more permitted divers. Dive teams typically combine a day's catch into a single report instead of reporting per person. It is doubtful that the proposed daily bag limit of 10 flame wrasse per collector will reduce the amount of fish taken per trip by 60%. A team of three divers could take a combined 30 flame wrasse per trip under the proposed limit. To avoid this uncertainty about the impacts of a daily bag limit, DAR suggests proposing a TAC.
- The applicant suggests applying Ochavillo and Hodgson's (2006) TAC range of 5%-25% will ensure sustainable take. However, there is little discussion regarding the population health of the species in which this range should be applied to. The 2017 study by Friedlander et al.² suggests that fish biomass around the Main Hawaiian Islands (MHI) shows a significant negative correlation with population density. As expected, the biomass of "resource fish" species in O'ahu's nearshore waters was markedly lower than other areas in the MHI. Can a TAC of 5%-25% be applied to a depleted or overfished population and still be considered sustainable? Please provide discussion of the population statuses of commercially harvested aquarium species. Note any species collected by the O'ahu aquarium fishery that have been identified previously as overfished, in a state of overfishing, or otherwise population depleted.

Comments Regarding Collection Methods and Gear

- The use of fine mesh barrier nets seems conducive for the collection of species like kole and yellow tang which tend to occur in aggregations. Are fine mesh barrier nets also used to collect solitary or less abundant species like wrasses and butterflyfish? For example, would a 30 ft barrier net be used to target a single flame wrasse or hawkfish that hide within coral when threatened? If not, what methods are used? Please describe in detail any and all methods that may be used, even if the method does not involve the use of fine mesh net.
- The applicant cites Hawai'i Administrative Rules (HAR) § 13-77 as an existing limit on fine mesh collection. HAR § 13-77 sets bag limits and size restrictions on some species, but only if fine mesh is used. The effectiveness of this set of regulations is limited by the fact that a fisher possessing a fine mesh permit can also use non-fine mesh methods without the

² Friedlander AM, Donovan MK, Stamoulis KA, et al. Human-induced gradients of reef fish declines in the Hawaiian archipelago viewed through the lens of traditional management boundaries. *Aquatic Conserv: Mar Freshw Ecosyst.* 2017; 1-12. <https://doi.org/10.1002/aqc.2832>

specified limits. For example, fishers can plausibly use a fine mesh net to target juvenile yellow tang on one day, and larger mesh to target larger conspecifics without limit the next day. If granted fine mesh permits, the 20 collectors would, therefore, be able to collect without any size limits. Please suggest additional measures to eliminate the ability to take all size classes.

- Despite the ban on fine mesh nets, kole and yellow tang are still being collected with legal gear. For example, in area 412, yellow tang and kole take increased after the fine mesh ban. Are all or some of the 20 collectors currently using legal mesh ($\geq 2''$) to collect kole and yellow tang? Are the 20 collectors taking daily amounts of certain species or size ranges otherwise prohibited under HAR § 13-77? Will targeting of larger yellow tang and kole by the 20 collectors discontinue if fine mesh permits are granted?
- The applicant cites Tissot and Hallacher (2003) to support the claim that no significant coral damage occurs as the result of commercial aquarium collection. While DAR is aware of the study's findings, it seems unlikely that the methods described do not pose a threat to corals. DAR has received multiple photos of collectors in West Hawai'i setting nets directly on and moving close to live corals in addition to pictures showing coral damage resulting from anchoring. Whether the applicant agrees with the accounts of previous damage or not, the act of operating around live corals in this manner creates a risk of contact. Further, significant bleaching events occurring since the 2003 study have left many corals in degraded states, potentially lowering resilience to trauma. In the requested detailed description of collection methods, the applicant should include specific actions that will be taken to prevent contact with live coral including contact by anchors.

Comments regarding the Waikiki Marine Life Conservation District (MLCD) Expansion

- In the Expanded Waikiki MLCD and Flame Wrasse Conservation Alternative and the preferred Limited Permit Issuance Alternative, the applicant proposes that the existing Waikiki MLCD be expanded to the mouth of Honolulu Harbor's main basin. The applicant states that within the expanded MLCD, all commercial aquarium collection would be prohibited, and no additional regulations would be placed upon other fisheries. Currently, the Waikiki MLCD is a no-take zone with any type of commercial or non-commercial harvest of marine life prohibited (HAR § 13-36). If the current Waikiki MLCD is included in this expanded area, its current level of protection would be lost, as it would then be open to non-commercial aquarium take and other fishing activity. Is the applicant proposing that current protections of the Waikiki MCLD be lost as a part of this expansion? It may be more appropriate to characterize the proposed management measure as a permit condition and the eventual establishment of a new Marine Managed Area where commercial aquarium collection is prohibited.
- HAR § 13-36 defines the outer boundary of the existing Waikiki MLCD as "from the highwater mark seaward a distance of 500 yards or to the edge of the fringing reef, whichever is greater." Though not stated in the DEIS, Figure 2 seems to suggest that the proposed expanded Waikiki MLCD will have the same definition regarding its outer

boundary. Though this expansion would protect nearshore waters from collection, it would not protect areas just outside of its outer boundary. Deepwater species such as flame wrasse will still be open to collection with little to no protection given by the expanded MLC. Assuming the protection of fish from aquarium collection is the goal, an expansion of the proposed MLC border out to the Exclusive Economic Zone (3nm) or the entire closure of DAR fish report collection area 400 to commercial aquarium collection, may more effectively achieve this goal.

- DAR fish report collection area 400 (shown in figure 1 of the DEIS) includes the proposed expanded Waikiki MLC area. In 2017 (pre-fine mesh ban), area 400 accounted for 4% of the total O'ahu finfish commercial aquarium catch. In 2018 (post-fine mesh ban), area 400 accounted for 5% of the total O'ahu finfish commercial aquarium catch. Considering that the proposed expanded Waikiki MLC makes up only a portion of area 400, it is safe to assume fishery contribution from the proposed MLC was less than 4%-5%. The proposed MLC expansion area is not a commonly used area for commercial aquarium collectors, and its closure will likely have little positive impact.

Comments Regarding Population and Fishery Trends

- Please provide a discussion of how the O'ahu commercial aquarium fishery changed following the 2017 fine mesh ban. In the discussion, please address the following questions:
 1. How did finfish species composition change?
 2. Was there a change in the ratio of vertebrate to invertebrate catch?
 3. Were small-bodied fish species caught less frequently? Larger species targeted?
 4. How did gear use change?
- Please provide information regarding the historical fishing effort of the 20 collectors. Include a discussion of any previous changes in effort over time, and how it is expected to increase moving forward.
- DAR notes that unlike West Hawai'i, O'ahu does not have Fish Replenishment Areas (FRAs) in addition to MLCs. With less inshore refugia, impacts due to aquarium harvest in O'ahu's nearshore waters may be more severe than in West Hawai'i. DAR recommends the applicant consider proposing the creation of a network of FRAs on O'ahu as an alternative or in addition to the Waikiki MLC expansion.

Comments Regarding Endemism

- Of the top 20 fish species collected by the O'ahu commercial aquarium fishery, 10 are endemic to Hawai'i. Because these species are found nowhere else, it would seem prudent to offer them increased protection or at least provide a more in-depth consideration of the potential impact of take, especially if harvested by other fisheries (e.g., kole).

Comments Regarding Climate Change

- The extreme threat of climate change on our reefs warrants extreme caution in reviewing activities that may affect them. The FEIS should further discuss potential effects of present

and future levels of climate change including ocean warming, ocean acidification, coral bleaching, extreme storms, and resulting reef destruction and algae growth, and the potential for mitigating harm (i.e. further regulation) if the proposed fishery has unanticipated or greater negative effects due to climate change.

Comments Regarding Cultural Impacts

- The applicant notes that, regarding the Cultural Impact Assessment (CIA), “some interviewees expressed the belief that collection for aquarium purposes, regardless of impact or sustainability, is a violation of traditional beliefs.” This sentiment was heard in the interview of O’ahu cultural practitioner Noelani Puniwai, and numerous others interviewed in the West Hawai’i CIA. Yet, the applicant asserts that cultural resources are not under threat because a significant population decline in collected species is not anticipated. This ignores the fact that these individuals believe that any take for commercial marine purposes is unacceptable. In light of this belief, it is improper for the DEIS to conclude that the impact to cultural resources is less than significant.

General Comments

- The Board of Land and Natural Resources (Board) recently declined to accept a FEIS regarding aquarium collection in the WHRFMA (see attached Findings and Reasons for Non Acceptance of FEIS). DAR echoes many of the concerns noted by the Board and notes that the Board’s rationale for rejecting the FEIS may similarly apply to this DEIS. DAR suggests the applicant consider the Board’s reasoning to inform the applicant’s forthcoming FEIS.

Attached:
Findings and Reasons for Non Acceptance of FEIS

DAVID Y. IGE
GOVERNOR



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

JADE T. BUTAY
DIRECTOR

Deputy Directors
LYNN A.S. ARAKI-REGAN
DEREK J. CHOW
ROSS M. HIGASHI
EDWIN H. SNIFFEN

IN REPLY REFER TO:
STP 20-032
STP 8.2910

May 15, 2020

TO: SUZANNE D. CASE, CHAIRPERSON
DEPARTMENT OF LAND AND NATURAL RESOURCES

ATTN: DAVID SAKODA, FISHERIES PROGRAM MANAGER
DEPARTMENT OF LAND AND NATURAL RESOURCES,
DEPARTMENT OF AQUATIC RESOURCES

FROM: JADE T. BUTAY 
DIRECTOR OF TRANSPORTATION

SUBJECT: OAHU COMMERCIAL AQUARIUM FISHING PERMIT
DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS)
OAHU, HAWAII

The Hawaii Department of Transportation (HDOT) understands the Pet Industry Joint Advisory Council (PIJAC) has prepared the subject DEIS to evaluate the impacts of issuing 20 Commercial Aquarium Permits on the island of Oahu.

In general, HDOT has no comments on the proposed permitting for commercial aquarium fishing; however due to United States Department of Homeland Security requirements and HDOT safety requirements for our commercial harbors, the HDOT is opposed to any permitting for the commercial collection of aquarium fish within any HDOT commercial harbor.

If there are any questions, please contact Mr. Blayne Nikaido of the HDOT Statewide Transportation Planning Office at (808) 831-7979 or via email at blayne.h.nikaido@hawaii.gov.

c: Terry VanDeWalle – Stantec Consulting Services Inc.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 2:09:35 AM

Name: Arthur Adachi

Email: artngina@icloud.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 7:02:06 PM

Name: Elizabeth Admire

Email: ea2701@icloud.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Sunday, June 21, 2020 11:38:42 PM

Name: George Aelion

Email: gjlaelion@hotmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 6, 2020 8:00:46 AM

Name: Nicholas Alspach

Email: metallicafannick@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

As an aquarium fish store employee, it is often difficult to ensure that the fish we receive from outside the country are from a sustainable source, the red sea and Australia are the best options, but have a cost premium largely related to shipping. To have Hawaii back in the mix would help ensure that we have a closer source for sustainably caught fish, as well as give us an opportunity to support American companies. Thank you for your consideration.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 2, 2020 9:18:24 PM

Name: Asia Alualu

Email: aalualu01@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited

number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 12:19:59 PM

Name: Alex Anderson

Email: dendro.pumilio@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Sunday, June 21, 2020 8:26:25 PM

Name: Tony Andresen

Email: tonyandresen10@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Friday, June 5, 2020 6:27:27 AM

Name:

Email:

State Of Residency:

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Sunday, June 7, 2020 1:37:53 AM

Name:

Email:

State Of Residency:

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Thursday, June 11, 2020 7:12:52 PM

Name:

Email:

State Of Residency:

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 13, 2020 9:54:17 PM

Name:

Email:

State Of Residency:

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 17, 2020 1:25:18 PM

Name:

Email:

State Of Residency:

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 17, 2020 2:35:57 PM

Name:

Email:

State Of Residency:

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Sunday, June 21, 2020 10:23:11 PM

Name:

Email:

State Of Residency:

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 11:15:48 AM

Name:

Email:

State Of Residency:

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 2, 2020 5:06:36 PM

Name:

Email:

State Of Residency:

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 16, 2020 3:24:03 AM

Name: Murray Armstrong

Email: arm_mur@hotmail.co

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 2, 2020 9:22:05 PM

Name: brielle avila

Email: valeriecopado2608@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited

number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 11:01:22 AM

Name: Donna Ayers

Email: donna.ayers@sunpet.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 13, 2020 4:05:02 PM

Name: Kyle Baird

Email: kbaird626@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Sunday, June 7, 2020 2:21:24 AM

Name: Jacob Balatico

Email: jbalatico216@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 2, 2020 6:40:38 PM

Name: Charles Baring

Email: springcoralfarms@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited

number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 8:21:19 AM

Name: Stephen Barlow

Email: stephenbarlow@barlowdesigns.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 2, 2020 6:26:23 PM

Name: kirk barth

Email: kirkbarth@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited

number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 5:14:24 AM

Name: Gayton Bartlett

Email: gcbart1987@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 15, 2020 3:53:25 PM

Name: Tracey Bass

Email: saltwood57@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

Protect Hawaii's Sea Life Dear Hawaii, It's Our Direct Removal of Marine Life Causing a Decline in Numbers and the Extinction of Many Species in our Ever Growing Population of Aquariums Needing More from a Static Marine Environment. Any Livelihood that Destroys and Wastes the Environment and Wildlife For No Good Reason, should be apart of our Past for the Sake of our Future and Theirs. Learning and Teaching from our Mistakes is How we Grow and become Better People Living Symbiotically with Nature. Please Protect Our Environment and Wildlife from Needlessly being Wasted, for it would be Better to Feed a Whole Country with Fish from the Sea than to Torture the Same Amount in an Aquarium for Fun. Sincerely, Someone who found Honor in a New Livelihood, Earning Freedom for Others. Mahalo <https://www.reef2rainforest.com/2020/06/10/call-for-support-from-hawaiian-fisherman-and-marine-fish-wholesaler/>

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 13, 2020 1:46:10 PM

Name: Gerald Bassleer

Email: gerald@bassleer.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

As a fish doctor in the ornamental fish industry I know that Hawaii had the one of the best sources of good quality fish for the aquarium industry!

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 5:04:15 AM

Name: Alan Bernstein

Email: asbern30@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 2, 2020 6:39:55 PM

Name: Dalton Bilecki

Email: daltonbilecki@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited

number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Sunday, June 21, 2020 5:56:19 PM

Name: Rachel Billstein

Email: rachelbillstein@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Sunday, June 21, 2020 5:39:05 PM

Name: Andrew Black

Email: a.black70@yahoo.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 13, 2020 12:22:25 PM

Name: Ed Blair

Email: jove010@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 20, 2020 1:14:13 AM

Name: Ed Blair

Email: jove010@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

Closure of the fishery would have a negative impact on local employment. The resources affected (Aquarium fisheries in Hawaii) are sustainable and closure is not warranted. The economic impact of the aquarium trade is a positive for the State of Hawaii.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 12:22:28 PM

Name: Cameron Blewitt

Email: roneschones@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 11:15:45 AM

Name: Blake Blewitt

Email: blake@riftcichlids.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 11:16:29 AM

Name: Heather Blewitt

Email: hwgarcia@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 16, 2020 1:26:45 PM

Name: MICHAEL BLOSS

Email: biomekanic@yahoo.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 13, 2020 10:42:14 PM

Name: Jason Boehm

Email: jasonboehm1@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 12:28:41 PM

Name: Garret Bowman

Email: gurt.bowman@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 13, 2020 10:22:49 PM

Name: Stephanie Brider

Email: sbrider01@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I have been keeping and caring for saltwater fish for many years. I value Hawaiian fisherman and the care they take of collecting fish for the Aquarium hobby. Hawaii is the best source for healthy vibrant fish, that are collected with care, and with little impact on the environment including the coral reefs. Please reconsider taking away the livelihoods of the Hawaiian fisherman.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 15, 2020 1:34:05 PM

Name: Robyn Bright

Email: rbrightsun@yahoo.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I have been in the aquarium fish industry for over 40 years and have a degree in biology. Again and again, it has been proven that the aquarium fish collection around Hawaii has not hurt or decreased the fish populations. It's only the Animal rights groups that want to stop any pet ownership, and that includes fish. This is a fact, not an opinion.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 20, 2020 12:56:00 PM

Name: Karen Brittain

Email: kbrittai@hawaii.edu

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

I would like to see more closed zones around Oahu similar to those in Kona. I am involved in aquaculture of fishes.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 2, 2020 7:18:38 PM

Name: Edward Brown

Email: nedebrown@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

As a past 10 year resident of Hawaii, an avid snorkeler and scuba diver, and a past employee of The Nature Conservancy in Hawaii, I am a strong supporter of aquatic conservation and also very familiar with the impacts of the various fisheries on the aquatic environment. Near shore aquarium fishing is already highly regulated and repeated research has shown that it is being well managed with limited impact. Small mesh nets are the most effective and efficient means of aquarium fish capture, and have virtually no bycatch. This DEIS ensures that effective management of this fishery will continue and be improved even further. I highly support this DEIS.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 3:36:56 PM

Name: Jennifer Buckendorf

Email: j_buckendorf2004@hotmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 10:05:35 AM

Name: Chris Buerner

Email: Chris.buerner@qualitymarine.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 4:22:29 PM

Name: Lee Burkett

Email: leeburkett47@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: Oahu DEIS
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 2:06:41 AM

Name: Meri Burkhardt

Email: meriburkhardt@yahoo.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 13, 2020 10:11:04 PM

Name: Mike Caggiano

Email: mike@jerryspowerwashing.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I have been a reef keeper for over 20 years

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 4:41:56 PM

Name: Peter Caldwell

Email: pekelo@pekelocald.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 16, 2020 1:08:31 PM

Name: Ethan Camden

Email: Ethancamden626@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Thursday, June 4, 2020 9:06:39 AM

Name: Matthew Carberry

Email: matthewc@charter.net

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

My name is Matthew Carberry. I am a marine biologist and operate Sustainable Aquatics (SA), a marine ornamental fish hatchery in East Tennessee. SA is an unusual business in that we both breed fish in-house and import fish for resale. I have visited other hatcheries as well as collection stations around the world, including in Hawaii. We have the belief that both practices (hatchery production and wild collection) are necessary to support a healthy marine ornamental hobby and are both indeed sustainable for all parties, most importantly the ecology of native collecting areas. After reviewing the recent DEIS, I remain supportive of a well-managed sustainable fishery for Hawaii aquarium fishes.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 2, 2020 5:18:59 PM

Name: Bruce Carlson

Email: exallias2@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited

number of boats which are registered. This will make fishery management practical for law enforcement.

When all commercial and recreational fisheries in Hawaii are held to the same high standards as the aquarium fishery, then maybe there will be hope for all fish populations here. Instead, the one nearshore fishery that has been monitored and managed extensively for decades, i.e., the aquarium fishery, is the one that has been targeted for extreme scrutiny and closure, while the other fisheries that extract much greater biomass are all but ignored. The only good fish is a dead one apparently.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 10:22:28 PM

Name: Paula Carlson

Email: pbcarlson3@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I am a Marine Biologist who has worked in the aquarium industry for more than 30 years and support legal, sustainable fishing in Hawaii's well managed fishery and realize its importance to the local economy.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 17, 2020 2:35:54 PM

Name: Ulla Carmiencke

Email: uscarmiencke@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I respectfully request you apply the same standards used for other fisheries to this fishery. In doing so you will find this is a great fishery due to it being highly sustainable.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 2, 2020 10:05:01 PM

Name: Teqwyn Cash

Email: teqwynanela01@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited

number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 2, 2020 8:17:40 PM

Name: Leonardo Catoni

Email: lcatoni1@yahoo.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited

number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 11:09:19 AM

Name: Ryan Cessna

Email: ryan.cessna@segrestfarms.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I have a Degree in Aquaculture and have been in the industry for many years. I know how much of an important impact this makes on the society that we live in today and is more beneficial than most people know.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 6, 2020 4:49:05 PM

Name: Jason Chamberlain

Email: jason.chamberlain@mytmc.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I support the aquarium industry in Hawaii 100%

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 2, 2020 9:04:55 PM

Name: Ticura Chanthakham

Email: ticuraxchanx@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited

number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 2, 2020 8:20:54 PM

Name: Tionna Chanthakham

Email: chantionna@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited

number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 9, 2020 2:35:35 PM

Name: jenny choo

Email: newyorkreefaquatic@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 6:48:14 AM

Name: michael clark

Email: mclark113@me.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 12:06:22 PM

Name: Gary Coffman

Email: austinaquadome@aol.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 13, 2020 1:02:27 PM

Name: David Cohen

Email: jafdas1@yahoo.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Sunday, June 7, 2020 3:04:08 AM

Name: pierson connors

Email: pcon426@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 3:30:14 PM

Name: Josh Cook

Email: aquariumworldlafayette@yahoo.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 13, 2020 4:00:45 PM

Name: Jason Cormier

Email: jason.a.cormier27@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 13, 2020 2:09:56 PM

Name: Art Costantino

Email: artcostantino@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

Fishing by using small hand nets is sustainable and minimally impactful.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 2, 2020 8:15:15 PM

Name: Donna Cottrell

Email: donnacottrell3@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited

number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 2, 2020 8:17:22 PM

Name: kaya cottrell

Email: kayacottrell@icloud.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited

number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Thursday, June 4, 2020 10:03:58 PM

Name: madyson cowan madyson cowan

Email: madysoncowan.gm.6117771@blackjunky.life

State Of Residency:

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainably yielded to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2 inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Sunday, June 7, 2020 8:19:40 PM

Name: CARL CRAWFORD

Email: CARL@POHINA.COM

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I HELD AQUARIUM CATCH PERMITS IN THE MID 70'S TO EARLY 80'S AND HAVE BEEN ACTIVE IN THE PET INDUSTRY FOR OVER 50 YEARS (STILL ACTIVE). I STILL HOLD A COMMERCIAL FISHING PERMIT IN HAWAII AND ALSO HELD AN AQUARIUM PERMIT UNTIL THEY WERE CANCELLED. I AM IN THE ISLANDS 6 TO 8 WEEKS A YEAR WORKING IN THE PET INDUSTRY. OAHU'S AQUARIUM FISHERY IS THE BEST REGULATED FISHERY I KNOW OF IN THE WORLD AND HAS MY COMPLETE SUPPORT !!!!!

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Thursday, June 4, 2020 9:14:18 AM

Name: Richard Crowe

Email: rcinbs@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 4:16:02 AM

Name: Kaili Cruz

Email: kailicruz0@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 10, 2020 11:19:45 PM

Name: Bernardo Cuadra

Email: b_byrd_21@hotmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Sunday, June 7, 2020 4:19:11 AM

Name: Chris Cumberland

Email: evilcc82@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Sunday, June 21, 2020 9:21:21 PM

Name: Louis Curran

Email: bmoreloulou@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

As an ardent environmentalist and sustainable agriculture & aquaculture advocate, I support the environmental impact analysis process wholeheartedly. Tropical fish tanks and other aquaria introduce innumerable people to the wonders and sensitivity of ocean life, engendering urgently needed appreciation for nature and our human role in it.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 9:05:56 PM

Name: luke daily

Email: lukedaily4300@hotmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 13, 2020 9:54:04 PM

Name: Scott Daw

Email: exasperatus2002@yahoo.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 13, 2020 5:36:01 PM

Name: Joseph DeBoe

Email: jdeboe24@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 3:38:58 PM

Name: dom denora

Email: reefcodom@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Thursday, June 4, 2020 11:29:21 AM

Name: Kim Dixon

Email: kim.dixon@segrestfarms.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

The livelihood of me & my family depend upon sustainable animals

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Friday, June 19, 2020 4:55:38 PM

Name: Stan Douglas

Email: stan.douglas@btinternet.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I first started reefkeeping in 1976 and it is my wholehearted belief that a properly managed reef fishery must be better than one left to it's own devices. Do it right and do it sustainably.
Stan

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 20, 2020 6:30:53 PM

Name: Lawrence Drexler

Email: ljdrexler@att.net

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 1:26:14 PM

Name: Adam Dugger

Email: adamduggerpaw@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 3:38:39 PM

Name: brian dunleavy

Email: bridun22@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 9:05:32 PM

Name: brian dunleavy

Email: bridun22@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 6, 2020 1:38:54 AM

Name: Karen Dureg

Email: kmurai0@yahoo.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

fishes are great for people to watch so let's watch them and learn

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 8:58:38 AM

Name: Philip Economou

Email: pje1652@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 8, 2020 1:53:09 PM

Name: John Edmonds

Email: j.edmonds83@sbcglobal.net

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 13, 2020 8:17:38 PM

Name: Bertus Eksteen

Email: bertus_eksteen@hotmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 13, 2020 5:56:28 PM

Name: Bob Ellis

Email: warriorselite@comcast.net

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 8:13:44 AM

Name: Richard Ellis

Email: rellis@12to20.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 1:39:13 PM

Name: Tim Evans

Email: tim.evans@segrestfarms.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

25 years in the tropical fish industry. Proper care and handling along with responsible collecting can be a benefit to aquatics overall. We all want a sustainable stock and demand the best out of our suppliers.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 15, 2020 8:29:05 AM

Name: Robert Farnsworth

Email: rfarnsworth@bulkreefsupply.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

Aquarium collection practices are among the most sustainable in the world from what I understand. Specifically in Hawaii. Funds and efforts are much better spent conserving the environment as a whole and regulating the extensive impact of tourists and commercial fishing in this unique and pristine ecosystem. I fully support a very regulated and sustainable aquarium fish collection program that will not have a significant impact on local wildlife as deemed true by unbiased, peer reviewed, scientific research and data.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 13, 2020 12:22:04 PM

Name: Bryan Farrish

Email: info@santa-monica.cc

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

Allowing more citizens to purchase aquarium fish will enable them to understand natural habitats and thus participate more in helping the habitats.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 13, 2020 1:28:45 PM

Name: Henry Feddern

Email: hunter@terranova.net

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

Additional comments: I have a PhD degree in Marine Biology and Ichthyology from the University of Miami, in 1968. I serve on the Coral Advisory Panel of the Gulf of Mexico and South Atlantic Fishery Management Councils (Federal). I advise the Florida Fishery Management Commission on catch limits.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 13, 2020 1:19:17 PM

Name: Henry Feddern

Email: hunter@terranova.net

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I and colleagues in the Florida Marine Life Association have been involved in the Marine Life Fishery for over 50 years, and have worked closely with the Federal and State fishery managers to develop safe methods and catch limits of the organisms involved. We have helped evolve the fishery into to a limited-entry system that has satisfied fishermen, the governments involved, and the environmentalists. I don't understand why some Hawaiians are so opposed to a sustainable fishery.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 7:37:50 AM

Name: William Fender

Email: pfender1@comcast.net

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 2, 2020 7:37:40 PM

Name: David Fernley

Email: fernley@comcast.net

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited

number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Sunday, June 21, 2020 4:07:29 PM

Name: ELISE FERNLEY

Email: elise_cfh@hawaiiantel.net

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I have been working in the retail sector of the tropical fish industry for almost twenty years. The collectors I have dealt with know that they must maintain the areas they collect from. I have talked with customers and have seen first hand that areas once heavily populated by fish no longer support as many fish since they're now overrun with visitors (and this is also with ZERO collection).

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 10:17:01 PM

Name: Randy Fernley

Email: Coralfish@hawaiiantel.net

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

The extensive science that has been conducted over the past 35 years and the knowledge that the Dept of Aquatic Resources feels that the EIS should be accepted, should make this a no brainer.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 2, 2020 4:39:38 PM

Name: Robert Fernley

Email: rsfernley@bellsouth.net

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited

number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 2, 2020 4:52:10 PM

Name: Taylor Fernley

Email: tfernley@fernley.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited

number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 2, 2020 3:57:05 PM

Name: Todd Fernley

Email: Toddfernley@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited

number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Friday, June 12, 2020 11:37:53 PM

Name: Benjamin Fieschi-Rose

Email: bfieschirose@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 12:35:53 PM

Name: Julie Filteau

Email: fastmovingtrain1992@yahoo.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Sunday, June 21, 2020 8:02:32 PM

Name: Ian Fitch

Email: ianjelstrup@yahoo.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

Hawaiian caught aquarium fish set the highest standard for health and quality in the aquarium industry. These fish are important for businesses like the one I manage to further the appreciation and understanding of nature. The American economy also benefits when Americans are allowed to engage in all aspects of our industry and small businesses rely on these fish to provide jobs.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 11:12:14 PM

Name: Connor Folan

Email: contor.folan@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 2, 2020 5:06:38 PM

Name: Scott Folsom

Email: sfolsom1@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited

number of boats which are registered. This will make fishery management practical for law enforcement.

I'm a former marine biologist with UH. This fishery has been extensively studied and has been shown to be sustainable. This fishery has even been called a model fishery. The activities purposefully do not occur in tourist areas. This fishery provides income independent of the tourist market (important for economic downturns such as now). Please listen to the science (that's why DLNR conducted studies): this fishery is well-managed and sustainable.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 9:36:22 AM

Name: Red Fong

Email: Red@CoralReefShop.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I am the Chief Executive Officer of a specialized boutique retail and wholesale operation of marine/saltwater ornamental fish & inverts located in Canada. Having conducted business globally with other country's collectors and wholesalers; I find that your State has some of the BEST practices for collecting ornamental fish. I consider the collectors & fishers that I have conducted business with over the years on Hawai'i, Ohana. It is in THEIR BEST interest and livelihood for them to collect sustainably & not have cultural impact . Nor would I conduct business with them if I believed that they were irresponsible. To be blunt; "Yes", their continuity is important to my business - BUT not to the extent where I would conduct business with what I considered environmentally irresponsible members. As a small boutique operation; we contribute just below \$100K USD to your local economy. The DEIS clearly shows empirical data and rationale for sustainability. It has also recommended

ALTERNATIVES to alleviate concerns of others.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 6, 2020 11:47:50 AM

Name: Cy Forell

Email: cyforell@hotmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 5:24:41 AM

Name: Steven Fouts

Email: stevenfouts71@yahoo.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Sunday, June 21, 2020 4:38:33 PM

Name: Frank

Email: ffarmfishing@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Friday, June 5, 2020 8:27:29 PM

Name: Amanda Fredal

Email: afredal@petsuppliesplus.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 9:02:05 PM

Name: Glenn Fukuda

Email: gfukuda@twc.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

Over 40 yrs Aq fishing experience many factors and knowledge of the ocean. Also many yrs of this industry market impact. To only think of depletion of fish after 50 yrs 50 yrs and no consideration of detrimental outcomes while other fishing go on unaffected. Now this disastrous finance epidemic brings no remorse to our plight or a financial out for us. Fish were placed for human survival ornaments or consumption no difference. Lastly we're victims of common sense decisions made by unqualified people.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 9:58:18 PM

Name: Rowan Funes

Email: rowanfunes@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Thursday, June 4, 2020 1:08:06 PM

Name: Alyssa Gabriel

Email: alyssasseahorsesavvy@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I have a B.S. in Biology from Salisbury University. I own and operate one of the largest seahorse farms in the United States, if not the largest. We also focus on offering both sustainably collected ornamental fish, coral, and other invertebrates as well as aquacultured specimens. We support Oahu's sustainable aquarium fishery.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 6:13:38 PM

Name: Alex Garcia

Email: alikatoes@yahoo.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

DAR and DLNR should use this EIS data to develop a common-sense fishery management program that could serve as a pilot and an example to apply to the numerous other fisheries that are in critical need of effective management. The State 30x30 plan offers the structure and goals to effectively manage all fisheries, and aquarium fishermen should be a part of the development and implementation of 30x30 goals. If fishermen are allowed to fish and still feed their families while management plans are being developed, they will provide extremely valuable advice and experience. The DEIS uses the best available scientific data to show that the aquarium industry has been sustainable. To allow for sustainable yields in the future I think all commercial fisheries should have daily and annual bag limits, based on population estimates. I also think that more closed areas (MPA's) would benefit all user groups in the long term.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 10:45:54 PM

Name: Janet Garcia

Email: jkg.1957@yahoo.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Sunday, June 7, 2020 1:07:12 PM

Name: David Gazda

Email: dmgazda55@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Friday, June 5, 2020 8:15:14 PM

Name: Lauren Gilbertson

Email: laurengilby@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 9, 2020 6:52:38 PM

Name: Sarah Gitenstein

Email: sarah.gitenstein@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Friday, June 12, 2020 7:43:30 PM

Name: Steve Glazier

Email: ssglazier@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 8, 2020 7:10:29 AM

Name: Ellen Glendinning

Email: eglendinning@comcast.net

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 2:54:51 PM

Name: Chris Goins

Email: cgoins845@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 9:23:05 AM

Name: HECTOR gomez

Email: reefgofish@outlook.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 11:05:13 AM

Name: scott goodson

Email: scott.goodson@sunpet.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 13, 2020 6:00:57 PM

Name: Jacob Goodwin

Email: oysterjake@aol.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 6, 2020 10:19:44 AM

Name: Siegfried Gutekunst

Email: siegfriedgutekunst@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 13, 2020 12:20:50 PM

Name: Eric Haegele

Email: eshaegele@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 3:29:27 AM

Name: Michael Hans

Email: mchans_99@yahoo.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Sunday, June 21, 2020 12:09:24 PM

Name: Michael Hans

Email: mchans_99@yahoo.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 2:15:06 AM

Name: Kadin Harding

Email: lmaotown@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 10, 2020 6:10:13 PM

Name: Chris Hart

Email: chrishart105@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 13, 2020 1:11:32 PM

Name: shawn Haywood

Email: shawnhaywood@hotmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Sunday, June 21, 2020 6:20:53 PM

Name: Steve Heard

Email: steveheard94@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Sunday, June 21, 2020 10:22:54 PM

Name: Thomas Hegarty

Email: t_hegarty@yahoo.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 6, 2020 7:35:10 AM

Name: Adam Heinrich

Email: aheinrich@orafarm.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

While I make my livelihood farming ornamental species utilized by Hawaii's fisheries, I still support sustainable collection of these species because 1) the industry needs these fish to help promote conservation mindsets through private and public aquarium keeping and 2) there is more incentive to protect the threatened habitat of these species if there is an economic incentive to do so.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 6, 2020 8:04:50 AM

Name: Jay Hemdal

Email: jay.hemdal@frontier.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I am a marine biologist and have worked in public aquariums for over 30 years. I have researched aquarium fish sustainability, and know that this fishery is well-managed.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 1:22:43 PM

Name: Michael Hennessy

Email: mike-hennessy@verizon.net

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 12:31:52 PM

Name: Mark Hirayasu

Email: Markt7707@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Thursday, June 11, 2020 5:19:56 PM

Name: Mark Hirayasu

Email: Markt7707@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

I think only local people who lived here their whole life should be able to not people from the mainland just come here to catch to make money and does not know how to maintain the fish. I meet guy that came from the mainland just to catch fish to sell to make money

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 13, 2020 2:48:17 PM

Name: Sarah Hlavenka

Email: sarahannhlavenka@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

Two decades of fish husbandry and local fish disease treatment resource.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Sunday, June 21, 2020 9:08:55 PM

Name: Robert Horton

Email: whorton@tampabay.rr.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

As a life long coastal resident and active recreational and environmental water advocate, I support the work of the DEIS and its commitment to better manage vital resources.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 8, 2020 9:04:11 AM

Name: Mathew hough

Email: mathewhough@hotmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Sunday, June 21, 2020 9:22:37 PM

Name: Benjamin Howard

Email: bmcbh@hotmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 2, 2020 6:39:53 PM

Name: Kevin Howard

Email: allthingsaquaticllc@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited

number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 6, 2020 5:34:12 PM

Name: steve howard

Email: captstephen@yahoo.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 9, 2020 8:00:46 AM

Name: John Howe

Email: lhowetruck22@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 11:02:30 AM

Name: Kelly Hudson

Email: kelly.hudson@sunpet.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

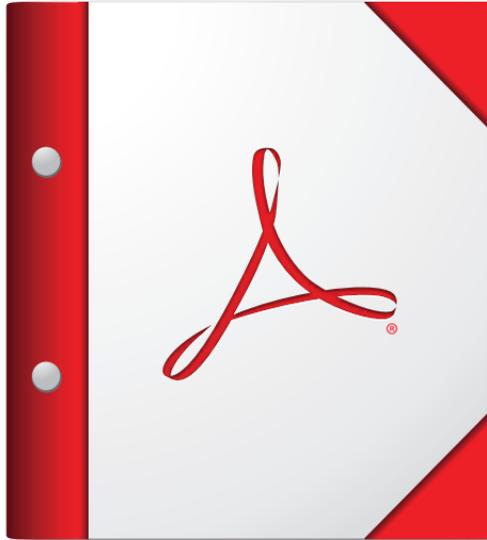
The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I am the manager/buyer of the marine department at a wholesale pet supplier.



**For the best experience, open this PDF portfolio in
Acrobat X or Adobe Reader X, or later.**

[Get Adobe Reader Now!](#)

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 6, 2020 8:11:05 AM

Name: Dorothy Hurley

Email: hurley411@aol.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Thursday, June 11, 2020 7:33:28 PM

Name: phillip huth

Email: philhuth808@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 6, 2020 8:11:39 AM

Name: Ates Isildak

Email: atesisildak@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 2:04:45 PM

Name: Randy Jahier

Email: randy@life-aquatic.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Friday, June 12, 2020 3:07:37 PM

Name: Carl Jellings

Email: mjellings@hawaii.rr.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

45 years I have watched aquarium guys. no bycatch no damage to reefs. small footprint, small operations. This is not a come and go fishery the ones who do it have done it for the long term, We support these men who just like any other fishery put in the time, hard work and long hours to sustain thier business and families.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 8, 2020 9:38:04 AM

Name: Jeremy St.Louis

Email: email@realtorjeremy.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I have been an avid aquarist for the majority of my life. Worried in coral aquaculture facilities and cohost the world's largest reef related podcast, The Reef News Network. I believe that data provided proves that this measurable and safe means of collecting fish is absolutely the best option and very sustainable. In addition, I believe that oversight on less safe methods and unlicensed collection should have oversight. The impact of working towards a monitored sustainable collection system by a limited licensed selection of collectors would be a huge step in the right direction.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 2, 2020 9:16:26 PM

Name: Kinamoni Jerome

Email: kjerome2904@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited

number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 10:54:42 AM

Name: Kevin Jones

Email: kevin.jones@segrestfarms.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 10:55:57 AM

Name: William Jones

Email: bill.jones@segrestinc.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

Owner of a wholesale fish distributor in the US for 20 years.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 8, 2020 10:55:06 PM

Name: John Kay

Email: johnsreef@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 1:42:29 PM

Name: Denise Kerr

Email: denise.kerr@segrestfarms.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I've been in marine husbandry for 26 years with Segrest Farms

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 3:01:59 AM

Name: Ali Khan

Email: alikhhan211992@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

This is something I want my kids and their kids and their generation to experience it is deeply upsetting that they might not get to see such beautiful piece of nature please let's not take it away from them

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 6, 2020 3:00:18 PM

Name: Ben Kilgore

Email: kilgoreb03@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Sunday, June 21, 2020 5:59:42 PM

Name: Robert Kimball

Email: rkimballdc@aol.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 2, 2020 5:43:44 PM

Name: Paul Kimsel

Email: kimselpaul@yahoo.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited

number of boats which are registered. This will make fishery management practical for law enforcement.

Aquarium Fish Diver. Reliant upon the aquarium fish collection industry. Support scientific data and evidence of a sustainable fishery.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 1:35:10 AM

Name: Stan Kimura

Email: smkimura00@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 1:03:45 PM

Name: Kevin Kohen

Email: Kevin.Kohen@liveaquaria.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Friday, June 5, 2020 7:44:56 PM

Name: Heather Kribell

Email: hmkribell23@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 6, 2020 1:12:50 PM

Name: Andrew Kwon

Email: corpusse@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

While I live far from Hawaii I have been keeping marine fish in aquariums for almost 15 years and my oldest fish is 14 years old. I am thrilled to see these findings released and am hopeful that I will be able to house Hawaiian fish - as they are some of the most sustainably wild caught fish for decades to come. While the purpose of my aquariums are primarily entertainment they are also very educational. After all the largely emotionally decided bans took place I took Hawaii off my list of vacation spots, but I would gladly visit in the future. If sustainable and well managed exports continue.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 5:15:17 AM

Name: Frederick La Rosa

Email: fred808@icloud.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 9:05:03 PM

Name: audrey laine

Email: ajlaine4@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 8, 2020 11:23:51 AM

Name: Simon-Pierre Laliberte

Email: irvine_85@videotron.ca

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 10, 2020 6:23:28 AM

Name: Walter LaRoque

Email: walterlaroque@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I have been keeping aquarium fish and live corals for twenty-three years, and know that my industry is best served by a sustainable collection practices, as are the inhabitants of coral reef ecosystems. Hawaii had one of the most sustainable ornamental fisheries in the world before non-science based entities began meddling in the licensing process of these largely defenseless fisheries.

VanDeWalle, Terry

From: Oahu DEIS <info@oahusustainablefishing.com>
Sent: Tuesday, June 2, 2020 10:43 PM
To: david.sakoda@hawaii.gov; VanDeWalle, Terry
Subject: Oahu DEIS Comments

Name: Sean Larranaga-Dorman

Email: skldestt@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired specie s.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 6:47:46 AM

Name: WILLIAM LAVANDOSKI

Email: VENDAS@MUNDOBLUE.COM.BR

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Friday, June 12, 2020 4:01:12 AM

Name: April Lee

Email: aprillee13@yahoo.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 13, 2020 12:28:34 AM

Name: Giorgio Lena

Email: giorgio_lena@yahoo.it

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 12:04:53 AM

Name: Daniel Leung

Email: daniel@itshawaii.net

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

To members reviewing the DEIS and making the decisions. I understand that activist and/or public view of the collection of fish in this industry may lead to the depletion of our fisheries. Though on the contrary, it is the stewards that are licensed to collect that are keeping a watchful eye and keeping the funding towards sustainability. Yes, there maybe illegal collecting from time to time, but that will happen regardless, but in those instances. The funds are not reused towards sustainability, research or protection in anyway. If time permits I advise members to listed to a podcast made by radiolab titled "The Rhino Hunter", which dives into the flip side of the Dentist that was wrongly accused of killing a rhino on a hunting trip. The situation we are in is very similar if not the same. In which those who are in the industry have way more vested in keeping the industry & environment sustainable then just ppl saying it's wrong but don't put the money towards where their mouths are. I hope after

listening to the podcast that it will open your minds to how all those in the hobby, industry or just someone who enjoys going to the aquarium. More than anything else understand the importance of sustainability, but yet know that in order for that to happen. Money and interest have to be contributed from somewhere. Thank you for your time to read my comment. Aloha

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 2, 2020 6:36:21 PM

Name: Doug Leung

Email: drdwleung@yahoo.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited

number of boats which are registered. This will make fishery management practical for law enforcement.

I am a Dr. biologist volunteering at the Waikiki Aquarium now . Been raising, and breeding Aquarium fishes for over 40 years in the Boston area, and I can attest that the fisheries are very well managed here on Hawaii. Other than an individual and total catch limits , I do not see why there will be further measures needed to be imposed.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 4:42:41 PM

Name: John Levine

Email: onlinelevine@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

Born and raised on Oahu, now living in CA, I understand the problems with overfishing and unsound fishing methods. I believe that the DEIS addresses these concerns and provides a path for sharing the beauty of the island reefs with individuals around the world.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Sunday, June 14, 2020 3:33:30 AM

Name: Joe Lewis

Email: flymach1@hotmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 20, 2020 1:25:43 AM

Name: Don Lidtke

Email: lidman@me.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 2, 2020 3:55:18 PM

Name: David Liemohn

Email: daveliemohn@northstaraquatics.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited

number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 1:31:28 AM

Name: Keoki Edwin Liftee-Kau

Email: warrior96@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 6, 2020 12:40:47 PM

Name: Elliot Lim

Email: info@marinecollectors.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 6, 2020 3:48:33 AM

Name: Keith Lim

Email: keithlim@hawaiiantel.net

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

As a graduate of the Hawaii University system in zoology and a former oceanographic tech. and fisherman involved in the trade. The recently published EIS only cements what the scientific community and state DLNR already know is true and undeniable! That is the resources are sustainable and a positive impact to the local and world economy.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 6, 2020 10:41:35 AM

Name: Ernest Lin

Email: linjiahong91@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 2, 2020 8:18:43 PM

Name: Martin Lopez

Email: betterlivinghome@bellsouth.net

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited

number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 15, 2020 4:58:19 AM

Name: Nicholas Lozier

Email: nicholaslozier@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Sunday, June 7, 2020 5:12:17 AM

Name: Chris Lucia

Email: aqua-dreams@comcast.net

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

30 year industry veteran

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 3:05:04 PM

Name: Alan Luken

Email: alan.luken@segrestinc.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I have a bachelor's of science in marine science from Coastal Carolina University. I strongly support the sustainable aquarium fishery of Hawaii.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 4:12:23 AM

Name: Steven Lum

Email: smtrading1@hawaiiantel.net

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 13, 2020 3:32:12 PM

Name: Cole Lundgaard

Email: lundgaard.phasex@yahoo.ca

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 13, 2020 4:07:11 PM

Name: Shawn Lyons

Email: amcmat1977@yahoo.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 6, 2020 10:51:28 AM

Name: Keith Mace

Email: macekeith@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Sunday, June 21, 2020 8:24:02 PM

Name: Jeff Maclaren

Email: maclaren5000@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 8:47:11 AM

Name: Bruce MacNeil

Email: bruceemmacneil@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 8:32:18 AM

Name: Corey Markley

Email: coreymarkley4444@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 2, 2020 7:19:29 PM

Name: Teran Marsden

Email: blacktipaquarium@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited

number of boats which are registered. This will make fishery management practical for law enforcement.

The aquarium fish business is not just for making a few dollars. It also to help keep the invasive species out and help control and support rebuilding of Reefs. There may place that setup up fund raiser

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 11:03:41 AM

Name: James Martz

Email: jimmy.martz@sunpet.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 6:42:40 AM

Name: Chuck Matses

Email: c.matses@yahoo.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 10:26:32 AM

Name: Asima Saad Maura

Email: asaadmau@udel.edu

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

As a vegetarian [almost vegan] since 1973, I see no reason to be against aquariums; they do not kill the fish but instead preserve the aquatic environment and do so with utmost respect and care. Some of these fishes are used to soothe people's mental anxieties, just as horses and dolphins that help treat various human mental issues, including down syndrome and autism. Thank you.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Thursday, June 18, 2020 2:42:23 PM

Name: Jana Maynard

Email: jbmaynard@bellsouth.net

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I have a science degree and carefully watch fisheries as I teach this in my curriculum. Oahu has a well managed fishery. It's evident that those involved care about the habitats. It's not overfished but well maintained.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 2:19:09 AM

Name: Jim Maynard

Email: jim@pdfhawaii.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 7:27:26 AM

Name: Raymond McConnie

Email: rjmzapater@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I am a native Puerto Rican islander with fellow fish and ocean lovers all over the Caribbean and the Hawaiian Islands. Most of my life had been spent in the ocean as I was a southern coastal resident of the Caribbean Archipelago who learned from my ancestors the crucial importance of preserving habitat and environmental conservation. Close relatives and friends of mine are oceanographers and marine biologists with whom years were spent scuba diving and sports fishing as well always respectful of other sentient beings right to live and proliferate, including coral reefs. My support of Coral Fish Hawaii and their contribution to both education and stocking with signal responsibility home and clinical aquariums remains undeterred. I am an animal and human rights activist with an agenda for conservation based in reason, compassion, wisdom, and scientific acuity. The foregoing is a good proposition for the health of the Oahu living waters and their stewards, John Randolph Fernley, whom I have

known intimately for fifty-three years, being one of the most experienced in the realm.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 2, 2020 5:16:51 PM

Name: Kevin McDonald

Email: mcdkev@comcast.net

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited

number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 2:04:54 AM

Name: Aysiah McGee

Email: aysiahkmcgee@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Thursday, June 11, 2020 5:02:35 PM

Name: David McGinnis

Email: dmcginnis73@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

VanDeWalle, Terry

From: Oahu DEIS <info@oahusustainablefishing.com>
Sent: Tuesday, June 2, 2020 10:46 PM
To: david.sakoda@hawaii.gov; VanDeWalle, Terry
Subject: Oahu DEIS Comments

Name: Cory McKeon

Email: corymckeon@yahoo.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired specie s.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 6, 2020 11:34:12 AM

Name: Amanda Meckley

Email: amanda@aciaquaculture.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I support the scientific findings. It is important to promote the sustainability of fisheries around the globe for future generations as well as support local economic opportunities. Our focus has always been working with businesses that have the same passion for marine life and its sustainability. We have worked the past 13years on coral propagation for the Aquarium industry. Without the managed fisheries we would have not had the opportunity to promote Aquaculture in our trade. All fisheries around the globe should support your commitment to sustainability of our reefs.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 13, 2020 5:02:27 PM

Name: Colin Meier

Email: cmeier60@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 12:04:53 PM

Name: Virginia Melnick

Email: darlene@segrestfarms.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 2, 2020 4:06:19 PM

Name: Dianna Miller

Email: dianna.birdsong82@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited

number of boats which are registered. This will make fishery management practical for law enforcement.

I work as a fisheries biologist and I support the aquarium fishery in Hawaii. The harvest of aquarium fish is very small compared to the harvest of reef fish for food. It makes no sense to single out aquarium fishermen when other fisheries are basically unregulated. If you want to regulate reef fisheries, start with limiting food harvest of large herbivores like parrotfish and large tangs, whose declines on Oahu's reefs are 100% due to spearfishing and whose loss has a significant impact on reef health. Aquarium fish harvest specifically targets excess production of small tangs, wrasse, and angelfishes, is sustainable, and does not affect reef health. These are fishes that are limited by habitat (space) and excess production is wasted. In other words, fish naturally produce many times (10,000x) more offspring than what the environment can support. These are the small fish that aquarium fishermen target, and thus their harvest is naturally sustainable. On a more personal note, the only reason I am a fish biologist today is that I was a passionate aquarium hobbyist starting in my teens. Aquarium keeping grew my love of coral reefs such that I went on to have a career in fisheries. My story is not unique and I worry that wrongfully demonizing sustainable harvest of fish will lead to less exposure to these amazing animals and apathy for reefs in the wild. You protect what you love. Sometimes having what you love in your living room is the greatest motivation.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 2, 2020 4:12:11 PM

Name: Robert Miller

Email: robm@seadwelling.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited

number of boats which are registered. This will make fishery management practical for law enforcement.

I have 2 degrees in marine sciences (Oceanography and Fisheries). I am also the founder of the largest distributor of marine aquarium fish in the country with almost 30 years of experience in the industry.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 15, 2020 5:08:46 AM

Name: Gennadiy Mirochnik

Email: rochesteraquarium@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 5:55:16 PM

Name: Eric Moennich

Email: eric.moennich@yahoo.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

To whom it may concern: My name is Eric Moennich, and I want to thank you for allowing me the opportunity to submit my comments and thoughts regarding the aquarium fishery in Hawaii and the DEIS that is currently being considered. I am a firefighter and resident of Oahu. I have lived in Hawaii for almost 20 years and have every intention of living here for the rest of my life and finishing my career here with the fire department. I would also like to have the right to continue to catch aquarium fish now and in the future. In the time I have lived here I have seen many changes. One thing that has remained constant though is a relentless attack on the aquarium fishery. It seems I find myself wondering every year if the fishery will be allowed to continue or not. I have testified at many hearings regarding bills that were being considered to regulate or shut down the aquarium fishery. This uncertainty has been tiring and I feel unfair. Be that as it may, we are now at a crossroads for the fishery. If the state decides

not to pass the eventual FEIS and grant aquarium fishermen a legal way to continue their livelihoods then the state is sending a message that they intend to end the fishery. The applicants for this DEIS are trying to meet every requirement the state has put on them to continue to be aquarium fishermen legally in Hawaii. The process has been long, difficult, financially staggering, and yet the applicants have prevailed and done their best to bring forward a DEIS that would meet the burdens brought onto them to be allowed to legally continue their industry. I feel strongly that this DEIS has put forward a complete package that meets all requirements and should be passed. If however the state feels that there are changes that need to be made, I know the applicants are open to hearing what needs to be done in order to have an acceptable FEIS that could be passed. If this is the case please provide the applicants a specific list of what needs to be changed in order to comply with the states needs. I myself feel that having a fishery, even a greatly restricted fishery is better than no fishery at all. I feel that not allowing the fishery to continue would be too drastic a step for the state to take. Although there has been a recent rejection of a FEIS for the aquarium fishermen on Hawaii Island I hope the state will consider this DEIS and eventual FEIS for Oahu separately. Oahu has long had less user conflict than the Big Island and aquarium fishermen on Oahu tend to catch a wide variety of fish in small numbers rather than concentrating their efforts on only a few targeted species. Aquarium fishermen on Oahu also recognize the benefits of working together with related industries and local government agencies. Examples of this include an unwritten rule among the majority of aquarium fishermen on Oahu to not dive at known dive company dive sites, or snorkeling sites. The aquarium fishermen know that the dive shop that fills their dive tanks also relies on the tourism industry and we work together so that we all can enjoy the ocean peacefully in a cooperative effort. Another example is when aquarium fishermen self imposed further regulation of the industry to place gear restrictions and bag limits on fish we catch in order to continue to keep the fishery sustainable. Aquarium fishermen care greatly about the sustainability of the fishery as their livelihoods depend on it. I would also like to bring up another concern I have regarding this EIS process that is being mandated on the aquarium fishing industry. I think it would set a dangerous precedent for the state if we not only require an EIS for fishermen but even after doing all they can to comply with an EIS not pass it. If this happens I can't see how all the other ocean related industries that we love not also be mandated to be held to the same standards. Commercial food fishermen would have to do an EIS, dive shops and snorkeling shops would have to do an EIS. The list goes on and on. All those industries could be shut down from this too and they may have even less available data to support their actions than aquarium fishermen do. This is an opportunity for the state to pass an EIS and send the message that our current ocean businesses can be confident that they will be able to continue if they were to come under fire and be required to do an EIS as well. If we are ok with commercial food fishermen taking fish from the ocean how can we also not be ok with allowing aquarium fishermen to do the same? I see no difference between the fishermen who catches an Ahi and takes that Ahi to the auction block to receive payment and the aquarium fishermen who catches a yellow tang and sells it to a wholesaler or retail customer to receive payment. In both cases, both fishermen have caught a fish from the ocean, that they then sold for payment. Then the fishermen takes their pay to buy groceries for their families, pay rent, and other bills. In fact, in my opinion the yellow tang gets the better end of the deal because it has the opportunity to continue to live for years while the fate of the Ahi was to be killed immediately after being caught. Let's not forget why we are even here today and considering this DEIS. One user group wants to stop another user group. The basis on this action is biased, emotionally driven, and has ulterior motives. In closing I would like to say that I strongly support this DEIS and the aquarium fishery. It is one of the best studied fisheries in the world. It is sustainable and should be allowed to continue. While concerns may arise from time to time regarding the fishery, those concerns can be

addressed now just as they have been in the past and will be in the future. Industry standards, regulations, licenses, gear and take restrictions, among others are all tools in the states belt for controlling this fishery to allow it to adapt to the sentiments of the times rather than be extinct from existence. Aquarium fishing is a part of Hawaiian history and not a new untested activity. It has existed for a long time for good reason. Please do not allow this fishery to perish as so much of our other important Hawaiian history has. Please pass the FEIS when the time comes. Thank you for your time and consideration regarding this important matter.
Sincerely, Eric Moennich

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 6, 2020 3:23:42 PM

Name: David Moffat II

Email: davidmoffat2@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

22.3% - Hawaii unemployment 4/2020 (<https://labor.hawaii.gov/blog/news/hawaii-unemployment-rate-at-22-3-in-april/>) Oahu and our state need to find ways to diversify our heavily tourism and hospitality dependent economy. The commercial aquarium industry offers exactly this - state income tax paying jobs for Oahu residents who otherwise maybe relying on a depleted state unemployment insurance system. After reviewing the Draft Environmental Impact Statement, I agree that the discussed methods and procedures, all in cooperation with the State DLNR, would maintain a sustainable and culturally respectful fishery and industry.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 10:22:34 AM

Name: Sandy Moore

Email: sandy@segrestfarms.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I have experience within the aquarium industry, and serve on boards that support the ethical and sustainable collection of ornamental fish, including Ornamental Fish International, Rising Tides Conservation Foundation, and Project Piaba. By doing so, I also openly condemn fishing that damages the environment.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 12:11:09 PM

Name: Scott Moore

Email: scott@segrestfarms.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I'm very proud of all the efforts that are in place to protect this fishery and this under water environment as well as the local fisherman and their families.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 17, 2020 1:25:16 PM

Name: Anthony Nahacky

Email: nahacky@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

Aloha, Please consider that this fishery has been operating since 1962 just short of 60 years so it is not a new, untested fishery. It has provided jobs, paid taxes, and supported families over all these years as it is sustainable and can continue to do the same in the future.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 12:31:02 AM

Name: Vincent Newell

Email: vincenewell2616@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 20, 2020 12:47:35 AM

Name: Thomas Nichol

Email: thomasnichol71@gmail.com

State Of Residency: No Residence Selected

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 20, 2020 12:46:48 AM

Name: Thomas Nichol

Email: thomasnichol71@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 15, 2020 8:05:03 PM

Name: Joe Nixon

Email: reeflover120@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 8, 2020 9:34:00 AM

Name: Stephen Offutt

Email: offuttdpm@comcast.net

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 6, 2020 7:26:32 AM

Name: Junkai Ong

Email: contact@aquaticssolutions.com.sg

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

The agenda of the animal rights industry in trying to undermine this DEIS is so obvious. Even when catch data is provided on many species that fall below 1% total population numbers. If the people who evaluated the DEIS were objective, they would have only highlighted concerns with regards to species that had higher catch percentage like flame wrasse. Instead of trying to crush everything. Many species in the world are also deemed data deficient by the IUCN. With most catch percentages already looking sustainable and within sustainable thresholds, the onus is on the accusers to prove that the trade is unsustainable or is impacting the environment significantly. The onus is on them to prove otherwise, not for legitimate fisheries having to prove themselves for legal harvest that have been going on for decades.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 6, 2020 7:51:13 AM

Name: Katharine Onofryton

Email: konofryton@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 8, 2020 11:39:09 AM

Name: Genevieve Ouellet

Email: ginicalaurpa@hotmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Friday, June 5, 2020 10:34:17 PM

Name: Brandon Pabst

Email: bpabs001@umaryland.edu

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I have 20 years of experience in private and commercial husbandry and equipment construction of home aquariums as well as aquaculture facilities. Not only does the responsible collection of marine life appear to have minimal impact on reefs throughout the world (when done in conjunction with clear regulations and oversight) it encourages interest in the world's reefs in a way that many other methods fail to do so.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Thursday, June 4, 2020 4:11:56 PM

Name: David Parks

Email: dave.parks@segrestfarms.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 10:13:22 AM

Name: Robert Pascua

Email: rufishy2@aol.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I have been in the tropical fish industry since 1977.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 6:15:40 PM

Name: Lynne Peleholani

Email: lpeleholani@live.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 7:06:06 PM

Name: Mark Peleholani

Email: hokudog@hawaii.rr.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 15, 2020 1:08:11 AM

Name: Dan Perdue

Email: sntmods@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I'm what may be considered an advanced aquarist, I maintain several saltwater aquariums and their inhabitants are members of my family. I care deeply for their well being while in my care and I heavily support the sustainable fishing industry.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 8, 2020 7:07:48 AM

Name: Raúl Perez

Email: pr3240@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 13, 2020 6:02:26 PM

Name: Michael Pietz

Email: pietzfamily@camtel.net

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 6, 2020 8:06:05 PM

Name: Nick Pluscht

Email: nplush64@yahoo.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

Properly Managed aquarium trade collection is extremely profitable for local economy and has little environmental impact when managed.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 6, 2020 1:00:28 PM

Name: Brandon Polinsky

Email: bpolinsky643@yahoo.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

As a resident of Omaha NE for my entire life the ocean was pretty far from me. I grew up with the Omaha Zoo and Aquarium and that's where my interest in conservation was peaked. Without the collection of wild fish for aquariums around the world, people like me wouldn't likely have the chance to see the animals and become concerned for their wellbeing. I believe the collections need to be done sustainably, but cutting them off completely won't allow future people to have the same experience as me.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 8, 2020 12:14:47 AM

Name: Nick Ponce

Email: nickponce@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 2:15:34 AM

Name: Jeffrey Preble

Email: piscespac@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I have been diving and collecting fish for 40 years. I am a passionate student of everything natural in Hawai'i and feel the controversy around the small and shrinking aquarium industry distracts from serious real issues.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 16, 2020 1:32:08 PM

Name: Jason Rader

Email: jrader@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

In this time when we're being told to listen to the experts in the scientific community, the scientific facts supporting the sustainability of the Hawaiian fisheries can not be denied. They have set the standard for sustainable fishing.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Sunday, June 21, 2020 8:30:45 PM

Name: Hal Rafter

Email: hwrafter@netscape.net

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 10, 2020 1:40:49 PM

Name: Laura Reid

Email: peach@fishmartinc.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

Having being a wholesale supplier of aquatics to pet stores in the northeast United States for over 40 years, and being an active participant in sustainability (in and out of the marine trade), all research indicates that the Hawaiian fisheries are the best regulated in the world, and actually serve as a model of sustainability.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 13, 2020 2:46:17 PM

Name: John Reiter

Email: ichthyman@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 23, 2020 12:24:40 AM

Name: David Rizkalla

Email: david@thereefdr.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Friday, June 19, 2020 5:18:15 PM

Name: Jordan Roberts

Email: Jordaneroberts@aol.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 13, 2020 7:23:23 PM

Name: Garrett Ross

Email: garrettross312@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Sunday, June 21, 2020 6:56:50 PM

Name: Matthew Ross

Email: matt.htfa@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Friday, June 5, 2020 6:48:45 PM

Name: Chris Rothwell

Email: kamaainachris@yahoo.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

VanDeWalle, Terry

From: Oahu DEIS <info@oahusustainablefishing.com>
Sent: Tuesday, June 2, 2020 10:51 PM
To: david.sakoda@hawaii.gov; VanDeWalle, Terry
Subject: Oahu DEIS Comments

Name: Cristina Rothwell

Email: hipetlover@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

Please allow this trade to continue. The fisheries have spent timeless hours and money coming up with a sustainable EIS. Do not let a few rotten apples ruin it for all the households that love the hobby. The future generations should be allowed to enjoy an aquarium in their homes. It has been proven sustainable. Why does one industry, scuba tours, have preference above the law abiding Aquarium industry? The careless tourists do more

harm to our reefs than the conscientious fishery do. I implore you to read the EIS and work with these groups. Mahalo .I am a very concerned citizen and business owner

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Friday, June 5, 2020 6:37:30 PM

Name: Ian Rothwell

Email: blunchmeat@yahoo.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

VanDeWalle, Terry

From: Oahu DEIS <info@oahusustainablefishing.com>
Sent: Tuesday, June 2, 2020 10:39 PM
To: david.sakoda@hawaii.gov; VanDeWalle, Terry
Subject: Oahu DEIS Comments

Name: Ryan Rothwell

Email: ryan.tfehi@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired specie s.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

Please support this EIS.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 6, 2020 11:24:18 AM

Name: Jeremy Sable

Email: jeremysable@yahoo.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I believe responsible collecting, holding, and selling of ornamental fish is very important. I have kept saltwater reef aquariums and fish tanks for over 15 years. It's one of the main reasons I'd like to go so far from home to visit Hawaii. See the fish and corals reefs on your beautiful islands. They are amazing gifts. I hope fish collecting and the fishermen who make this their livelihood are able to keep going and growing responsibly so we can all enjoy this gift. It will be a good example if managed well to the rest of the world where coral and ornamental fish are collected.

VanDeWalle, Terry

From: Oahu DEIS <info@oahusustainablefishing.com>
Sent: Tuesday, June 2, 2020 10:43 PM
To: david.sakoda@hawaii.gov; VanDeWalle, Terry
Subject: Oahu DEIS Comments

Name: Dacie Salcedo

Email: daciesalcedo@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired specie s.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Thursday, June 4, 2020 9:14:38 AM

Name: Alvin Sanders

Email: alsinbs@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Sunday, June 21, 2020 9:24:38 PM

Name: Witney Schneidman

Email: wwschneid@aol.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Thursday, June 11, 2020 8:07:59 PM

Name: Dean Sensui

Email: dean@hawaii goes fishing.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

Having directly observed and filmed this activity, I can confirm that the environmental impact of this activity is minimal and insignificant. There is far more loss of these fish due to natural predation by invasive species and habitat damage due to pollution and other human activity.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 2, 2020 11:40:14 PM

Name: Jakaria Shaikh

Email: jakaria440@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

This is a test Comment

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 13, 2020 8:04:29 PM

Name: Richard Shanks

Email: richardshanks@cox.net

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 1:25:22 AM

Name: Lane Shiroma

Email: lane.shiroma@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 2, 2020 3:19:19 PM

Name: Kelly Shishido

Email: kcshishido3@hawaiiantel.net

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited

number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 13, 2020 2:46:07 PM

Name: Dylan Shotton

Email: dylan_shotton@hotmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

Sustainable fisheries can be an asset to the native wildlife. These fisheries are strictly regulated and harvest animals humanly and with conservation in mind. With proper efforts they can help build wild fish numbers while harvesting for the aquarium trade as well. Environmental change is the biggest threat to wild fish populations, unfortunately air and water quality will continue to decline and put pressure on the wild populations. Aquaculture and sustainable fisheries could be a major help in helping wild fish populations survive in these trying times.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Friday, June 19, 2020 7:20:08 PM

Name: Jules Silverman

Email: jsilver3314@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Friday, June 12, 2020 6:43:06 PM

Name: Kaipo Simpson

Email: kaipo13@yahoo.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I have lived in Hawaii my entire life, collecting fish for eating as well as my personal aquariums for much of that time. Restrictions reserved for any group that are not for another group that are often collecting the same fish (for food or sport rather than aquarium sale,) are inherently unfair. What is good for one is good for all. The amount of fish taken by the aquarium collection industry is unsubstantial, and the money generated supports a number of families throughout the state.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 13, 2020 12:17:20 PM

Name: Paul Skinner

Email: paulskinner@blueyonder.co.uk

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 20, 2020 4:46:19 AM

Name: Paul Skinner

Email: paulskinner@blueyonder.co.uk

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 12:22:29 PM

Name: Adam Sklar

Email: oceandevotionla@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 6, 2020 10:26:02 AM

Name: Tanner Smith

Email: tannersmith2000@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 6, 2020 12:04:54 PM

Name: Ryan Snodgrass

Email: RyanSnodgrass.RS@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

The age of fear mongering and rampant manipulative tactics by self serving special interest groups needs to come to a close. When those groups put forth knowingly false statistics and statements contradicting decades of research we can't give in to their threats. This bill should happen, and needs to happen. Having worked for the Department of Natural Resources in Minnesota I can say banning the collection of fish is no different than banning fishing, hunting, etc. Not only does the economy suffer but the continued public support, research, health of the environment, and those very animals we seek to protect suffer. It's counter intuitive but it's been documented in numerous other species. Healthy, sustainable collection engages the public in the environment and preservation of those resources... banning has the opposite effect. We claim to follow science, if we do then pay attention to decades of independent research in your biosphere and numerous other in the United States.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Sunday, June 21, 2020 9:12:01 PM

Name: William Stafford

Email: bill.stafford@staffordengr.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 9, 2020 11:16:32 AM

Name: David Steinberg

Email: imdvs3@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 1:04:56 PM

Name: Marcia Strugnell

Email: marcia.strugnell@secrestinc.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 4:54:37 PM

Name: Wayne Sugiyama

Email: wowhawaii@aol.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Sunday, June 14, 2020 8:13:52 PM

Name: Joseph Sullivan

Email: 14jsullivan96@gmail.com

State Of Residency: No Residence Selected

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Sunday, June 21, 2020 11:44:34 PM

Name: Carl Sussenberger

Email: csussenberger@hubfoldingbox.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 2, 2020 9:21:32 PM

Name: Tyler TAKEHARA

Email: takeharat001@hawaii.rr.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited

number of boats which are registered. This will make fishery management practical for law enforcement.

I have been a recreational as well as commercial diver of aquarium fish using both snorkeling and scuba equipment for over 40 years. My experiences and observations support the argument that collecting aquarium fish is a sustainable industry. There are years when certain species are abundant and other times when they are not. The use of 2 inch mesh net does more harm injuring the fish through entanglement and limits the catch to fish of breeding size. I also believe the collecting for hobbyist should be restored as knowledge and interest in our aquatic environment can be fostered through the aquarium hobby for our keiki.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Sunday, June 7, 2020 5:27:31 AM

Name: PAUL TALBOT

Email: paul@majesticaquariums.com.au

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I think it should be open to ornamental fish export

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 1:27:44 AM

Name: Edward Tauro

Email: opihi8me@yahoo.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 6:50:26 AM

Name: Ralph Taylor

Email: rharveytaylor@gmail.com

State Of Residency: No Residence Selected

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Sunday, June 7, 2020 4:06:09 AM

Name: Ashley Thompson

Email: koko_0009@hotmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I am from Australia and own and operate an marine ornamental fish importation business which is certified by the Australian government, i also have completed studies and certification in aquaculture in Australia, I. Relive Hawaii and Australia are the two most sustainable aquarium fisheries in the world with the best practises.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 9:06:32 PM

Name: mark thompson

Email: mthompson4081986@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 13, 2020 3:45:26 PM

Name: Dallas Tippie

Email: nicereef@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Friday, June 5, 2020 5:21:54 PM

Name: Lina tomoyasu

Email: LINA.TOMOYASU@GMAIL.COM

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Thursday, June 11, 2020 5:32:21 PM

Name: Martin Tran

Email: martinstran@yahoo.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 11:13:32 AM

Name: William Trufant

Email: trufantwb@hotmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I have been keeping and selling these wonderful fish for almost 50 years now and am proud to tell the story of how they come from the best managed fishery in the world! I have been fortunate enough to visit and SCUBA dive in Hawaii a couple of times and knowing that these fish are collected in these waters I was pleased to see every fish on my "bucket list" and even some that I wasn't expecting!

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Thursday, June 4, 2020 3:39:26 PM

Name: Mary Tubbs

Email: rtubbs@hawaii.rr.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

Limiting licenses for small mesh net permits, to just a few divers who could afford to pay expensive lawyers at the time that this lawsuit was brought forth (see the last point above) is not ethical nor equitable. It will eventually kill the aquarium trade which helps teachers like me so much. For years as an Hawaii elementary public school teacher, my classroom's aquarium, the tropical fish in it, and school-wide STEM night aquarium displays and activities- worth thousands of dollars and serving over 1200 people- have all been donated to my school for free by our Oahu aquarium divers. For there is no better way to immediately engage students and their families who may not swim or snorkel, in scientifically observing, respecting, and learning to take responsible stewardship of our ocean life, its resources, and our "Blue Planet" – Earth. We need the sustainable aquarium fishery on Oahu to continue to supply teacher's like me across the U.S, and public aquariums so that our valuable lessons can be taught.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 2, 2020 7:03:30 PM

Name: Ronald Tubbs

Email: rtubbs@hawaii.rr.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

Oahu's corals and fish populations are healthy and the low, 1%-2% of fish taken by the Oahu aquarium fishery makes an insignificant impact

on Oahu's fish populations. This is the definition of ecology-sustainability. Oahu's aquarium fishery has proven itself to be sustainable, in part due to the fact that it is already highly regulated with many laws including closed areas, limits on the size of fish that can be caught, and catch limits on the number of fish that can be caught. All of these have ensured the sustainability of Oahu's tropical fish for the future. Hawaii needs sustainable fisheries.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 13, 2020 6:42:13 PM

Name: CHRISTOPHER TURK

Email: chris@v2ofoods.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

My name is Christopher Turk, President of V2O Aquarium Foods. I grew up collecting marine tropicals in South Florida. I graduated from Dartmouth College in 1972 with a degree in Marine Ecology and then worked toward a Masters Degree in Fisheries Biology at the University of South Florida in St. Petersburg. I know from personal experience and from learning over the years that the art and profession of collecting marine tropical fish in Hawaii is the most advanced, most talented, and most environmentally concerned of any around the globe. It is the model to be studied, emulated, and practiced by all. The fishery has been proven to be absolutely SUSTAINABLE because of their strict practices and constant monitoring. The keeping of marine fish in home and public aquariums has brought the wonder of the coral reef directly to the eyes of the public. The divers and caretakers of this fishery are the true admirers of the sea and are the ones who deeply care about the fish, the corals and the

reefs. Let their voices be heard and give the DEIS it's just attention and due respect. Thank you.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 6, 2020 7:58:13 PM

Name: Michael Turner

Email: mjt822@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Friday, June 12, 2020 12:56:17 PM

Name: Ryan Turner

Email: ryant_t@hotmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 10:10:51 AM

Name: jordan vagovic

Email: jvagovic@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 12:51:42 PM

Name: Robbins Valentine

Email: valentineagcy@aol.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

40 years of recreational fishing experience

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 2, 2020 7:13:18 PM

Name: Hector Valero

Email: hectorevalero@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited

number of boats which are registered. This will make fishery management practical for law enforcement.

IN SUPPORT of the DEIS

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 15, 2020 6:30:07 AM

Name: Mark Vallar

Email: mvallar@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 6, 2020 2:45:15 PM

Name: Michael Vendetti

Email: Mike@ntxcorals.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 12:17:14 AM

Name: Christian Viernes

Email: christian.viernes@yahoo.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

VanDeWalle, Terry

From: Oahu DEIS <info@oahusustainablefishing.com>
Sent: Tuesday, June 2, 2020 10:47 PM
To: david.sakoda@hawaii.gov; VanDeWalle, Terry
Subject: Oahu DEIS Comments

Name: Jeff Villinger

Email: surfdivesurf@yahoo.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired specie s.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 10, 2020 3:02:44 PM

Name: Chad Vossen

Email: Chad@vossenaquatics.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

A sustainable and well managed fishery is just as important as aquaculture. Permitting 20 fishers to collect fish will support thousands of jobs along the supply chain and industry, while having minimal impact on highly prolific fish species.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 5:40:03 AM

Name: Alton Vrana

Email: alton.vrana@att.net

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 8, 2020 9:44:50 AM

Name: Mathias Wagner

Email: wagnem38@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 9:55:53 AM

Name: CHARLES WALL

Email: cwall@bvwins.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I am a long time aquarist who prefers to get fish from Hawaii as they are normally more healthy than other locations apparently do to better collecting and handling methods.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Thursday, June 11, 2020 7:46:31 PM

Name: Edwin Watamura

Email: watafishing@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Friday, June 19, 2020 12:57:35 AM

Name: Dean Watanabe

Email: deanwatanabe@hotmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 6, 2020 12:48:39 PM

Name: Gerard Wellemeyer

Email: gwellemeyer@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I am a wetland conservationist and I believe the ban segregates people from environment, resulting in a shortage of hands-on education, ignorance, and casually-related fear of nature.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Sunday, June 14, 2020 10:31:59 AM

Name: Chris Whitesell

Email: chriswhitesell@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 5:54:13 AM

Name: Don Wiggin

Email: wiggindon@gmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Friday, June 12, 2020 2:41:43 AM

Name: Kane Wilcox

Email: kanealiirtw@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I've been in the hobby for a few years now and proud that our island has one of the best managed fisheries in the world. We need to lead the rest of the world with our practices in this sustainable industry.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Monday, June 22, 2020 5:10:08 AM

Name: Chuck Will

Email: chuck@proctornet.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Sunday, June 7, 2020 4:15:01 AM

Name: Shane Willis

Email: shane@aquaculturetraining.com.au

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I am currently the President of Ornamental Fish International - the peak industry representative group in the world. We have members across the globe and our members trade in around 60% of the ornamental fosh traded around the world. Sustainable fisheries as found in Hawaii are a vital part of our industry which supports tens of thousands of jobs in the USA and millions of jobs around the world. Please allow this well managed industry to continue!

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 2, 2020 9:15:35 PM

Name: Jansen Wong

Email: jwpandaboy@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited

number of boats which are registered. This will make fishery management practical for law enforcement.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 3, 2020 12:51:57 AM

Name: Stanford Wong

Email: stanwong1@gmail.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I have been keeping marine fish in Hawaii for 40+ years. Been experimenting with fish, shrimps, macro algae, phytoplankton and zooplankton. Running tanks from 5 gal to 240 gal. This summer, I will be setting several 1,000 gal ponds to experiment with breeding of marine fish. Looking to work with some local species and will depend on the local divers/pet shops to obtain specimens.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Wednesday, June 10, 2020 9:39:56 PM

Name: Roy Yanong

Email: rpy@ufl.edu

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I am a Professor and Veterinarian in the Fisheries and Aquatic Sciences Program, SFRC, IFAS, University of Florida. Our faculty work closely with all of our stakeholders including our agriculture and natural resource agencies to help develop data-driven, science-based, adaptive management decisions. It is critical that good science is not ignored to the detriment of sustainable livelihoods and practices.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Friday, June 5, 2020 5:58:09 PM

Name: Jessica Zahn

Email: Jbrittonrn@yahoo.com

State Of Residency: Hawaii

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

From: rtlivefish@gmail.com
To: [Sakoda, David](mailto:David.Sakoda@hawaii.gov)
Subject: [EXTERNAL] FW: Oahu's Aquarium Fish w/signature
Date: Thursday, June 4, 2020 4:22:09 PM

From: rtlivefish@gmail.com <rtlivefish@gmail.com>
Sent: Thursday, June 04, 2020 11:14 AM
To: david.sakoda@hawaii.gov
Subject: Oahu's Aquarium Fish

Comment on the Oahu Aquarium Fishery Environmental Study:

I am writing as an elementary school teacher in a Hawaii public school. Over the years my classroom aquariums, the tropical fish in them, and the schoolwide family STEM Night aquarium displays, demonstrations and activities- worth thousands of dollars and serving over 1200 people- have all been donated to my school by our Oahu aquarium divers. For there is no better way to immediately engage students and their families who may not swim or snorkel, in learning to scientifically observe, respect, and take responsible stewardship of our oceans' sea life, resources, and our "Blue Planet" Earth. We need the sustainable aquarium fishery on Oahu to continue to supply teacher's like me across the U.S who teach the national New Generation Science Standards (NGSS), and to supply public aquariums so that our valuable ecological lessons can be taught.

Sincerely,

Mary S. Tubbs, M.Ed., N.C.S.P.
Highly Qualified Teacher
Windward Oahu District

From: [Jo Alexander](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Sunday, June 21, 2020 1:36:45 PM

Aloha Mr. Sakoda,

My name is Jo Alexander and I am a Part time HI resident.

My specific comment:

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: whaleszone@gmail.com

From: [Lynn Allen](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@kigates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Monday, June 22, 2020 6:35:10 PM

Aloha Mr. Sakoda,

My name is Lynn Allen and I am a Visitor/non-resident/concerned citizen.

My specific comment: These “limits” are irresponsible and will have extensive consequences. It is critical that the welfare of the marine life and reef ecosystem (which impacts many people and resources) be prioritized over a small group of collectors.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/ Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: lynn.all@maui.net

From: [Anne Allison](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Thursday, June 18, 2020 1:31:20 AM

Aloha Mr. Sakoda,

My name is Anne Allison and I am a Full time HI resident.

My specific comment: You have got to be kidding. Who and at what offices is getting paid off by the Aquarium rape trade?????

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts.

This DEIS is completely flawed.

I can be reached at: onehiker4fun@mykolab.com

From: [Geri Allison](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynych@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Thursday, June 18, 2020 11:01:41 AM

Aloha Mr. Sakoda,

My name is Geri Allison and I am a Full time HI resident.

My specific comment: Completely unacceptable

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs

Butterflyfishes

Herbivores/Surgeonfishes

Bandit Angelfish

kole

Achilles tang (paku ikui)

Cleaner Wrasse

Flame Wrasse

Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: GeriAllison@yahoo.com

From: [Linda Anderson](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Saturday, June 20, 2020 1:25:29 AM

Aloha Mr. Sakoda,

My name is Linda Anderson and I am a Full time HI resident.

My specific comment: Please lay off our reef fish. Close pet shops and disallow all sales. It is harmful and frivolous to use this as a job. Become ocean tour guides or find other work.. A photo op company ocean tour, but let the fish recover!!!!

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.
Species abundance is significantly reduced by aquarium collecting.
Communities of reef species are disrupted by aquarium collecting.
Marine life is threatened with local extinction
Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.
70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.
Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: louiilyle@yahoo.com

From: [Caroline Azelski](mailto:Caroline.Azelski@gmail.com)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](mailto:VanDeWalle.Terry@hawaii.gov); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Saturday, June 20, 2020 5:27:22 PM

Aloha Mr. Sakoda,

My name is Caroline Azelski and I am a Full time HI resident.

My specific comment: The pandemic has proven that when left alone animals populations rebound.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: forthefishes@azelski.net

From: [Robert Babson](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Thursday, June 18, 2020 2:16:39 AM

Aloha Mr. Sakoda,

My name is Robert Babson and I am a Full time HI resident.

My specific comment: I moved to Maui in 1991 and live in Kihei. During the 1990's, I snorkeled all over Maui, but mostly in Kihei, Wailea, Makena and La Perouse. There used to be schools of fish up and down the Kihei coast, but not anymore. Please do not approve any collectors taking fish from the coral reefs. 50% of all collected fish that are shipped to the mainland for sale, die in transit. The rest don't last long in captivity. Please preserve these fish for our children and grand children to enjoy. The only place there are still fish in La Perouse is the Ahihi Kinau Natural Area Reserve which is a "no take" reserve. "no take" means no line fishing, no spear gunning, no lay nets and no collectors. What we need is more "no take" natural area reserves all over Hawaii, all islands. Many reef fish do not become sexually active until they are five years old. To remove these older fish from the reef is also removing all their future offspring.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar

with on Oahu:
North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: babsonb001@hawaii.rr.com

From: [Bette Belanger](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 7:41:29 PM

Aloha Mr. Sakoda,

My name is Bette Belanger and I am a Full time HI resident.

My specific comment:

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Flame Wrasse
Moorish Idol
All reef fish

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: belangerblue@gmail.com

From: [Christopher Biltoft](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynych@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 6:55:38 PM

Aloha Mr. Sakoda,

My name is Christopher Biltoft and I am a Full time HI resident.

My specific comment: The proposed "limits" presented in the DEIS are actually no limits at all. The "Aquarium Trade" is a superfluous business that is ultimately destructive to native marine habitat. There is no reasonable justification for continuing it. Those engaged in this awful business need to find some socially responsible thing to do other than despoiling our marine reserves. The Big Island lost a significant marine sanctuary as a consequence of the June 2018 lava flow. There is no need or justification for further reducing fish stocks by "Aquarium Trade" poaching.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
Moorish Idol

My concerns about those species include:

Species abundance is significantly reduced by aquarium collecting.
Communities of reef species are disrupted by aquarium collecting.
Marine life is threatened with local extinction
The real possibility that future generations may not encounter these species
Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: biltoftc@yahoo.com

From: [Marjorie Bonar](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 8:24:21 PM

Aloha Mr. Sakoda,

My name is Marjorie Bonar and I am a Full time HI resident.

My specific comment: They have had a flagrant disregard for the data collected over many years. This is not science, it is marketing. With a very uncontrolled collection method, the industry has shown it cannot be trusted in any fashion. There should be no take of reef fish, except for those that are taken for personal human consumption.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

Communities of reef species are disrupted by aquarium collecting.

The real possibility that future generations may not encounter these species

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: margebonar@gmail.com

From: [Heidi Bornhorst](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Saturday, June 20, 2020 6:24:28 PM

Aloha Mr. Sakoda,

My name is Heidi Bornhorst and I am a Full time HI resident.

My specific comment: Overfishing is detrimental to Hawaii. Salt water aquariums are fish killers. they belong on our reefs. NO fishing of reef fish for commercial trade. We would also like to see Waikiki to Maunalua closed to Spear and net fishing. Permanently. these are keiki fish nurseries.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: heidibornhorst@gmail.com

From: [JANE BOWMAN](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Saturday, June 20, 2020 2:54:56 PM

Aloha Mr. Sakoda,

My name is JANE BOWMAN and I am a Visitor/non-resident/concerned citizen.

My specific comment: Please LIMIT aquarium collecting on Oahu. Without the abundant marine life of Hawaii's reefs I would seriously consider vacationing elsewhere. I was disappointed in my last trip to Oahu because of the barren nature of some reefs. Thanks you

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Leeward Oahu

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: jane@cmark.com

From: [Bill Bugbee](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynych@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Monday, June 22, 2020 9:05:35 PM

Aloha Mr. Sakoda,

My name is Bill Bugbee and I am a Full time HI resident.

My specific comment: Aquarium reef fish extractors are NOT compatible with Hawaii's environmental, sustainability, and economic goals. It doesn't take a scientist to connect the dots between the health of Hawaii's reef system and the essential role that abundant and varied reef fish play in ensuring a healthy ecosystem, both are essential and interdependent in their role in maintaining a healthy marine ecosystem, and both are under attack from multiple manmade stressors: 1) global warming from rising levels and concurrent shifts in temperature, circulation, stratification, nutrient input, oxygen content, and ocean acidification, all with wide-ranging biological effects. 2) Hawaii's state-wide 2015-16 coral bleaching event is a case in point, which reef systems on every island, including suffered and five years later have not recovered, creating a two-fold impact on fish and coral. 3) Recent scientific findings have demonstrated the spread of coral diseases may be mitigated by reef fishes, further mitigating global heating impacts, and recognizing the value-added role of Hawaii's reef fish to Hawaii and the need to ensure their preservation. 4) There are strong mutual dependencies between the reef-building corals and reef-inhabiting fishes, with many Hawaiian reef fish species depending on corals for food and habitat, while corals depend on the grazing by certain fishes for reproductive success. Make no mistake: the health of Hawaii's marine reefs ecosystem, and the fish which inhabit them are fish prized by reef extractors are both major contributors to a healthy marine ecosystem and the state's largest economic segment: Tourism. The aquarium trade claims that the limitless collection of Hawaii's reef animals has a minimal impact on the state's coral reef ecosystem, even in the face of ongoing, unprecedented coral bleaching and climate change. The aquarium extractors take the majority of Achilles tangs and yellow tangs on the reefs where they operate, amounting to more than 80% in some years. DEIS skews this data by comparing catch numbers to estimates for fish populations on the entire island and concludes that the trade would be taking just 1%, which misleadingly minimizes impacts to localized reef ecosystems. Allowing the extraction of Hawaii's reef fish, which are at the present and for the foreseeable future facing unprecedented stressors – is a prescription for species extinction, and would be a wanton disregard for common sense policy designed to protect Hawaii's environmental assets and the public interest.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore

Leeward Oahu

Windward Oahu

Kaneohe Bay

Kailua

Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: bbugbee@beyondkona.com

From: [Patricia Cadiz](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 7:23:52 PM

Aloha Mr. Sakoda,

My name is Patricia Cadiz and I am a Full time HI resident.

My specific comment: The health of our reefs is inextricably linked to the health of our beaches. Both beach and reef depend on a balanced and thriving reef ecosystem. Please do not allow the aquarium trade access to these proposed permits.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol
Parrotfish/Uhu

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: pbc5@mac.com

From: [Francesca Carey](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Friday, June 19, 2020 8:20:30 PM

Aloha Mr. Sakoda,

My name is Francesca Carey and I am a Full time HI resident.

My specific comment: Already there are NO yellow tangs in Maui!! The reef fish need our protection - it should be ILLEGAL to take them at all! Find a way to raise them in captivity if you can - but do NOT ALLOW collecting in ANY of our islands!

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore

Kaneohe Bay

Kailua

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts.

This DEIS is completely flawed.

I can be reached at: fcarey529@yahoo.com

From: [Heather Carollo](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynych@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Monday, June 22, 2020 4:04:00 AM

Aloha Mr. Sakoda,

My name is Heather Carollo and I am a Full time HI resident.

My specific comment: Fish populations are declining all over the world, now is not the time to allow anyone the ability to catch unlimited amounts of any animal. We need to protect our environment and that includes the animals that are essential for it's survival. Our reefs will only die faster without these species. Please do not allow this to pass.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

Species abundance is significantly reduced by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: Isis081902@gmail.com

From: [Mia Charleston](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Friday, June 19, 2020 2:16:11 PM

Aloha Mr. Sakoda,

My name is Mia Charleston and I am a Full time HI resident.

My specific comment: Aloha and thank you for considering comments to the DEIS. I feel the DEIS is not accurate, overlooks a lot of data and does not provide enough information to support or prove there won't be negative affects on the populations of fish they are proposing to take off the reef. This statement alone "it is unknown which, if any, species are experiencing population declines, as population trend data is not available for the fish species analyzed in this EIS for the island of O'ahu" does not provide an acceptable conclusion that the proposed reef ecosystem will not be affected. I have lived in Hawai'i for 14 years. My degree is in Oceanography with a background in Marine Science. Having worked on snorkel boats for about 8 years on Maui, I have seen the decline in so much marine life from corals to fish. It would be a shame to basically allow additional impacts to the reef ecosystem. Weren't some of the collectors who are behind the proposal to take off the reef, have been caught illegally taking marine life. I understand this is a difficult time for so many people but it doesn't mean that we need to sacrifice some of our resources that bring in monies in different ways to the State such as the tourism industry and diving industry. I remember going to an interview for a job in Florida that was associated with the marine trade industry. I walked in for the interview and saw hundreds of tanks with living (for sale)and so many dead fish- that I turned around and walked right out- it was terrible to see the amount of loss first hand. I am lucky to be able to get out snorkeling and diving at least once a week still even though I am not on the boats anymore. Based on what I have seen on Maui, Hawaii and Oahu, it would not be in the best interest of the community to to take these fish species without have something to replace them with. These fish species create a type of balance and in these times, that balance is under threat having so many detrimental obstacles to deal with, it needs all the help it can get. Also there are other means such as certain types of fish being raised in captivity that should be supported instead (win-win). I hope you will take these comments into consideration and thank you for your time. Mahalo

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
Achilles tang (paku ikui)
Flame Wrasse
Moorish Idol

My concerns about those species include:

Communities of reef species are disrupted by aquarium collecting.

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an

exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made. Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore

Leeward Oahu

Kaneohe Bay

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: alohamia7@yahoo.com

From: [Debbie Collins](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 7:53:59 PM

Aloha Mr. Sakoda,

My name is Debbie Collins and I am a Full time HI resident.

My specific comment:

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: mauideb1996@gmail.com

From: [Alissa Collins](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynych@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Monday, June 22, 2020 6:32:33 PM

Aloha Mr. Sakoda,

My name is Alissa Collins and I am a Full time HI resident.

My specific comment: STOP PILFERING OUR LOCAL OCEANS.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts.

This DEIS is completely flawed.

I can be reached at: Alissa14@msn.com

From: [Keoki Cortez](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 4:22:16 PM

Aloha Mr. Sakoda,

My name is Keoki Cortez and I am a Full time HI resident.

My specific comment: I believe that we should not allow the aquarium fishing industry remove any of our tropical fish from our waters. There is a reason why West Hawaii was called the Gold Coast. There was such an abundance of Yellow Tang that when they fed on the reefs, it would look like "gold" in the waters. You can't find this any longer. It needs to stop. When you harvest, you are destroying the balance of nature.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: keok1h151@gmail.com

From: [Antoinette Davis Davis](mailto:Antoinette.Davis.Davis)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](mailto:VanDeWalle.Terry); jim.lynych@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 3:15:52 PM

Aloha Mr. Sakoda,

My name is Antoinette Davis Davis and I am a Full time HI resident.

My specific comment: Please reject this proposal - let the north American Pet trade address North America - this is Hawaii and these unique and fragile fishes need protection not harvesting from our Ocean. In Hawaii our economic engine is Tourism - these fish need to stay here - all of them. In their natural habitat for all to enjoy and treasure.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol
Eels & Octopus

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Waikiki

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts.

This DEIS is completely flawed.

I can be reached at: tonimariadavis@gmail.com

From: [Tom Davis](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@kigates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 3:24:38 PM

Aloha Mr. Sakoda,

My name is Tom Davis and I am a Visitor/non-resident/concerned citizen.

My specific comment: This is a rhetorical question. When do we just stop this bullshit and cease pushing any species to extinction for the pleasure of selfish hobbyists. I want my Grand Children to have the same opportunities that I have had to enjoy the reefs around the world.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: tom.davis@civeo.com

From: [Jill Dietmeyer](mailto:Jill.Dietmeyer@hawaii.gov)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](mailto:VanDeWalle.Terry@hawaii.gov); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Thursday, June 18, 2020 3:22:02 PM

Aloha Mr. Sakoda,

My name is Jill Dietmeyer and I am a Full time HI resident.

My specific comment: No one should be allowed unlimited access to Hawaii's natural resources to profit from mainland sales. Once the fish are gone, they are gone. If you don't know how many of these species are still surviving on Oahu's beleaguered reefs how on earth can you vote on how many mainlanders or "residents" can come in and take for free? I'm a long distance ocean swimmer and have seen the dead, fish-less beaches and reefs on ALL shores of our island. How many of you have swam from Sunset beach to Ehukai, or Kaimana to the Hilton and really looked at the condition of our reef ecosystems. Well, I have and I must tell you that it's mostly dead. Maybe things have improved slightly due to the massive decrease in tourists and their sunscreen, perfumes, deodorants, wastes and garbage in our waters. But now is not the time to allow the mainland pet trade to destroy something so incredibly beautiful and valuable that can never be replaced. I support a ban on all reef fish collection for the aquarium trade as it benefits a tiny group at the expense of all Hawaii Kamaaina.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore

Leeward Oahu

Windward Oahu

Kaneohe Bay

Kailua

Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: manifest_health@yahoo.com

From: [Karen Dorrance](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 9:56:59 PM

Aloha Mr. Sakoda,

My name is Karen Dorrance and I am a Full time HI resident.

My specific comment: This is a criminal act against our fragile marine fishes and should never be allowed.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua
Waikiki

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: snorkelgrl63@yahoo.com

From: [Kimberley Emmons](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Thursday, June 18, 2020 9:43:10 AM

Aloha Mr. Sakoda,

My name is Kimberley Emmons and I am a Part time HI resident.

My specific comment: INCREASE RESTRICTIONS for aquarium collectors and ALL fishermen. Please save our reefs and the sea life that keeps them vital!!!

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/ Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol
any reef fish

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.
Species abundance is significantly reduced by aquarium collecting.
Communities of reef species are disrupted by aquarium collecting.
The real possibility that future generations may not encounter these species
DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.
Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.
70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.
Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.
Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within

months and then conclude that commercial aquarium collection has no significant impacts.
This DEIS is completely flawed.

I can be reached at: kemmons36@gmail.com

From: [Scott Fallon](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 3:37:48 PM

Aloha Mr. Sakoda,

My name is Scott Fallon and I am a Visitor/non-resident/concerned citizen.

My specific comment: As a former and enthusiastic marine aquarist, my perspective is broader than just this DEIS. I oppose all taking of marine fish from natural environments for these reasons: 1. By encouraging this sort of trade in a tragedy of the commons manner, we enable and encourage takings in other regions that will not use environmentally sound collection methods. We should, therefore, not encourage a market for trading in wild animals. Trading in wild animals beyond marine fish is rarely allowed. 2. The death rates of wild-capture marine fish are unacceptably and shockingly high. A tragedy by itself, this also encourages increased takings to replace deaths in the to-market pipeline. Some of the fishes taken such as Achilles Tangs and Moorish Idols have very little chance of surviving for even the most advanced aquarist and should never be taken. 3. Climate change is impacting reef health, and we just don't understand enough about these ecosystems to risk altering them through marine fish takings. 4. There are now acceptable private property solutions to supplying the marine trade. Captive breeding of a high number of species--and growing--makes taking from the wild for the aquarium trade unnecessary. The aquarist has tremendous options and choices among captive-bred fish now. This solves the tragedy of the commons problem through solid application of the principles of private property and capitalism. Look at the trade in dart frogs--literally no frogs offered are wild-caught anymore. The entire hobby is successfully supplied by a capitalism approach: private captive breeding which places no burden on wild populations or ecosystems. The same is now possible for marine aquaria. I intend to someday again be a marine aquarist and will at that time buy only captive-bred fish.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

Species abundance is significantly reduced by aquarium collecting.
Communities of reef species are disrupted by aquarium collecting.
Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: scottfallon425@gmail.com

From: [Karen Foster](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Saturday, June 20, 2020 2:24:35 AM

Aloha Mr. Sakoda,

My name is Karen Foster and I am a Full time HI resident.

My specific comment: Our fish belong in our ocean! They are not “ambassadors” for anyone. Ban reef rappers! Please!

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts.

This DEIS is completely flawed.

I can be reached at: Kfister00@hotmail.com

From: [Brooke Friswold](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Monday, June 22, 2020 10:21:36 AM

Aloha Mr. Sakoda,

My name is Brooke Friswold and I am a Full time HI resident.

My specific comment: I am a wildlife biologist and avid free diver here. I have personally witnessed a decline in biomass in reefs I have dived in and understand the impacts of removing important grazers like parrotfish and how opening up the trade would devastate not only fish populations but can collapse reef ecosystems all to support the corrupt aquarium trade. Please respect the delicate biodiversity of our reefs and do not allow it to be squandered for private interests.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol
Parrot fish

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu

Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: bfriswold27@hotmail.com

From: [JoAnn Garrigan](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 5:15:44 PM

Aloha Mr. Sakoda,

My name is JoAnn Garrigan and I am a Full time HI resident.

My specific comment: The number of fish and other species of ocean wildlife seen while swimming and snorkeling in Hawaii is scant. Why would any oven lover who enjoys seeing wildlife bother to visit our islands? We must conserve reef fish and wildlife in all forms for those of us who live here and for visitors to our islands. Promotion of ecotourism in Hawaii depends on the presence of wildlife in our ocean reefs. Tourism remains highly desirable and dependent on offering a colorful ocean for viewing.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol
octopus

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within

months and then conclude that commercial aquarium collection has no significant impacts.
This DEIS is completely flawed.

I can be reached at: joanngarrigan@gmail.com

From: [Robert Gibson](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 8:12:10 PM

Aloha Mr. Sakoda,

My name is Robert Gibson and I am a Visitor/non-resident/concerned citizen.

My specific comment:

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: robgibson1031@gmail.com

From: [Cat gould](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 3:08:04 PM

Aloha Mr. Sakoda,

My name is Cat gould and I am a Visitor/non-resident/concerned citizen.

My specific comment: My dad was a fish collector when I was a kid, they all had terrible survival rates. It is damaging to the reef diversity to allow collection. Leave them there for their own sake and the sake of those wanting to swim and see them.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Bandit Angelfish
Achilles tang (paku ikui)
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

The real possibility that future generations may not encounter these species

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: catlsun@yahoo.com

From: [Gail Grabowsky](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynych@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Monday, June 22, 2020 9:44:06 PM

Aloha Mr. Sakoda,

My name is Gail Grabowsky and I am a Full time HI resident.

My specific comment: The original limits were not based on any kind of ecological data and as such were a matter of huge contention and fiction. They were determined by fish collectors and not scientists or scientific reasoning. I did calculations years ago when the "limits" were first proposed that showed that they would be completely unsustainable and if carried out would lead to higher numbers of take than the entire population size estimated on Oahu in the DEIS. The then Chair of DAR resigned on the day of testimony saying that the limits were like a 400-mile-an-hour speed "limit." I am sharing the table with Mr. Sakoda in a separate letter because it cannot be downloaded into this text box. Pulling numbers out of the sky is not science. The fish collectors simply chose a number so high that they could collect business-as-usual without any justification for the number. The "limits" are not scientific or management or sustainable. Also, I have conducted research counting aquarium fish using the methods of Tissot and Hallancher (2003 "Effects of Aquarium Collectors on Coral Reef Fishes in Kona, Hawaii" Cons Bio 17(6)) who found that: "Aquarium collectors had significant effects on 7 of the 10 species of reef fish we examined." We reported on the abundance of aquarium-collected fish around Oahu by comparing fish abundances in open collection areas to two protected locations within Hanauma Bay. Six species of reef fish – *Acanthurus triostegus*, *Chaetodon lunula*, *Ctenochaetus strigosus*, *Naso lituratus*, *Zanclus cornutus*, and *Zebrasoma flavescens* – exhibited significantly lower populations in collection areas. The greatest decreases were observed in the four most heavily-collected species, three of which are not taken as food fish suggesting that ornamental collection is primarily responsible for the differences in abundance. This paper has not been published because we are told that we need more control counting areas. This cannot be achieved since less than 1% of Oahu is protected and only Hanauma Bay is free from poaching (personal observation). Lastly, the climate crisis threatens coral reefs and all reef species and requires that we model any sustainable collection at all using forward thinking prudent paradigms that include cautionary buffers for the confounding effects of climate change on reef health. Herbivorous reef fish are absolutely essential to reef health. Using past business-as-usual models and false limits will be detrimental to the health of the reef. Collection has already impacted fish populations negatively on Oahu and is therefore not sustainable. There is nothing in the DEIS to rectify that fact and so it should be rejected. Thank you for your consideration, Dr. Gail L. Grabowsky Director, Environmental Programs Interim Dean of Natural Sciences & Mathematics Chaminade University

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse

Flame Wrasse
Moorish Idol

My concerns about those species include:

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Leeward Oahu

Windward Oahu

Kaneohe Bay

Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: ggrabows@chaminade.edu

From: [Mary Groode](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynn@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Friday, June 19, 2020 12:01:36 AM

Aloha Mr. Sakoda,

My name is Mary Groode and I am a Full time HI resident.

My specific comment: PLEASE STOP THE AQUARIUM TRADE IN HAWAII. There are so few fish left on our reefs. Even on Maui where we voted to stop the trade the reefs have not recovered. We have many fewer fish than ever before. Not only from the few people making money from selling these valuable creatures, but from spear fishermen and women, people throwing nets, poachers taking fish even from protected areas, Roi eating local fish. We DESPERATELY need laws and enforcement of those laws. The ancient Hawaiian had periods of time where fishing was kapu. We need a sustainable way to protect our environment, the fish and the coral reefs on which they depend. We must have serious consequences for those breaking the law. To fine \$260 for taking \$37,000 worth of tropical fish is ridiculous ! PLEASE STOP THE AQUARIUM TRADE IN HAWAII FOR FIVE YEARS. Then, we can see if the fish and reefs have rebounded.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol
Parrot fish, yellow

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore

Leeward Oahu

Windward Oahu

Kaneohe Bay

Kailua

Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: dechenmaui@hawaii.rr.com

From: [Gregg Gruwell](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynych@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Monday, June 22, 2020 3:22:29 AM

Aloha Mr. Sakoda,

My name is Gregg Gruwell and I am a Full time HI resident.

My specific comment: My first trip to Hawaii was in 1980. I had just received my commission as an Ensign in the US Navy and a group of us were on our way to deployment in the Indian Ocean. We found time to make a snorkel trip to Hanauma Bay. Fish were super abundant and this magical experience stuck in my heart! Fast forward to 2000's and I am at DLNR to testify for the fish. During a break, fish collectors seated behind me are bragging about how easy getting fish is. They wait outside Hanauma Bay and when the fish school out the bay entrance, they scoop them up. Anyone who snorkels Oahu regularly knows the reef fish population has been decimated. From Maunalua Bay to Waikiki and the North Shore for example. Yellow Tang are seemingly gone. Collection reports show the yellow tang were once abundant in Waikiki and other areas. Collectors continue to push a false narrative that there are plenty of fish. The fact is DLNR have never counted fish populations and has no real idea what % of fish have been taken. My estimate is that 70% of the fish population are gone. For years, DLNR has aided and abetted the fish collection industry at every turn. A fish collector was even appointed as Director of DLNR. A DLNR scientist, Alton Miyasaka, (for years the lead scientist in charge of this fishery for DLNR) even published a guide, "Hawaii's Aquarium Fish Industry: A Business Profile", to assist Aquarium Collectors in catching and exporting fish.. Here is a review of the book, "A helpful guide for aquarium collectors in the 1990's. Miyasaka's small book is a business guide on how to run a fish collection operation. Licensing, shipping, etc. Written in a time when reef fish were in abundant supply and aquarium fish collection was a budding industry in Hawaii. Miyasaka himself is an aquarium enthusiast and an collector for personal use." (source - https://books.google.com/books/about/Hawaii_s_Aquarium_Fish_Industry.html?id=61BGGwAACAAJ) DLNR's role is to protect Hawaii's natural resources! Instead, their partnership with the collection industry has gone from a glaring conflict of interest to outright corruption. It is finally time for the State/DLNR to do the right thing and stop all aquarium collection! At the present rate, aquarium collection along with climate change and pollution will wipe out the vast majority of these beautiful creatures. They are a huge draw of tourist revenue and there will be no turning back the clock if we wait too long! This Draft Environmental Impact Statement (DEIS) is deeply flawed! Please take action for future generations and reject this fictional document. Hawaii reef fish need to stay in Hawaii! Mahalo for hearing my testimony! Gregg Gruwell Honolulu, HI

I am concerned about the impacts of the aquarium trade on the following species:

- Yellow tangs
- Butterflyfishes
- Achilles tang (paku ikui)
- Cleaner Wrasse
- Flame Wrasse
- Moorish Idol
- Pufferfish and Boxfish

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore

Leeward Oahu

Windward Oahu

Kaneohe Bay

Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: starriderhi@hotmail.com

From: jodi.gunderman
To: david.sakoda@hawaii.gov
Cc: VanDeWalle, Terry; jim.lynych@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Thursday, June 18, 2020 5:59:40 PM

Aloha Mr. Sakoda,

My name is jodi gunderman and I am a Visitor/non-resident/concerned citizen.

My specific comment:

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.
Species abundance is significantly reduced by aquarium collecting.
Communities of reef species are disrupted by aquarium collecting.
Marine life is threatened with local extinction
The real possibility that future generations may not encounter these species
DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.
Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.
70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.
Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.
Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts.

This DEIS is completely flawed.

I can be reached at: jokenarrowhead@aol.com

From: [Matthew Gurewitsch](mailto:Matthew.Gurewitsch@hawaii.gov)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](mailto:VanDeWalle.Terry@hawaii.gov); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 8:23:54 PM

Aloha Mr. Sakoda,

My name is Matthew Gurewitsch and I am a Full time HI resident.

My specific comment: I am horrified. This deceptive, predatory, irresponsible DEIS must be rejected out of hand. According to this document, "it is unknown which, if any, species are experiencing population declines, as population trend data is not available for the fish species analyzed in this EIS for the island of O'ahu." As anyone who keeps an eye in the waters knows, this is a lie. But even if it were true, let our watchword be: FIRST, DO NO HARM. It is time to shut down, once and for all, the removal of our native fish from their habitat to stock aquariums on the mainland and elsewhere. The survival rate of the stolen fish is heartbreakingly low. And obviously, fish that do survive in distant aquariums do not reproduce in sufficient numbers to satisfy collectors' desires. We must protect these creatures. They are our kuleana. Fail them now and we will have failed them forever.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol
Sailfin tang, Christmas wrasse

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar

with on Oahu:
North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: matthew@alohaheights.com

From: [Robert Guzman](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Thursday, June 18, 2020 9:36:23 PM

Aloha Mr. Sakoda,

My name is Robert Guzman and I am a Full time HI resident.

My specific comment: The Draft Environmental Impact Statement proposed will help accelerate destruction of our coral reef ecosystems.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol
all species are interdependent

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: robguz4@me.com

From: [Taylor Hall](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynych@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Sunday, June 21, 2020 1:02:14 PM

Aloha Mr. Sakoda,

My name is Taylor Hall and I am a Full time HI resident.

My specific comment:

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts.

This DEIS is completely flawed.

I can be reached at: tylrspace@aol.com

From: [Cory Harden](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Sunday, June 21, 2020 3:01:41 AM

Aloha Mr. Sakoda,

My name is Cory Harden and I am a Full time HI resident.

My specific comment: Our public trust resources should not be wiped out to enrich a few people.

I am concerned about the impacts of the aquarium trade on the following species:
Yellow tangs

My concerns about those species include:

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: 333cory@gmail.com

From: [yuk heath](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Monday, June 22, 2020 2:24:01 AM

Aloha Mr. Sakoda,

My name is yuk heath and I am a Visitor/non-resident/concerned citizen.

My specific comment: Continuously take marine animals will establish an unbalanced ecosystem.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within

months and then conclude that commercial aquarium collection has no significant impacts.
This DEIS is completely flawed.

I can be reached at: yukfunheath@gmail.com

From: [Teresa Hill](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Thursday, June 18, 2020 11:35:30 AM

Aloha Mr. Sakoda,

My name is Teresa Hill and I am a Full time HI resident.

My specific comment: Over the years I have seen a big decline in our beautiful Hawaiian tropical fish We need to protect our beautiful resources and aquatic Life life here

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Windward Oahu
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: supertfitness@gmail.com

From: [Elizabeth Hird](mailto:Elizabeth.Hird@hawaii.gov)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](mailto:VanDeWalle.Terry@hawaii.gov); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Thursday, June 18, 2020 2:47:19 AM

Aloha Mr. Sakoda,

My name is Elizabeth Hird and I am a Full time HI resident.

My specific comment: I am very concerned that there are not enough protections for reef fish.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: bethpaints@gmail.com

From: patricia_hoskin
To: david.sakoda@hawaii.gov
Cc: VanDeWalle, Terry; jim.lynych@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 9:53:27 PM

Aloha Mr. Sakoda,

My name is patricia hoskin and I am a Full time HI resident.

My specific comment: I have lived on Maui for 11 years. I purchased my condo before that move. I have always enjoyed snorkling. My sons enjoy snorkling as do my three grandsons. I do not appreciate your organization having the right to give away or sell this precious resource. All citizens have the right to see these fish in their native habitat. That is why tourists go into the ocean. I do not think you should have the right to allow these individuals or companies to come and steal our fish. I wish we could vote your power out of existence.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs

Butterflyfishes

Achilles tang (paku ikui)

Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

The real possibility that future generations may not encounter these species

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Kaneohe Bay

Kailua

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: pattylou9@gmail.com

From: [Phillip Hoyle](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynych@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Thursday, June 18, 2020 2:48:07 AM

Aloha Mr. Sakoda,

My name is Phillip Hoyle and I am a Full time HI resident.

My specific comment: Not responsible stewardship of our valuable wildlife.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua
Waikiki

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within

months and then conclude that commercial aquarium collection has no significant impacts.
This DEIS is completely flawed.

I can be reached at: phoyle1@gmail.com

From: [Alice Hughes](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@kigates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Monday, June 22, 2020 1:45:10 AM

Aloha Mr. Sakoda,

My name is Alice Hughes and I am a Full time HI resident.

My specific comment: We need our fish to thrive so our reefs can be healthy for future generation and or visitor industry . I can not go to parks and harvest plants to sell . why should Aquarium collectors be allowed to pillage are reefs of rare and endangered fish for profit.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/ Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua
Waikiki

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: Aliceinhawaii@gmail.com

From: [Shauna Ikahiifo](mailto:Shauna.Ikahiifo)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](mailto:VanDeWalle.Terry); jim.lynych@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Friday, June 19, 2020 7:00:13 PM

Aloha Mr. Sakoda,

My name is Shauna Ikahiifo and I am a Visitor/non-resident/concerned citizen.

My specific comment: I am a diasporic Kanaka Maoli living on the continent. When I return to my ancestral homeland, it is always heartbreaking to see how much of our islands natural beauty & resources have been commercialized with nothing to show for the Hawaiian people. You cannot continue to take what doesn't belong to you in the first place and then come back for more and more. When will you be satisfied? When the i'a who have called these waters their home for centuries are driven to extinction? Enough is enough. PAU ALREADY!

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay

Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: Shaunamalia@gmail.com

From: [Ara Johnson](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Saturday, June 20, 2020 3:33:42 PM

Aloha Mr. Sakoda,

My name is Ara Johnson and I am a Visitor/non-resident/concerned citizen.

My specific comment: I am a former Hawai'i resident who returns every year. The reefs need to be saved.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: Arajhnsn@gmail.com

From: [Bradley Jones](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynn@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Thursday, June 18, 2020 2:58:05 PM

Aloha Mr. Sakoda,

My name is Bradley Jones and I am a Visitor/non-resident/concerned citizen.

My specific comment: The capture of fish and animal's on Hawaii's reefs has gone on for far too long. Corruption at the highest levels of state government has allowed this to continue for decades and it must stop now. There is no real economic benefit to Hawaii for the plunder of its natural resources including the coral reefs, except for a few selfish individuals who profit from the abduction and destruction of marine life and ecosystems in Hawaii. Enough is enough. The aquarium trade must be completely banned in Hawaii forever starting now. End of story. End this now, or the political careers of those who are supporting this travesty will be over. It's that simple. Public sentiment has turned completely against this barbaric practice and it's long past time to stand on the right side of history. Please do the right thing and abolish the aquarium trade in Hawaii. No exceptions for anyone, no matter who they are related to in the state government. Mahalo.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: bjesquire@gmail.com

From: [Annette Kaohelaulii](mailto:Annette.Kaohelaulii)
To: david.sakoda@hawaii.gov
Cc: VanDeWalle, Terry; jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Friday, June 19, 2020 2:57:02 PM

Aloha Mr. Sakoda,

My name is Annette Kaohelaulii and I am a Full time HI resident.

My specific comment: I was shocked to learn that commercial operations even think they can harvest fishes from our reefs for sale to people with aquariums. They should start their own businesses growing aquarium fish for sale. It does not make sense to harvest our natural resources in a for profit operation.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/ Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: annettesadventures@juno.com

From: [Etta Karth](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynn@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Thursday, June 18, 2020 5:24:42 PM

Aloha Mr. Sakoda,

My name is Etta Karth and I am a Full time HI resident.

My specific comment: Aloha, As a resident, marine scientist, and UHH Marine Science employee, the DEIS is flawed. I can speak for the Big Island of Hawaii - there is little enforcement of the collection rules that currently exist, rules and laws are being broken, and the species targeted for the aquarium trade will be further at risk of low population levels if the DEIS is approved. Unfortunately, Hawaii is an easy place to get away with a lot of terrible things - don't let this get piled on top.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol
Marine invertebrates

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu

Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: mamanirvana4@gmail.com

From: [Mark Koppel](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 4:01:27 PM

Aloha Mr. Sakoda,

My name is Mark Koppel and I am a Full time HI resident.

My specific comment: I live in Hawaii. Leave those reefs and species alone!!!!

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts.

This DEIS is completely flawed.

I can be reached at: mak221@aol.com

From: [Laszlo Kurucz](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 8:54:43 PM

Aloha Mr. Sakoda,

My name is Laszlo Kurucz and I am a Visitor/non-resident/concerned citizen.

My specific comment:

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol
Every fish

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: laszlo.kurucz@hotmail.com

From: [Jerry Lear](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynych@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 5:21:27 PM

Aloha Mr. Sakoda,

My name is Jerry Lear and I am a Visitor/non-resident/concerned citizen.

My specific comment:

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: jjlear@gmail.com

From: [Rick Lewis](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 4:03:52 PM

Aloha Mr. Sakoda,

My name is Rick Lewis and I am a Part time HI resident.

My specific comment: Aloha: We have been visiting Hawaii for over 20 years. Every year there are fewer and fewer fish on the reefs. If you leave for a while like we do and return, you can see the difference year to year. If we lose our reef fish our visitors who like to stay for extended periods of time will go other places. Because, who wants to make an extended visit to a place where the natural beauty has been destroyed. I like tropical fish and I have kept aquarium breed fish. Our Maui reef fish are beautiful. We need them here. Maybe in 10 or 20 years they will recover, but until then, I do not believe we should take any more. The new normal will be that only people who are here for a quick sun break and some beer will be the only people who want to come here.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.
Species abundance is significantly reduced by aquarium collecting.
Communities of reef species are disrupted by aquarium collecting.
Marine life is threatened with local extinction
The real possibility that future generations may not encounter these species
DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.
Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.
Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within

months and then conclude that commercial aquarium collection has no significant impacts.
This DEIS is completely flawed.

I can be reached at: Ricklewis1972@gmail.com

From: [Pat Lindquist](mailto:Pat.Lindquist)
To: david.sakoda@hawaii.gov
Cc: VanDeWalle, Terry; jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Sunday, June 21, 2020 4:41:50 PM

Aloha Mr. Sakoda,

My name is Pat Lindquist and I am a Part time HI resident.

My specific comment: Hawaiian reefs need diverse reef fish to be healthy. Decimating the wild fish to provide a few to enjoy them in captivity is short sighted gain and long time loss.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: Pblindquist@gmail.com

From: [Jackie Lott](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 4:31:36 PM

Aloha Mr. Sakoda,

My name is Jackie Lott and I am a Full time HI resident.

My specific comment: Here on Kauai, I see trucks full of buckets of aquarium fish being harvested. They take the young fish, so no next generation It is Not sustainable!

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: avcwcoach@aim.com

From: [Heather MacKey](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Thursday, June 18, 2020 5:09:14 AM

Aloha Mr. Sakoda,

My name is Heather MacKey and I am a Visitor/non-resident/concerned citizen.

My specific comment:

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs

Butterflyfishes

Herbivores/Surgeonfishes

Bandit Angelfish

kole

Achilles tang (paku ikui)

Cleaner Wrasse

Flame Wrasse

Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: heatheracq@gmail.com

From: [Justin Makekau](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Friday, June 19, 2020 8:55:32 PM

Aloha Mr. Sakoda,

My name is Justin Makekau and I am a Visitor/non-resident/concerned citizen.

My specific comment: Save the oceans is what's heard most but where does that start? Healthy ecosystems, coral reefs, teaming populations of various species. This is crucial, stop this absurd request to kill the oceans!

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol
Parrotfish

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Leeward Oahu
Windward Oahu
Kaneohe Bay
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within

months and then conclude that commercial aquarium collection has no significant impacts.
This DEIS is completely flawed.

I can be reached at: justinian_kekoa@yahoo.com

From: [Helen Malnar](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Thursday, June 18, 2020 9:43:14 AM

Aloha Mr. Sakoda,

My name is Helen Malnar and I am a Visitor/non-resident/concerned citizen.

My specific comment: The underwater beauty that the Hawaiian islands have should be protected from all and any aquarium collectors. Why would you jeopardize the beautiful reefs, and the fish that live there, by letting these collectors exploit any of the waters around any of the islands of Hawaii?

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.
Species abundance is significantly reduced by aquarium collecting.
Communities of reef species are disrupted by aquarium collecting.
Marine life is threatened with local extinction
The real possibility that future generations may not encounter these species
DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.
Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.
Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: Helenptm1@gmail.com

From: [Richard Marks](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 6:15:28 PM

Aloha Mr. Sakoda,

My name is RIchard Marks and I am a Full time HI resident.

My specific comment: "This DEIS is a terrible insult to our dwindling reef systems. I've lived in Hawai'i for 20 years, and was a visitor here for the 15 years prior to becoming a full time resident. In these decades, the loss of specific reef life is more than obvious to the naked eye. One does not need to be a marine biologist to see how fishing for the aquarium/pet trade has diminished and nearly obliterated some species. PLEASE, please, please do not allow this dangerous practice to continue. Please INCREASE RESTRICTIONS for aquarium collectors and ALL fishermen. Please save our reefs and the sea life that keeps them vital!!! Thank you."

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu

Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: richard@dolphinmana.com

From: [Gwendelyn Marshall](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Monday, June 22, 2020 8:31:08 PM

Aloha Mr. Sakoda,

My name is Gwendelyn Marshall and I am a Full time HI resident.

My specific comment: Taking something that doesn't belong to you is stealing. Collectors are wiping out local fish populations. If you've been in the water lately you'll notice a lack of tropical reef fishes. These collectors can breed their own fish and sell them instead of stealing fish from the sea. Stop the collectors and save the fish.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.
Species abundance is significantly reduced by aquarium collecting.
Communities of reef species are disrupted by aquarium collecting.
Marine life is threatened with local extinction
The real possibility that future generations may not encounter these species
70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.
Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.
Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: Gwen_marshall@comcast.net

From: [Willa Mathison](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Thursday, June 18, 2020 3:22:12 PM

Aloha Mr. Sakoda,

My name is Willa Mathison and I am a Visitor/non-resident/concerned citizen.

My specific comment: Although I am 86 and somewhat disabled and not really able to snorkel, any more, I have been a frequent Hawaii visitor--two or three times a year for many years--I desperately want the fish to be there for future generations to observe. It is certainly a known fact that the collectors greatly reduce the breeding capacity and, therefore, the over all numbers of fish. Please don't let them ruin the population of fishes for profit and entertainment of others.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Flame Wrasse
Moorish Idol
All!

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: fredwillakubasta@yahoo.com

From: [Pedo Maynes](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynych@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Sunday, June 21, 2020 6:48:47 AM

Aloha Mr. Sakoda,

My name is Pedo Maynes and I am a Full time HI resident.

My specific comment: We must stop the rape and pillaging of our once pristine reefs and shoreline, that was once full of abundant sealife. Now no longer due to man's greed, carelessness and on going pollution. Hewa! Fix this problem maky it Pono. Malama Aloha Aina!

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: pedromaynesjr@gmail.com

From: [Kelley Mchenry](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynych@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 10:57:20 PM

Aloha Mr. Sakoda,

My name is Kelley Mchenry and I am a Visitor/non-resident/concerned citizen.

My specific comment: I was born in Hawaii and have been going there to visit all my life. I have seen how the reefs are dying in many formerly healthy places and how many fewer fish there are. It is a travesty that aquarium providers can take wild fish when they are already under so many pressures. The reefs of Hawaii are the state's best assets. Please do everything you can to ensure their protection.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Bandit Angelfish
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Kaneohe Bay
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: kelmch@comcast.net

From: [Charlotte McLaughlin](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynych@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Thursday, June 18, 2020 12:20:16 PM

Aloha Mr. Sakoda,

My name is Charlotte McLaughlin and I am a Full time HI resident.

My specific comment: Limits are inadequate. I snorkel regularly on Maui where I live and have snorkeled on Oahu. It is obvious the reefs have been stripped of most of their fish. Aquarium collecting needs to be banned and strong and mandatory penalties for poaching need to be put in place. I own a vacation rental and snorkeling is one of the primary activities of our visitors. They snorkel and they are upset by what they see happening as well. I visited the Galapagos and Equador is a poor country yet take better care of their marine resources. They have far more abundant sea life. There it is more like it used to be when I first moved to Hawaii 20 years ago. The snorkel and boat to snorkel industry is far more of an economic boon to the islands than aquarium collecting which represents a fraction. It makes no sense on any level to allow this predation to continue. I see turtles at cleaning stations but there are hardly any fish to clean them. The reefs themselves are not as clean and vibrant. Aquarium collecting creates an unhealthy situation for our residents, visitors, reefs, beaches and even the economy.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol
Potters Angelfish; Frog Fish

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside

Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore

Leeward Oahu

Windward Oahu

Kaneohe Bay

Kailua

Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: mauichandrika@yahoo.com

From: [Allison Melanson](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynych@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Monday, June 22, 2020 8:50:36 PM

Aloha Mr. Sakoda,

My name is Allison Melanson and I am a Full time HI resident.

My specific comment: Keep Hawaii's fish safe.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Windward Oahu
Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: Ach_penguin@hotmail.com

From: [Janet Mercer](mailto:Janet.Mercer@hawaii.gov)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](mailto:VanDeWalle.Terry@hawaii.gov); jim.lynych@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Monday, June 22, 2020 3:50:02 PM

Aloha Mr. Sakoda,

My name is Janet Mercer and I am a Full time HI resident.

My specific comment: Aloha, I am writing to urge you to reject the DEIS prepared by the North American pet industry. For the past thirty three years I have swum almost daily in the ocean surrounding our islands. In that time I have witness a dramatic decline in the tropical fish population and the degradation of our near shore reef. It is ludicrous to believe that allowing the collection and sale of tropical fish does not significantly impact the fish population, the reef or those of us that enjoy a healthy ocean. Now is the time to put our marine and island population ahead of profit. If not now, when? Once again I urge you to fully reject the DEIS prepared by the North American pet industry. Mahalo, Janet Mercer

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Kaneohe Bay
Kailua

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: MauiMercer@gmail.com

From: [Linda Mertens](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Monday, June 22, 2020 11:38:22 AM

Aloha Mr. Sakoda,

My name is Linda Mertens and I am a Full time HI resident.

My specific comment: At a time when so much is being taken away or destroyed, PLEASE let's keep what little we have left!

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: pelija2@hotmail.com

From: [David Meyer](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Thursday, June 18, 2020 7:24:44 PM

Aloha Mr. Sakoda,

My name is David Meyer and I am a Visitor/non-resident/concerned citizen.

My specific comment: Finally, after protection from the Aquarium traders for over two years, and with the break from much human interaction due to the pandemic, fish populations have been allowed to return. There should be at least another year's protection in O'ahu for studies to determine what the fish population is in various O'ahu marine sites. The DEIS should have remembered that take limits are based on state-wide populations - therefore allowing too much take for a species in the O'ahu population because state-wide figures include abundance in that species on the Big Island.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Moorish Idol

My concerns about those species include:

Communities of reef species are disrupted by aquarium collecting.

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: osheadavid@sbcglobal.net

From: [Terry Michaud](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Thursday, June 18, 2020 4:35:59 PM

Aloha Mr. Sakoda,

My name is Terry Michaud and I am a Full time HI resident.

My specific comment: I am horrified. This deceptive, predatory, irresponsible DEIS must be rejected out of hand. According to this document, "“t is unknown which, if any, species are experiencing population declines, as population trend data is not available for the fish species analyzed in this EIS for the island of O’ahu.” As anyone who keeps an eye in the waters knows, this is a lie. But even if it were true, let our watchword be: FIRST, DO NO HARM. It is time to shut down, once and for all, the removal of our native fish from their habitat to stock aquariums on the mainland and elsewhere. The survival rate of the stolen fish is heartbreakingly low. And obviously, fish that do survive in distant aquariums do not reproduce in sufficient numbers to satisfy collectors' desires. We must protect these creatures. They are our kuleana. Fail them now and we will have failed them forever.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.
Species abundance is significantly reduced by aquarium collecting.
Communities of reef species are disrupted by aquarium collecting.
The real possibility that future generations may not encounter these species
70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.
Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.
Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua

Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: Terrymichaud52@gmail.com

From: [Asta Miklius](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynych@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Monday, June 22, 2020 4:45:51 AM

Aloha Mr. Sakoda,

My name is Asta Miklius and I am a Full time HI resident.

My specific comment: This DEIS completely disregards multiple lines of evidence that would suggest that we need to severely limit the amount of reef wildlife that could be collected without severe impact to reef health (especially in recovery from ocean warming events that are becoming more and more intense.) Instead, this DEIS proposes expanding collection territories and increasing collection limits. I have seen first-hand the impact of aquarium collection on the reef ecosystem around the island of Hawai'i, and the potential for recovery once it is suspended. It is absurd to ask the people of Hawai'i to stop fishing for herbivores while allowing the aquarium trade to take these same fish for profit. It is also preposterous to recommend that it is fine to continue to destroy our natural resources for the personal financial gain of a handful of people and companies. This DEIS is deeply and irretrievably flawed and should be rejected.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar

with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: nalehua@hawaii.rr.com

From: [David Monasevitch](mailto:David.Monasevitch@hawaii.gov)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](mailto:VanDeWalle.Terry@hawaii.gov); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 4:04:27 PM

Aloha Mr. Sakoda,

My name is David Monasevitch and I am a Full time HI resident.

My specific comment: I think that there are not enough limits put on aquarium reef fish collectors. I think there should be a 25 year moratorium put on all collecting of reef fish for aquarium purposes.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: davidmonasevitch@hawaiiantel.net

From: [Nina Monasevitch](mailto:Nina.Monasevitch@hawaii.gov)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](mailto:VanDeWalle,Terry@hawaii.gov); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Sunday, June 21, 2020 2:11:23 AM

Aloha Mr. Sakoda,

My name is Nina Monasevitch and I am a Full time HI resident.

My specific comment: I have been diving in Hawaii since 1978. The drastic decline in reef fish is shocking! I can tell you from first hand experience that ALL species are experiencing population declines. Our oceans are dying. Extraction of species is one of the top three reasons for the degradation of the marine ecosystem. STOP ALL aquarium collection now!

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol
Eel's

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: oceanmana@hawaiiantel.net

From: [Mike Moran](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynych@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 9:09:07 PM

Aloha Mr. Sakoda,

My name is Mike Moran and I am a Full time HI resident.

My specific comment: TThe rape of the reefs continue in a nastygame of whack-a-mole. Stop 'em in one area they try another. Another fake DEIS Maybe if they were fned for fake info they would do better. Maybe we need to go to the precautionary principle? Please say no again to another ludicrous document & save our natural resources, Mahalo

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Bandit Angelfish
Cleaner Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: mmmmahalo2000@aol.com

From: [MARY MORRIS](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynych@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Friday, June 19, 2020 10:43:13 AM

Aloha Mr. Sakoda,

My name is MARY MORRIS and I am a Part time HI resident.

My specific comment: Stop aquarium trade on South Kohala coast! The yellow tang have just started coming back to Puako in the past 18 or 24 months. Collectors will wipe them out (again) if they are allowed to collect Tang or any other "decorative" aquarium species. Let the fish population increase! This is not the time to remove them from the waters.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Moorish Idol
Day Octopus

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: konaswim@gmail.com

From: [William Morris](mailto:William.Morris)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](mailto:VanDeWalle.Terry); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Thursday, June 18, 2020 8:07:06 PM

Aloha Mr. Sakoda,

My name is William Morris and I am a Full time HI resident.

My specific comment: In my 60 years on this planet, I have been swimming with a mask and snorkel on Oahu for 50 of these years. There are no kole, manini, Kala, Uhu left to fish. I used to think I could survive a food shortage by my ability to spear reef fish. Today I would starve. The reefs surrounding Oahu are in dire need of a kapu. We have to act responsibly, the way our Hawaiian ancestors did, and start managing these important food bearing assets appropriately NOW.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay

Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: accessible.homes.hawaii@gmail.com

From: [Vulong Nguyen](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 3:16:06 PM

Aloha Mr. Sakoda,

My name is Vulong Nguyen and I am a Visitor/non-resident/concerned citizen.

My specific comment:

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs

Butterflyfishes

Herbivores/Surgeonfishes

Bandit Angelfish

kole

Achilles tang (paku ikui)

Cleaner Wrasse

Flame Wrasse

Moorish Idol

My concerns about those species include:

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: vulong.nguyen.vietnam@gmail.com

From: [Laura Parks](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 5:09:26 PM

Aloha Mr. Sakoda,

My name is Laura Parks and I am a Visitor/non-resident/concerned citizen.

My specific comment:

I am concerned about the impacts of the aquarium trade on the following species:

Butterflyfishes

Herbivores/Surgeonfishes

Bandit Angelfish

kole

Achilles tang (paku ikui)

Cleaner Wrasse

Flame Wrasse

Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: oceanrespectcampaign@gmail.com

From: [Scott Parrish](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 9:51:19 PM

Aloha Mr. Sakoda,

My name is Scott Parrish and I am a Part time HI resident.

My specific comment: I am appalled that any aquarium trade is being allowed on Hawaii reefs, the amount of fish has declined tremendously since the first time I started exploring the beautiful reefs in the 1990's. I'm an avid reef explorer and the only places that have a decent supply of fish life left is at the reserves. Locals and tourist both benefit from having abundant fish life's on our crumbling reefs, please stop or put heavy restrictions on the aquarium trade from destroying our reef life.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
All species

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts.

This DEIS is completely flawed.

I can be reached at: sctt_parrish@yahoo.com

From: Susanne Paynovich
To: david.sakoda@hawaii.gov
Cc: VanDeWalle, Terry; jim.lynych@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 11:18:24 PM

Aloha Mr. Sakoda,

My name is Susanne Paynovich and I am a Visitor/non-resident/concerned citizen.

My specific comment: "This DEIS is a terrible insult to our dwindling reef systems. I've have lived in Hawai'i, been going to Hawai'i and have done business in Hawai'i for 44 years. In these decades, the loss of specific reef life is more than obvious to the naked eye. One does not need to be a marine biologist to see how fishing for the aquarium/pet trade has diminished and nearly obliterated some species. PLEASE, please, please do not allow this dangerous practice to continue. Please INCREASE RESTRICTIONS for aquarium collectors and ALL fishermen. Please save our reefs and the sea life that keeps them vital!!! Thank you."

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu

Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: waterygym@earthlink.net

From: [Pamela Polland](mailto:Pamela.Polland@hawaii.gov)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](mailto:VanDeWalle.Terry@hawaii.gov); jim.lynych@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 5:16:13 PM

Aloha Mr. Sakoda,

My name is Pamela Polland and I am a Full time HI resident.

My specific comment: This DEIS is a terrible insult to our dwindling reef systems. I've lived in Hawai'i for 44 years, and was a visitor here for the 15 years prior to becoming a full time resident. In these decades, the loss of specific reef life is more than obvious to the naked eye. One does not need to be a marine biologist to see how fishing for the aquarium/pet trade has diminished and nearly obliterated some species. PLEASE, please, please do not allow this dangerous practice to continue. Please INCREASE RESTRICTIONS of aquarium collectors and ALL fishermen. Please save our reefs that the sea life that keeps them vital!!! Thank you.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol
all species of surgeon, trigger and damsel fishes

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.
Species abundance is significantly reduced by aquarium collecting.
Communities of reef species are disrupted by aquarium collecting.
Marine life is threatened with local extinction
The real possibility that future generations may not encounter these species
DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.
Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.
70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.
Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.
Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu

Windward Oahu
Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: mele@pamelapolland.com

From: [Bryson Poloa- Lewis](mailto:Bryson.Poloa-Lewis)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](mailto:VanDeWalle.Terry); jim.lynych@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Sunday, June 21, 2020 11:50:29 AM

Aloha Mr. Sakoda,

My name is Bryson Poloa- Lewis and I am a Visitor/non-resident/concerned citizen.

My specific comment: A'OLE!! Aloha Aina!!

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Leeward Oahu

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: Bryson8h0i8@yahoo.com

From: [Dawn Reed](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynych@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 3:34:06 PM

Aloha Mr. Sakoda,

My name is Dawn Reed and I am a Visitor/non-resident/concerned citizen.

My specific comment: The amount of species being collected is already too high.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs

Butterflyfishes

Herbivores/Surgeonfishes

Bandit Angelfish

kole

Achilles tang (paku ikui)

Cleaner Wrasse

Flame Wrasse

Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: dawnreed25@gmail.com

From: [Robin Rogers](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynych@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Monday, June 22, 2020 6:55:37 PM

Aloha Mr. Sakoda,

My name is Robin Rogers and I am a Visitor/non-resident/concerned citizen.

My specific comment: The DEIS is ignoring the facts presented from recognized research concerning the welfare of the fish in O'ahu. They continue to ignore the use of reasonable bag limits: theirs exceeds the island-wide population of some species by up to 1000%! OUTRAGEOUS! How can this be permitted in any part of Hawaii? Please STEP UP and protect the reefs of West Hawaii from aquarium collecting. Thank you!

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: rlrogers05@yahoo.com

From: [Mark Schacht](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Thursday, June 18, 2020 10:13:39 AM

Aloha Mr. Sakoda,

My name is Mark Schacht and I am a Visitor/non-resident/concerned citizen.

My specific comment: With more than 30+ years as a divemaster and videographer with hundreds of logged dives throughout the islands, including Oahu, it is shocking that the aquarium trade continues to push phony "science" to support extractive reef policies that benefit only the industry. Reject this bogus EIS, and ban the trade!

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore

Windward Oahu

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: markschacht1@gmail.com

From: [Lisa Schattenburg-Raymond](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Saturday, June 20, 2020 11:45:15 AM

Aloha Mr. Sakoda,

My name is Lisa Schattenburg-Raymond and I am a Full time HI resident.

My specific comment: It's ridiculous to claim that taking any kind of fish from our reefs will not have any impact. Anyone with eyeballs can see our reefs are deteriorating. There are many reasons for this, but removing these species will further denigrate these already threatened resources.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: schatten@hawaii.edu

From: [Don Schwartz](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 10:53:15 PM

Aloha Mr. Sakoda,

My name is Don Schwartz and I am a Visitor/non-resident/concerned citizen.

My specific comment: I passionately oppose the flawed Draft Environmental Impact Study (DEIS)

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within

months and then conclude that commercial aquarium collection has no significant impacts.
This DEIS is completely flawed.

I can be reached at: tempdhs@yahoo.com

From: [S D](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Friday, June 19, 2020 12:57:50 PM

Aloha Mr. Sakoda,

My name is S D and I am a Visitor/non-resident/concerned citizen.

My specific comment: With the coral bleaching that is already taking place throughout the island chain, the marine life is already struggling to adapt and survive. Removing unlimited numbers of animals opens the islands up to more disturbing trends. As the reefs die and marine life dwindles, the islands die. Those selfish enough to think that their aquarium is more important than the survival of a marine species, it's home, and the environment are the biggest problem and do not deserve the honor of keeping any species for their own personal enjoyment.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Bandit Angelfish
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Leeward Oahu
Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: mauigirl4ever@yahoo.com

From: mary_sherman
To: david.sakoda@hawaii.gov
Cc: VanDeWalle, Terry; jim.lynch@kligates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 4:16:08 PM

Aloha Mr. Sakoda,

My name is mary sherman and I am a Visitor/non-resident/concerned citizen.

My specific comment: This is really not only about Hawaii, this is about the world oceans and our environment. We know that there is no separating one body of water from the whole.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.
Species abundance is significantly reduced by aquarium collecting.
Communities of reef species are disrupted by aquarium collecting.
Marine life is threatened with local extinction
The real possibility that future generations may not encounter these species
Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.
70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.
Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.
Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: spiloga@yahoo.com

From: [Sandra Shimmon](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 6:25:31 PM

Aloha Mr. Sakoda,

My name is Sandra Shimmon and I am a Full time HI resident.

My specific comment: Loss of marine life evident all over. Even shark coming in to look for food. Stop taking fish out of the ocean for greed of money. Enough!!

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Moorish Idol
Parrot fish UHU

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Windward Oahu
Kailua

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: Sshimmon@aol.com

From: [Matt Slater](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Thursday, June 18, 2020 3:40:37 PM

Aloha Mr. Sakoda,

My name is Matt Slater and I am a Visitor/non-resident/concerned citizen.

My specific comment: Reef fish are vital for the effective function of coral reefs. The aquarium trade is a significant threat and an immoral exploitation of a valuable resource that provide a vital ecosystem service and need to be left on the reefs at this crucial time.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/ Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within

months and then conclude that commercial aquarium collection has no significant impacts.
This DEIS is completely flawed.

I can be reached at: Sea_loop@yahoo.co.uk

From: [Robert Smith](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 8:58:35 PM

Aloha Mr. Sakoda,

My name is Robert Smith and I am a Full time HI resident.

My specific comment: I can't believe I even have to submit a statement. To me this completely undercuts what DLNR stands for. Are they the steward for our natural world or are they just the middleman selling off bits of Hawaii. I can't understand why DLNR would even consider such a thing.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within

months and then conclude that commercial aquarium collection has no significant impacts.
This DEIS is completely flawed.

I can be reached at: northshoreroadxxx@gmail.com

From: [Jeff soto](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Monday, June 22, 2020 12:55:07 PM

Aloha Mr. Sakoda,

My name is Jeff soto and I am a Full time HI resident.

My specific comment:

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.
Species abundance is significantly reduced by aquarium collecting.
Communities of reef species are disrupted by aquarium collecting.
The real possibility that future generations may not encounter these species
Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.
Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: Jeff_808@hotmail.com

From: [Dennis Stichman](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynych@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Friday, June 19, 2020 2:53:24 PM

Aloha Mr. Sakoda,

My name is Dennis Stichman and I am a Full time HI resident.

My specific comment: Unacceptable limits.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua
Waikiki

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within

months and then conclude that commercial aquarium collection has no significant impacts.
This DEIS is completely flawed.

I can be reached at: dennisstichman@gmail.com

From: [Robert Stricker](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 5:44:19 PM

Aloha Mr. Sakoda,

My name is Robert Stricker and I am a Part time HI resident.

My specific comment: PLEASE don't act like wE idiots in the lower / Eastern 48 and not pay attention to OUR ever deteriorating environment. Whether the air, the land or under the ocean, please, P L E A S E pay attention to the Hawaiian environment

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua

It is impossible to propose limits that would allow entire species to be wiped out within

months and then conclude that commercial aquarium collection has no significant impacts.
This DEIS is completely flawed.

I can be reached at: strickman@comcast.net

From: [Rick Switzar](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 3:32:58 PM

Aloha Mr. Sakoda,

My name is Rick Switzar and I am a Visitor/non-resident/concerned citizen.

My specific comment: it's redicoulus!

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: rickswitzar@hotmail.com

From: [Mark Tang](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynych@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Monday, June 22, 2020 1:57:55 AM

Aloha Mr. Sakoda,

My name is Mark Tang and I am a Full time HI resident.

My specific comment: PIJAC consultants refer to a key 'study' over and over again (Ochavillo and Hodgson - 2006) which turns out to be nothing more than a field guide for aquarium collecting in the Philippines, certainly not a 'gold standard' peer reviewed study! The document referenced was funded by the Transforming the Marine Aquarium Trade (TMAT) Project and the International Finance Corporation- Global Environment Facility, Marine Aquarium Market Transformation Initiative in cooperation with the Marine Aquarium Council and the Community Conservation Investment Forum. The species described in the referenced document's "natural mortality models" used to estimate a general "rule of thumb" are not found in Hawaii. And yet, that is precisely what they would pass off as "the best available science". It becomes the linchpin for many of the dubious thresholds for 'sustainability' of individual species here in Hawaii. It's wide range of collection (5%-25%) precipitated DLNR's call for more definitive information and/or an explanation in the initial Environmental Assessment. They still have not complied with the agency's directive! The whole document is 'BS'!

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside

Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: dancingcloudrefuge@gmail.com

From: [Gabriela Taylor](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynych@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 4:13:21 PM

Aloha Mr. Sakoda,

My name is Gabriela Taylor and I am a Full time HI resident.

My specific comment: I oppose the DEIS re. the 20 collectors of aquarium fish. Our reefs are in danger due to climate change and human atrocities. There should be no takes of aquarium fish from the Big Island as well as all the other islands. That goes for all aquarium fish. "Zero Tolerance "with stiff monetary penalties! It's an atrocity that recently a court ruled against a collector who took huge numbers of aquarium fish without a permit and charged them a pitifully low fine. Gabriela Taylor, Kauai

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay

Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: gabrielataylor40@gmail.com

From: [test test test](#)
To: rene@forthefishes.org
Cc: jim.lynch@klgates.com; [VanDeWalle, Terry](#)
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 9:12:05 AM

Aloha Mr. Sakoda,

My name is test test test and I am a Full time HI resident.

My specific comment: This is just lame

I am concerned about the impacts of the aquarium trade on the following species:

Flame Wrasse

My concerns about those species include:

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore

Windward Oahu

Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: octopus@maui.net

From: [Katherine Thunholm](mailto:Katherine.Thunholm@hawaii.gov)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](mailto:VanDeWalle.Terry@hawaii.gov); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Thursday, June 18, 2020 4:21:11 PM

Aloha Mr. Sakoda,

My name is Katherine Thunholm and I am a Full time HI resident.

My specific comment: There should be no collection period! Many aquariums breed fish, that should be the source not our reefs

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol
Puffer

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua
Waikiki

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: Thunholmatthelake@yahoo.com

From: [Linda Toki](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynych@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Thursday, June 18, 2020 8:42:27 PM

Aloha Mr. Sakoda,

My name is Linda Toki and I am a Full time HI resident.

My specific comment: I am horrified and upset to learn of this DEIS proposal that would harm Hawaii's unique marine life and reef ecology. I am firmly against this proposal as a native born and raised in Hawaii. Over the past 50 years I have witnessed great loss of marine life that used to be abundant in our Oahu reefs. We need to protect all our marine life from overfishing, coral damage from tourists stepping on the reefs carelessly, and commercial aquarium fish harvesting from our Hawaiian waters. Our government needs to do much more in policing and protecting our marine life. I often pick up loads of human trash, plastics, and other debris floating or sunk in the ocean while I dive and do my best to save marine life tangled in the nets and debris. We must help the ocean- not decimate it.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol
All butterfly fishes

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: lctoki@gmail.com

From: [BARBARA TOMASINO](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@kigates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Thursday, June 18, 2020 12:06:16 PM

Aloha Mr. Sakoda,

My name is BARBARA TOMASINO and I am a Visitor/non-resident/concerned citizen.

My specific comment: The ocean and its contents need to be protected once its gone...it is gone our current government does not know the first thing about saving our precious environment fish and sea life belong in the sea not a tank in a lobby

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua
Waikiki

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within

months and then conclude that commercial aquarium collection has no significant impacts.
This DEIS is completely flawed.

I can be reached at: BT10029@GMAIL.COM

From: [Mary True](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynych@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 8:59:55 PM

Aloha Mr. Sakoda,

My name is Mary True and I am a Full time HI resident.

My specific comment: I am outraged at the massacre proposed by the DEIS. We should err on the side of caution, not destruction. It is so short sighted to only look at the small picture... small unsustainable gains. We need to look at the big picture and shoot for long term sustainable gains.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Bandit Angelfish
Achilles tang (paku ikui)
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: streamgirl11@yahoo.com

From: [Debra Van Zile](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Thursday, June 18, 2020 6:44:53 PM

Aloha Mr. Sakoda,

My name is Debra Van Zile and I am a Full time HI resident.

My specific comment: Please DO NOT allow this. Our marine life is precious as it is, and enabling this would decimate species!

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/ Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within

months and then conclude that commercial aquarium collection has no significant impacts.
This DEIS is completely flawed.

I can be reached at: debra_vanzile@yahoo.com

From: [Momi Vee](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 7:15:49 PM

Aloha Mr. Sakoda,

My name is Momi Vee and I am a Full time HI resident.

My specific comment: We Only Have One Hawai'I Nei In The World!! We've Lost Soo Much Ocean Life, Due To Sugarcane Runoffs And Tremendous Over Fishing By The Immigrants That Arrived Here From Other Countries!! Enough Is Enough!! As Kanaka Maoli We Plant Limu And Coral For Fishes To Have Food And Shelter. Only For Them To Be Stolen From Their Rightful Homes From Generations And Generations Of Growing Up In Hawai'I Waters.. Stop The Slaps On The Wrist And Punish The Divers Stealing Our Ocean Sealife!! Please..!!

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol
Coral's And Crab's

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu

Windward Oahu
Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: momiv808@gmail.com

From: [Amy Venema](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Friday, June 19, 2020 2:28:37 PM

Aloha Mr. Sakoda,

My name is Amy Venema and I am a Full time HI resident.

My specific comment: I am a 26 year resident of Hawaii and a tour boat captain and environmentalist. Educating and protecting our oceans ecosystems is one of the the most important ways to ensure that the ecosystems will continue to be healthy and we will have them for our children, not to mention the economic impact of lost tourism when the reefs are dying and tourist no longer want to come here to enjoy them. The aquarium collecting trade has proven to have a very negative impact on the reefs. Please stop this trade and protect our reefs!

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within

months and then conclude that commercial aquarium collection has no significant impacts.
This DEIS is completely flawed.

I can be reached at: captamy@yahoo.com

From: [Suzanne Villeneuve](mailto:Suzanne.Villeneuve@hawaii.gov)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry; jim.lynch@klgates.com](mailto:VanDeWalle,Terry;jim.lynch@klgates.com)
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Thursday, June 18, 2020 12:46:29 PM

Aloha Mr. Sakoda,

My name is Suzanne Villeneuve and I am a Full time HI resident.

My specific comment: I can't believe that fisherman would take fish out of the water, to sell for the aquariums .

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua
Waikiki

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: oceandauphin@gmail.com

From: [Doreen Virtue](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Friday, June 19, 2020 11:34:33 AM

Aloha Mr. Sakoda,

My name is Doreen Virtue and I am a Visitor/non-resident/concerned citizen.

My specific comment: As a scuba dive master, I'm concerned that tourism and the dive industry will continue to be affected negatively if more fish are taken from the reefs. Already the tourists complain about the lack of fish during scuba dive trips in Hawaii, compared to Mexico, Tahiti, etc.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: Doreenvirtue444@aol.com

From: [Deborah Wallace](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Friday, June 19, 2020 12:39:36 AM

Aloha Mr. Sakoda,

My name is Deborah Wallace and I am a Full time HI resident.

My specific comment: It is absolutely unacceptable that a small amount of people would be allowed to profit at the expense of our ecology the health of our population and Our coral reefs. Our wreaths and our fish or already under stress is from pollution ocean warming plastics sunscreens and overfishing. The selfishness of aquarium fishers is unacceptable. Everyone in Hawaii deserves to enjoy the beauty Hawaiian ocean fish. Do not allow the taking of our fish. I swim in the ocean with the fish daily and the conditions of the reefs have deteriorated dramatically as have the number of our fish.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu

Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: 1happygyrl@gmail.com

From: [Colleen Wallis](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynych@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 3:51:48 PM

Aloha Mr. Sakoda,

My name is Colleen Wallis and I am a Full time HI resident.

My specific comment: I have stated my position about our precious reef fish many times and I will repeat myself again. No one should be allowed to take our reef fish to export or be sold in the Aquarium trade. We have seen what they do to capture the fish and how they discard the ones that end up dying in the process. No creature should be subjected to those cruel methods and taken from our island shores on any of our islands. I have been a Reef Teacher at Kahalu'u beach in Kona since 2010 and have tried to educate the locals as well as the public to protecting our reef and it's inhabitants so future generations can enjoy seeing them in their natural habitat.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/ Surgeonfishes
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay

Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: ceewallis@gmail.com

From: [james ward](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynych@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 5:58:10 PM

Aloha Mr. Sakoda,

My name is james ward and I am a Full time HI resident.

My specific comment: Aloha, As a scuba diver that has seen first hand what the fish collecting trade has done to the local reefs where I live, I want to add my voice to the residents of Hawaii that oppose aquarium fish collecting. Even if the damage to the fish populations is put aside, the colorful reef fish are a big attraction to visitors to the state. I worked as a concierge at a major resort, and the comment I kept hearing was " there's not as many fish as there used to be" Between the bleaching of the coral due to warming ocean temperatures and the harvesting of reef fish (most of which die on the way to the pet store) I strongly oppose the findings of the DEIS Mahalo James Ward 808-895-9656

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.
Species abundance is significantly reduced by aquarium collecting.
Communities of reef species are disrupted by aquarium collecting.
Marine life is threatened with local extinction
The real possibility that future generations may not encounter these species
DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.
Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.
70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.
Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.
Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Leeward Oahu
Kaneohe Bay
Kailua

Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: relaxjim@yahoo.com

From: [Robert Ward](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Thursday, June 18, 2020 6:45:31 PM

Aloha Mr. Sakoda,

My name is Robert Ward and I am a Part time HI resident.

My specific comment: The government is way behind in protecting the ocean life. It's obvious to everyone who has been here for the over 20 years of decline which I've witnessed.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/ Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts.

This DEIS is completely flawed.

I can be reached at: bobyboy49@gmail.com

From: [aerie waters](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Wednesday, June 17, 2020 10:10:10 PM

Aloha Mr. Sakoda,

My name is aerie waters and I am a Full time HI resident.

My specific comment: NOOOOOO!! Our reefs are so seriously denuded already by private interest with the cost to our natural resource of healthy reefs and beautiful tourist snorkeling sites, and Posterity!! STOP IT!!

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs

Butterflyfishes

Herbivores/ Surgeonfishes

Bandit Angelfish

kole

Achilles tang (paku ikui)

Cleaner Wrasse

Flame Wrasse

Moorish Idol

Coral... the interconnected life of the reef.. each inhabitant a part of a very delicate balance.

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore

Leeward Oahu

Windward Oahu

Kaneohe Bay

Kailua

Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: aeriewaters@gmail.com

From: [Madolin Wells](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Sunday, June 21, 2020 9:54:07 PM

Aloha Mr. Sakoda,

My name is Madolin Wells and I am a Full time HI resident.

My specific comment: The aquarium trade is wrong, wrong, WRONG!!! I finally got my wish to move to Hawai'i in 2018, 23 years after first visiting and not having been since. So much of what I witness now is absolutely heartbreaking. It is unbelievable that those who make decisions on behalf of Hawai'i's environment could so badly default on their sacred responsibility to to the ocean and every living species in it. Having insufficient data to make a determination means "do not allow any collection to proceed." In reality, there is no safe amount of harvesting. Allowing the harvesters to move on from Maui to O'ahu is unconscionable. I urge you to do the right thing. All eyes are on you - we are counting on you! Sincerely, Madolin Wells, Kihei

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.
Species abundance is significantly reduced by aquarium collecting.
Communities of reef species are disrupted by aquarium collecting.
Marine life is threatened with local extinction
The real possibility that future generations may not encounter these species
DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.
Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.
70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.
Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.
Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within

months and then conclude that commercial aquarium collection has no significant impacts.
This DEIS is completely flawed.

I can be reached at: wellsmadolin@gmail.com

From: [Laurel Whillock](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Monday, June 22, 2020 4:54:55 PM

Aloha Mr. Sakoda,

My name is Laurel Whillock and I am a Full time HI resident.

My specific comment: I've been diving in Hawaii for 30 years and my observations over the past three decades lead me to conclude that the marine life, including coral and reef fish, have degraded and declined substantially. Without adequate protection from over-collection by aquarium fishers, our reefs will be lost. Please, at the very least, do a thorough and impartial EIS before our marine environment has gone beyond recovery.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol
Dart fish

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

Unfamiliar with these reefs, but still concerned.

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts.

This DEIS is completely flawed.

I can be reached at: lwhillock@hawaiiantel.net

From: [Linda Willaby Willaby](mailto:LindaWillabyWillaby)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](mailto:VanDeWalle,Terry); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Friday, June 19, 2020 3:26:03 PM

Aloha Mr. Sakoda,

My name is Linda Willaby Willaby and I am a Full time HI resident.

My specific comment: To Whom it May Concern, I have been a Big Island resident for the past 12 years. I snorkel in the ocean almost every day and I have seen a huge decline in the number of reef fish in just the time that I have been here. I think it is time to stop all aquarium fish collecting. It is not sustainable and the health of our coral reefs depends on reef fish. Please REJECT the Environmental Impact Statement There is no verification of the numbers of fish caught or methods used. The practice of catching reef fish for aquariums is not healthy for the reefs and has dire environmental consequences There are other industries that rely on a healthy reef system and the fish life on the reef such as dive and snorkel boat operators. The entire tourism industry will suffer if there are no reef fish in Hawaiian waters. You will only have yourselves to blame when the last yellow tang disappears from Hawaiian waters. Caught and shipped away so some fat cat mainlander can have a pretty fish in his aquarium. Entire species of reef fish should not be sacrificed so a few people can get rich at the expense of all the rest of us who appreciate living sea creatures in our waters. I can't believe that I have to keep making these comments to keep our reef fish from being exploited to extinction. . Yours truly, Linda Willaby

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore

Leeward Oahu

Windward Oahu

Kaneohe Bay

Kailua

Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: lwparisfrance@hotmail.com

From: [Linda Wright](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynch@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Thursday, June 18, 2020 4:22:44 PM

Aloha Mr. Sakoda,

My name is Linda Wright and I am a Part time HI resident.

My specific comment: The limits proposed are not enough to preserve life on the islands. Continuing the decimation of the fish life in search of profits may well spell the end of many species in the Pacific. We must seriously examine our interference in the ecology of our islands and take action to preserve it.

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts.

This DEIS is completely flawed.

I can be reached at: thatswright1@gmail.com

From: [Carrie Younkin](#)
To: david.sakoda@hawaii.gov
Cc: [VanDeWalle, Terry](#); jim.lynych@klgates.com
Subject: Comments on Draft Environmental Impact Statement for Commercial Aquarium Collecting on Oahu
Date: Saturday, June 20, 2020 12:10:58 AM

Aloha Mr. Sakoda,

My name is Carrie Younkin and I am a Full time HI resident.

My specific comment: There should be nothing and no one that allows the take of Hawaii's species, especially endangered and endemic ones for the aquarium trade. This is apparent especially after what we have seen on West Hawaii with the largest abundance of reef fish documented after 2.5 years of no fish take for aquariums!

I am concerned about the impacts of the aquarium trade on the following species:

Yellow tangs
Butterflyfishes
Herbivores/Surgeonfishes
Bandit Angelfish
kole
Achilles tang (paku ikui)
Cleaner Wrasse
Flame Wrasse
Moorish Idol

My concerns about those species include:

The natural beauty of coral reefs is diminished by aquarium collecting.

Species abundance is significantly reduced by aquarium collecting.

Communities of reef species are disrupted by aquarium collecting.

Marine life is threatened with local extinction

The real possibility that future generations may not encounter these species

DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.

Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.

70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.

Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.

Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.

I believe some or all of the species identified above have been impacted on reefs I am familiar with on Oahu:

North Shore
Leeward Oahu
Windward Oahu
Kaneohe Bay
Kailua
Waikiki

It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.

I can be reached at: cyounkin78@hotmail.com

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Sunday, June 14, 2020 12:14:07 PM

Name: Bambi Ghys

Email: seasaveemail@msn.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

Dear Hawaii, I have been in the Aquarium Industry for Decades and have seen the way Sea Life is Treated throughout the Supply Chain Selling Life for Amusement, Money and Nothing of Any Value to Anyone but Those Taking the Wildlife. Covering the Truth of Who we Are and what we Do With Misused Words, is Now a part of our Job to Protect the Passion we have for Taking Wildlife for Fun while Promoting our Business as Conservation, Education, Protection and Sustainable in our Aquatics Defense Fund and Excuse Bag. It's Our Direct Removal of Marine Life Causing a Decline in Numbers and the Extinction of Many Species in our Ever Growing Population of Aquariums Needing More from a Static Marine Environment. Any Livelihood that Destroys and Wastes the Environment and Wildlife For No Good Reason, should be apart of our Past for the Sake of our Future and Theirs. Learning and Teaching from our Mistakes is How we Grow and become Better People Living Symbiotically with Nature. Please Protect Our Environment and Wildlife from Needlessly being Wasted, for it would be Better to Feed a Whole Country with Fish from the Sea than to Torture the Same Amount in an Aquarium for Fun. Sincerely, Someone who found Honor in a New Livelihood, Earning Freedom for Others. Mahalo

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 6, 2020 8:18:31 PM

Name: Kyle Mundy

Email: kmundy@csumb.edu

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

2 years is not enough time for recovery. I do not support this proposal to reopen the Oahu fishery.



June 22, 2020

David Sakoda
Hawai'i Department of Land and Natural Resources
Division of Aquatic Resources
1151 Punchbowl Street, Room 330
Honolulu, HI 96813-30813

Submitted via e-mail: david.sakoda@hawaii.gov

Re: Draft Environmental Impact Statement: Issuance of Commercial Aquarium Permits and Commercial Marine Licenses for the Island of O'ahu

Dear Mr. Sakoda:

For the Fishes, Center for Biological Diversity, Moana Ohana, Kai Palaoa, Haereticus Environmental Laboratory, The Humane Society of the United States, Kaimi Kaupiko, and Wilfred Kaupiko (collectively, "Commenters"), are conservation and animal protection organizations and individuals with strong interests in preserving the State of Hawai'i's natural resources and protecting its delicate coral reefs. Commenters submit these comments on the Pet Industry Joint Advisory Council's (PIJAC's, or "Applicant's") Draft Environmental Impact Statement (DEIS) purporting to analyze the environmental impacts of commercial aquarium fish collection by 20 permittees on the island of O'ahu.¹

¹ Office of Environmental Quality and Control, The Environmental Notice at 6 (May 8, 2020), http://oeqc2.doh.hawaii.gov/The_Environmental_Notice/2020-05-08-TEN.pdf; PIJAC, Draft Environmental Impact Statement for the Issuance of Commercial Aquarium Permits and Commercial Marine Licenses for the Island of O'ahu (2020), http://oeqc2.doh.hawaii.gov/EA_EIS_Library/2020-05-08-OA-DEIS-Oahu-Commercial-Aquarium-Permits.pdf

The DEIS was required to fully analyze the environmental impacts of commercial aquarium collection on the Island of O'ahu and specifically address the significance criteria in HAR § 11-200-12, including, but not limited to:

- Involving an irrevocable commitment to loss or destruction of any natural or cultural resource;
- Curtailing the range of beneficial uses of the environment;
- Conflicting with the state's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders;
- Substantially affecting the economic or social welfare of the community or State;
- Involving a substantial degradation of environmental quality;
- Cumulatively has considerable effect upon the environment or involves a commitment for larger actions;
- Substantially affects a rare, threatened, or endangered species, or its habitat;
- Affects or is likely to suffer damage by the activity/activities being located in an environmentally sensitive area such as a beach, erosion-prone area or coastal waters.

To this end, we expected the Applicant to comply with the requirement "to develop a fully acceptable EIS prior to the time the EIS is filed with the office, through a full and complete consultation process, and . . . not rely solely upon the public review process to expose environmental concerns."² However, the Applicant failed to conduct the required early consultations prior to submitting its Draft and Final Environmental Assessments, despite the HEPA requirement that the applicant must "at the earliest practicable time, . . . consult with . . . those citizen groups and individuals which the approving agency reasonably believes to be affected."³ In this case, it is clear from the long history of litigation that Commenters, at the very least, should have been consulted. The Applicant should also have consulted Native Hawaiian groups (outside of those contacted as part of the CIA).

Further, we expected our substantive comments on the FEAs to be incorporated and consultation to be responded to in writing and incorporated into the DEIS by the Applicant prior to the filing of the DEIS with the Hawai'i Department of Land and Natural Resources (DLNR) and Office of Environmental Quality Control (OEQC). We also expected that the responses would not be merely self-serving recitations of benefits and/or rationalizations of the proposed actions. However, these expectations were not met. See Appendix 1 for a detailed description of how the Applicant's responses to the questions we raised during consultation process were inadequate. As a result of this failure to abide by HEPA's mandate of early consultation, the DEIS fails to adequately analyze all impacts, and is skewed toward a favorable result for the trade.

Most importantly, we expected the DEIS to accurately and adequately evaluate the HEPA significance criteria, to disclose any and all effects (beneficial and adverse) to biological, socioeconomic, and cultural resources and traditional cultural practices, stemming from the

² HAR §11-200-15 Consultation Prior to Filing a Draft Environmental Impact Statement.

³ HAR § 11-200-9(b)(1).

proposed alternatives, and, to propose mitigation measures to reduce impacts, as set forth in HAR § 11-200-17.

However, serious, fundamental errors in various factors used to determine impacts render the DEIS fatally flawed. They include, but are not limited to: the use of an incorrect baseline, an expanded and exaggerated spatial scale, minimization of catch levels, overestimations of fish populations and other omissions in determining impacts. These missteps have contributed to erroneous conclusions and improper evaluations of HEPA significance criteria.

Finally, we also expected the DEIS to factor climate change into the analyses, as envisioned by HAR § 11-200.1-13 Significance Criteria, Criterion 11 (based on the December 2017 Climate Change Mitigation and Adaptation Commission report) to address concerns related to climate change adaptation, such as impacts from increased hurricane frequency and/or intensity, potential endangered species migration, impacts on areas likely to experience wave inundation, increased exposure to hurricanes, or flooding, and further impacts discussed below.

I. Introduction

DLNR has the authority to issue permits for the taking of fish and other aquatic life for aquarium purposes.⁴ While these permits are limited in duration to one year, neither the aquarium collection statute nor DLNR places any limits on the number of animals that can be captured per commercial permit, nor on the number of permits the Agency issues.⁵ In fact, prior to court mandated compliance with HEPA, DLNR automatically granted *every* commercial aquarium permit application, and allows the collection of *unlimited* numbers of animals under those permits.⁶ DLNR also automatically granted every recreational permit application, which effectively allowed for unlimited recreational collection of nearly 2,000 fish per year per collector.⁷ In addition, DLNR also automatically grants commercial marine licenses for aquarium collecting issued pursuant to HRS § 189-2, but does so without HEPA review as required by law. Furthermore, while commercial collectors are required to report their collections (but in practice, do so inaccurately), there is no similar requirement for recreational permits.⁸ Therefore, there are no definitive data on how many of each type of fish or other aquatic animal is taken from the State's delicate coral reef ecosystem each year, nor on what level of take would be sustainable.

The DEIS is entirely inadequate under the Hawai'i Environmental Policy Act (HEPA, Haw. Rev. Chapter 343) and its implementing regulations. The DEIS fails to address these and other notable flaws that we outlined in our prior comments on the Environmental Assessments:

- The DEIS fails to analyze the impacts of collection over time (i.e. the expanded 5-year scope of the analysis, beyond one year, is still inadequate);

⁴ Haw. Rev. Stat. § 188-31(a).

⁵ Haw. Rev. Stat. § 188-31(a); HAR § 13-75-14(4).

⁶ See *Umberger v. Dep't of Land and Nat. Resources*, 403 P.3d 225, 300, 304 (Haw. 2017).

⁷ HAR § 13-75-14(4); *Umberger*, 403 P.3d at 300, 304.

⁸ See Haw. Rev. Stat. § 189-3; *Umberger*, 403 P.3d at 283, 295.

- The DEIS fails to accurately analyze the environmental consequences (i.e. direct, indirect, and cumulative impacts) of unlimited collection of aquatic life to biological, cultural, and socioeconomic resources on O‘ahu;
- The DEIS fails to accurately analyze the environmental consequences (i.e. direct, indirect, and cumulative impacts) of unlimited collection of aquatic life to biological, cultural, and socioeconomic resources on other parts of the State that may be connected via larval dispersal patterns;
- The DEIS fails to accurately analyze the cumulative impacts of commercial collection along with recreational collection;
- The DEIS fails to accurately analyze impacts on cultural resources;
- The DEIS fails to accurately analyze the alternatives presented;
- The DEIS fails to accurately analyze the impacts of collection practices harmful to corals;
- The DEIS relies on inaccurate, misleading, and incomplete data;
- The DEIS fails to propose and analyze mitigation measures; and
- The DEIS fails to adequately incorporate input of Native Hawaiian groups, experts, affected citizens and consulted parties.

The Applicant’s Preferred Alternative does not ensure that commercial aquarium fish collection is lawful, responsible, and sustainable for any of the more than 300 fish and invertebrate species taken from nearshore habitats on O‘ahu nor for any species taken elsewhere in the state where collection is allowed under the current geographic scope of the aquarium permits. The DEIS’s continued conclusion that the aquarium fishery on O‘ahu has “no significant impact” on targeted reef fish species, coral reefs, and the human communities that rely on them is unsupportable. The DEIS fails to accurately evaluate the true primary, secondary, cumulative, short-term and long-term effects of the Preferred Alternative and fails to propose any proper mitigation.

II. Reliance on Flawed and Inadequate Science and Data

As previously mentioned, fundamental errors in the DEIS’s impact analysis resulted in patently false findings of no significant impacts and improper evaluations of HEPA significance criteria. Those errors include, but are not limited to, the use of an improper baseline, the minimization of potential collection rates under the proposed alternatives, and an expanded area to which the impacts would apply. A properly conducted DEIS would focus on impacts in the areas where the subject activity is to take place. This DEIS is fundamentally flawed in that it fails to do so. In addition, the DEIS fails to disclose the impacts that would occur under the full extent of the existing and proposed bag limits and ignores the evidence of impacts, including the magnitude of depletion to targeted species in the areas from which they are taken as determined by a comparison to the baseline.

A. The use of an improper baseline.

A critical component in any DEIS is the establishment of a proper baseline against which to compare the impacts of the proposed action. Any analysis stemming from an improper baseline cannot be considered accurate or relevant. A proper baseline reflects pre-project environmental conditions and is spatially relevant. In this case, a proper baseline is found in the O'ahu conservation districts and managed areas, collectively referred to as Marine Protected Areas (MPAs), such as Hanauma Bay where aquarium collecting has been prohibited since 1967.

Rather than using a proper baseline, free from the impacts of aquarium collecting, the DEIS incorrectly incorporates the effects of prior aquarium collecting into the baseline, and states in sections on the scope and affected environment, "the evaluation includes past use and potential impacts by the commercial aquarium fishery because it has been a part of the baseline condition of these resources since the late 1940s," and "permitted commercial aquarium fishing has been a part of the socioeconomic, cultural, physical, and biological resources for decades and is considered a part of the baseline condition of the affected environment."⁹

The important role MPAs serve as a baseline for fish populations in Hawai'i is underscored by their use as such in reports and papers that seek to document the effects of aquarium collecting on targeted fish populations. These studies use MPAs because they have been closed to aquarium collecting for decades and are presumed to have close to "natural" levels of aquarium fish abundances. This makes them ideal as reference or "control" sites to compare with the areas where aquarium collecting occurs.¹⁰

B. Flawed Impact Analysis

In determining the level of impact to the more than 300 fish and invertebrate species that would occur under the preferred alternative, the DEIS compares reported catch from "the 20 fishers" (presumably the 20 unidentified collectors who are seeking aquarium permits) to the estimated *island-wide* populations of just 22 fish species and provides no analyses for the remaining 216 fish and 66 invertebrate species taken by commercial aquarium collectors since 2000.

When used properly, the basic analysis – catch as % of population – is useful in describing past impacts and has been employed since at least 2010 as one method for doing so elsewhere in the state, such as in the West Hawai'i Regional Fishery Management Area (WHRFMA) on the Island of Hawai'i.¹¹ It is also useful for determining future allowable impacts.

A proper analysis would include all species that can be taken under the permits and then compare the estimated population of a given species, in the area where it would be taken, to the average reported catch of that species during the same time frame. Unfortunately, the analysis is easily manipulated, and in the DEIS, the impacts are minimized as described below:

1. Affected Species

⁹ DEIS at 13 and 20.

¹⁰ Walsh et al. (2010); Tissot and Hallacher (2003); Grabowsky (2011); Grabowsky (2014).

¹¹ Walsh et al. (2010); Walsh et al. (2013); Walsh (2010); Walsh (2015).

At least 282 species that have been reportedly taken by commercial aquarium collectors since 2000 have been omitted from the analysis. The DEIS claims to analyze 23 species, but includes population data for just 22 of them, because for one species, the endemic Bandit Angelfish, there is no population data.

2. Affected Environment/Directly Affected area

The DEIS improperly uses island-wide fish populations to determine the impacts of the proposed action to 22 species which would occur within 15 distinct aquarium fishing trip report zones, and which together, encompass O'ahu's entire coastline (see Appendix 2). This dilutes the impacts by distributing them equally around the island, although fish populations, as well as levels of take, are highly varied and vary around the island.

The DEIS uses the Coral Reef Ecosystem Program (CREP) data from O'ahu surveys conducted over five years (2010, 2012, 2013, 2015, 2016) to estimate island-wide fish populations. The CREP collected fish data from 228 stationary point count locations (i.e. reefs) around O'ahu between depths of 0-98 feet, with numerous sites within each of the 15 trip report zones.¹² CREP survey count data was converted to abundance per unit area and then multiplied by the estimated area of hard-bottom habitat in <30 meters of water for the *entire island*.¹³ However, nothing prevents the estimated area of hard-bottom habitat within the trip report zones (or even smaller areas) from being used in this calculation, instead of the island-wide estimated area.

Using report zone populations rather than island-wide populations would facilitate a much more accurate analysis. Not only because it's highly unlikely that O'ahu's fish populations are equally distributed among the 15 report zones, but also because aquarium catch reports document fairly consistent patterns of heavy annual collection in some zones and little to no collection in others. For example, zones 401, 403, 407, 412, 413 are consistently among the most heavily collected areas, especially zone 407 (Kaneohe Bay) with aquarium fish take ranging from 9,300 to over 28,000 in recent years. Meanwhile, zones 406, 408, 409, 414, 418, are among the least collected, especially zone 418 (Waimanalo) with zero fish reportedly taken from this area in recent years.¹⁴

Those areas experiencing the heaviest pressure are where the greatest direct and cumulative impacts likely occur. Significant indirect impacts likely occur in other areas that may be connected via currents and therefore possible sink areas for larval dispersal, but those impacts should be analyzed separately from the areas where the activity would take place.

In addition, while the CREP data may be the best available science for estimating fish abundance, it skews the data in a way that possibly minimizes the impacts of commercial aquarium collection in at least two ways. Documentation of the impacts of commercial aquarium collecting in West Hawai'i have calculated fish populations within the 30'-60' depth range, because as the main operating depth for aquarium collectors, it is the area directly

¹² CREP (2018).

¹³ DEIS at 37.

¹⁴ DLNR catch reports for 2013, 2016, 2017, 2019.

affected by the activity.¹⁵ However, the CREP surveys expand that range by 68 feet. Although the DEIS claims that CREP data likely underestimates total populations by excluding fish that dwell even deeper, it is equally likely that the CREP data overestimates total populations. This is because the O'ahu CREP surveys used by the DEIS were conducted in 2010, 2012, 2013, 2015, 2016 which includes a significant, anomalous fish recruitment pulse that occurred in 2015 and lasted into 2016 for certain species. The pulse coincided with the 2014/2015 ocean heat wave which, while killing many corals, also boosted fish abundance substantially throughout the state.¹⁶ In West Hawai'i, long term studies show that typical recruitment pulses resulting from El Nino conditions, such as those that occurred in 2002 and 2009, have resulted in short-lived increases in fish populations that were followed by prolonged or short and steep population declines on the reefs and in the areas where commercial aquarium collectors operate.¹⁷

3. Inaccurate Projected Levels of Catch

The DEIS determines the level of impact by comparing the projected annual average catch of the White List Species by "20 aquarium fishers" to the island-wide populations of those species, per Tables 5-4 and 5-7.¹⁸ In those tables, and elsewhere throughout the DEIS "the 20 fishers" is used to describe past and potential future aquarium catch and values that would occur under the alternatives. **However, per the DEIS, "the 20 commercial fishers who are part of this proposed action made up 3 to 16 of the fishers in any given year from 2000 – 2017."¹⁹ Therefore, both past and future average and maximum rates of collection and impacts are grossly underestimated.**

C. Flawed Threshold for "Sustainable" Collection

The applicant bases the DEIS on the premise that fish collection is considered sustainable if it removes less than 5% to 25% of the entire island-wide population (annually), but the reasoning behind this threshold is entirely flawed. The DEIS states that "Ochavillo and Hodgson (2006) suggest collection of between 5% and 25% is sustainable for various reef species in the Philippines that are similar to those found on O'ahu (e.g., tang, wrasse, butterflyfish, angelfish, triggerfish). Similar data for the species collected on O'ahu are not available to determine species-specific sustainable thresholds; therefore, this research represents the best available science."²⁰ However, the DEIS should not use these thresholds because:

- These thresholds for sustainable ornamental fish collection are species-specific based on estimated natural mortality rates (M) and fishing mortality at maximum sustainable yield (F_{MSY}) or year-per-recruit analysis. Natural mortality rates for reef fishes are based on growth rates and length and thus are also area-specific. Mortality is based on catch data. Yield-per-recruit analysis should be derived from several annual surveys. Thus, these

¹⁵ Walsh et al. (2010); Walsh et al. (2013); Walsh (2010); Walsh (2015).

¹⁶ Gove 2019.

¹⁷ West Hawai'i DEIS at pdf pg. 402.

¹⁸ DEIS at 96 and 114.

¹⁹ DEIS at 20.

²⁰ DEIS at 78.

parameters should be specifically calculated for Hawaiian reef fish targeted by the aquarium industry as highlighted in Ochavillo and Hodgson (2006).

- These thresholds were developed to calculate total allowable catch (TAC) in comparatively small “collection areas” that are orders of magnitude smaller than O’ahu. Specific collection areas used by Ochavillo and Hodgson (2006) to develop the methodology are adjacent to Bohol island in the Philippines, which is close in size, though smaller, than Hawai’i Island, which, itself, is nearly seven times larger than O’ahu. One collection area, Clarin, is part of a coastal town of the same name that has a coastline of approximately 6 linear km. Another, Batasan Island, lies approximately 6.4 km off the coast of Clarin. Applying the 5%-25% threshold to the entire island of O’ahu far exceeds the parameters it was developed for.
- The 5%-25% threshold indicates “a good rule-of-thumb of collection limit” for coral reef fishes in the Philippines.²¹ This does not mean it is a good rule of thumb for collecting reef fishes in Hawai’i.
- Most ornamental fish species in Ochavillo and Hodgson (2006) are species different from those on the White list. Only a few species share the same genus or species (butterflyfish, a couple of wrasses, one angelfish, a couple of damselfish, one tang and one triggerfish). Thus, it is questionable whether this fairly wide threshold (5%-25%) is representative and applicable to Hawaiian species.
- **Finally, this report is not peer-reviewed research, it is a field manual:** Marine Aquarium Trade for Coral Reef Monitoring Protocol with a Data Analysis and Interpretation Manual. This field manual was designed in part to: “provide a scientific basis for recommending sustainable levels of collection.”²²

The DEIS continues to assert that current fish abundance for target species is the baseline, and thus 2.5% to 25% of individuals removed from the population would be considered sustainable. But this is wrong. **The DEIS fails to acknowledge that current population abundance of most of these fish species is already depleted due to in part to heavy exploitation by the aquarium trade since at least the 1970’s and habitat degradation.** The total allowable catch for each species must be calculated based on information on natural mortality rates and the available and limited information on catch records, specific to the geographic areas and locations where they are taken on the Island of O’ahu.²³ Additionally, an analysis of larval dispersal and connectivity patterns for the species that would be taken on O’ahu is key to preventing local extirpation of heavily targeted and/or rare species.

D. Unrepresentative Data Used

The CREP data used in the DEIS for the entire Island of O’ahu (based on 2010-2016 surveys) are not representative of regional population abundance such as in the leeward and windward parts of the

²¹ Ochavillo & Hodgson (2006), at 12.

²² Ochavillo & Hodgson (2006).

²³ See Ochavillo and Hodgson (2006) for step by step guidance on using natural mortality rates for this analysis.

island and within each the fifteen aquarium catch reporting zones, and should not be used to estimate regional proportions of fish catch.

It is well established that population abundances of reef fish species in Hawai'i, especially relatively small-size species that are targeted by the aquarium industry, are highly variable in space depending on reef complexity, depth and wave exposure, and in time (within and among years) depending on the season, mortality, recruitment to the population, and environmental factors.²⁴ This helps explain why population abundance estimates for fish species for the entire Island of O'ahu are not representative of regional fish abundances and do not adequately portray the impacts of the activity in the areas where it occurs.

The CREP collected fish data from 228 stationary point count locations (i.e. reefs) around O'ahu between depths of 0-98 feet, with numerous sites within each of 15 aquarium fish catch report zones.²⁵ An individual zone should be the largest area assessed for impact. Aquarium collectors must report catch by zone, and zones cannot be combined for reporting purposes (i.e. a separate report is required for each zone, even for catch taken on the same day).²⁶ Likewise, these zones should not be combined for environmental impact analysis. Both catch and population data for calculating the O'ahu aquarium catch as a percentage of population at the zone level is publicly available and should be used for this analysis.

The relative proportion of fish species taken annually by the aquarium trade should be based on regional total abundances and regional catch records (e.g., aligned with the aquarium fish trip report zones). Allowable levels of take should be determined in conjunction with the wishes of Hawai'i residents who strongly desire that fish populations are restored to their naturally occurring (i.e. unfished) levels of abundance on the majority of Hawai'i reefs .

The allowable number of individuals that could be collected from aquarium fish populations must be substantially less than those proposed in the DEIS Preferred Alternative. Scientific evidence shows that collecting activities substantially affect targeted species in Hawai'i and fishing intensity remains high even when stocks are depleted or recruitment is weak.²⁷ As described below, many targeted species on O'ahu are already depleted from over 40 years of unchecked extraction by commercial aquarium collection. The DEIS Preferred Alternative could lead to the total decimation of entire species, also described below.

Therefore, the current estimates of population abundance of fish species for the entire Island of O'ahu (from 2010 to 2016) should not be used as regional/local reference abundances to estimate minimum and maximum percentage of fish taken per year.²⁸ This is because these calculations underestimate the proportion of fish collected by region and collection zone and assumes fish populations of the entire island are evenly distributed. An accurate calculation of allowable catch would be based on regional population abundance, using the aquarium trip report zones, or

²⁴ Friedlander & Parrish (1998a, 1998b).

²⁵ CREP (2018); DEIS at 35.

²⁶ DLNR Aquarium Fishing Trip Report Instructions

²⁷ Tissot & Hallacher (2003); Stevenson et al. (2011); Walsh et al. (2004).

²⁸ DEIS Tables at 79, 88, 96, 114.

smaller, and by using data estimates obtained from the depth ranges where the fishes are captured, where available.

Finally, sustainable fishable abundance for target species must take into consideration the fact that most target species are depleted in comparison with historical levels. **The EIS fails to analyze the impact of collection/fishing on current population abundance and fails to consider that these populations are far below the historical baselines as represented in the MPAs, or otherwise.**

E. Catch Is Grossly Underreported

As mentioned above, there is no requirement for recreational aquarium collectors to report catch. For commercial collectors, while reports are required, catch report compliance is substantially low. As such, the impact of the aquarium fishing industry is likely larger than is reported, which has been discussed in the scientific literature.²⁹

As a former DLNR employee succinctly wrote regarding aquarium catch reports: “The reliability of the data depends upon the sincerity of the permittees.”³⁰ There is no verification system, such as that provided by independent observers, to ensure the accuracy of self-reported data. One additional major impediment to accurate data stems from the lack of a license requirement for marine dealers and/or exporters. Currently there is a requirement for dealers (i.e. those who buy directly from aquarium collectors) to report their purchases. According to DLNR, the effect is that “dealer reporting is essentially on a voluntary basis and a few dealers are not reporting in whole or in part.”³¹ DLNR cannot know whether a “few” or a dozen dealers are not reporting, without a requirement for these businesses to have licenses, thus, these businesses operate beneath the radar and serve as a conduit for moving unreported catch out of the state.

Establishing a marine dealer/exporter license has long been a priority for those within DLNR concerned about Hawai‘i’s marine resources, because it would enable the department to verify catch reports, identify unlicensed collectors (and all commercial fishers), identify dealers and helped with generating economic data about the fisheries. Without this information, DLNR/DAR has no accurate data on health of fish populations. According to a former DAR Commercial Fisheries manager, Karl Brookins, the process of establishing the license was abandoned due to lack of funding.³²

F. Further Necessary Data Excluded is Needed for an EIS

As discussed above, there is no reliable data on how many fish and other species are actually taken pursuant to aquarium permits in any given year. The DEIS repeatedly refers to a lack of data for numerous species. For example:

²⁹ Friedlander et al. (2008).

³⁰ Katekaru (1978).

³¹ DLNR (2014).

³² Clark & Gulko (1999); Brookins, K., DAR commercial fisheries manager, personal communication to author R. Umberger (October 7, 2008).

- **For the 238 fish species and 66 invertebrate species taken by the O’ahu aquarium trade from 2000 – 2017, population estimates for just 22 fish species were used in the DEIS analysis.**³³
- **“...it is unknown which, if any, species are experiencing population declines, as population trend data is not available for the fish species analyzed in this EIS for the island of O’ahu.”**³⁴
- **“Because specific species of hermit crabs are not reported on aquarium permits reporting forms, it is not possible to know which species are collected, with the exception of zebra hermit crabs.”**³⁵
- **Though the endemic Bandit Angelfish is among the 23 fish species purportedly analyzed in the DEIS, “a population estimate for Bandit Angelfish is not available from the CREP data due to the species’ deep-water habits.”**³⁶

This data is necessary in order for the EIS to properly assess impacts. Furthermore, the Agency must conduct stock assessments of species before it is able to determine a sustainable rate of take. Clearly the Agency has not done so, as DLNR personnel have stated that to do so would take over a decade for just 40 fish species, out of the more than 287 fish and invertebrate species the Agency identifies as targeted by the trade (found at Appendix 3).³⁷ Without such data, the Agency cannot meaningfully assess the environmental impacts of commercial aquarium collection. Such assessments must be completed prior to the issuance of the EIS, and in the face of any uncertainty, the EIS’s analyses must err on the side of caution to protect these vulnerable species.

G. Examples of Proper Impact Analyses

Comparisons of reported catch to estimated populations in the WHRFMA have revealed that upwards of 80% of Achilles tangs and 60% of yellow tangs in the open areas have been taken by commercial aquarium collectors in some years and have concluded that “aquarium collecting is having a major impact on Achilles and yellow tang.”³⁸ Although these estimates are imperfect, because they do not factor under-reporting, they are still more accurate than presented in the DEIS because they are spatially relevant. Still, the extremely high levels of take are reflected in the difference between populations in the areas where they are taken and baseline areas where they have not been taken for decades (e.g., Hanauma Bay). For heavily targeted species, it has resulted in a 90% reduction in natural abundance in those areas, on average, compared to the MPA baseline.³⁹

H. Other omissions, and misleading and incorrect data sets used

³³ DEIS at 37 and 58.

³⁴ DEIS at 19.

³⁵ DEIS at 60.

³⁶ DEIS at 82.

³⁷ DLNR (2017); Eagle (2017); Aquarium Fishing Trip Report.

³⁸ Walsh et al. (2010).

³⁹ Grabowsky (2011); Grabowsky (2014).

The DEIS omits an analysis of the current and proposed daily bag limits and fails to disclose the impacts that would occur under the full extent of those limits when applied to the 20 aquarium permittees in the Preferred Alternative. A simple analysis, as shown below, indicates the bag limits would allow take ranging from 23% to 1,284% of the total island-wide populations (see Fig. 1).

Species	Daily Bag Limit	Applied to 20 Collectors	Over 365 Days	Est. O'ahu Population (per DEIS)	% of Population
Yellow Tang	100	2,000/day	730,000	216,524	337%
<i>Kole</i> *	75	1,500	547,500	1,144,130	48%
Potter's Angel *	50	1,000	365,000	297,372	125%
Naso Tang	50	1,000	365,000	950,505	38%
Moorish Idol	25	500	182,500	285,677	64%
Achilles Tang	10	200	73,000	5,570	1,265%
Cleaner Wrasse *	6	120	43,800	190,455	23%
Flame Wrasse * (DEIS proposed)	10	200	73,000	5,683	1,284%
* Endemic Species					

Fig. 1. Allowable take resulting from existing and proposed bag limits under the preferred alternative and impact to island-wide populations of those species

Lastly, At the foundation of every determination made in the DEIS is the flawed conclusion that aquarium collection rates are at or below the “sustainable” level of 5% - 25% of the populations of targeted species on O’ahu. The DEIS fails to consider cumulative impacts, both short- and long-term. HEPA requires that “agencies shall consider the sum of effects on the quality of the environment and shall evaluate the overall and cumulative effects of an action.”⁴⁰ Furthermore, the Agency must consider “both primary and secondary” consequences, “and the cumulative as well as short-term and long-term effects of an action.”⁴¹ Notably, “cumulative impact” is defined as the impact resulting from “the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions,” and “[c]umulative impacts can result from individually minor but collectively significant actions taking place over a period of time.”⁴²

III. All Impacts Improperly/Inadequately Analyzed

A. Failure to Adequately Analyze Long-Term Impacts

The Applicant unlawfully limited its analyses to the time period of five years.⁴³ PIJAC provides no reasoning for this 5-year period, while noting that each permit lasts only one year, and therefore a new HEPA analysis would need to be completed on an annual basis.⁴⁴ However, while Commenters

⁴⁰ HAR § 11-200-12.

⁴¹ HAR. § 11-200-12.

⁴² HAR. § 11-200-2.

⁴³ DEIS at 13.

⁴⁴ DEIS at 13.

agree that it is critical for the Agency to continue to monitor the impacts that aquarium collection is having over time, the relatively short time period of the activity itself does not nullify HEPA's clear requirement for considering the long-term effects of that activity.⁴⁵ For example, a large excavation project could destroy habitat in an area of an island that takes decades to regrow—and even if the excavation itself was only for a year, HEPA would clearly require consideration of the impacts to the environment during the decades of regrowth. Similarly, the use of a pesticide could have known impacts on a species where serious or lethal effects are felt far beyond the time frame of the actual application of the pesticides—yet HEPA would clearly require consideration of those expected impacts. Thus, PIJAC's logic simply does not hold up. Additionally, stating that the Agency can simply reevaluate the consequences of a year-long permit *after* that year is up entirely contradicts HEPA's mandate to evaluate the potential consequences of an action *before* the Agency authorizes the action.

Additionally, a 5-year timeframe that analyzes impacts is inadequate because the impact of fish removal will accumulate over time, and as explained below, is best understood in a timeframe spanning decades. There were no reef fish population surveys for O'ahu prior to 2018 when the CREP survey data was published. However, where baseline population data are absent, and where consumer demand exists for a particular species or family group, it is highly likely that substantial declines of reported catch reflect reduced abundance of the target sizes—juveniles in most cases—of those species or families on Hawai'i's reefs.⁴⁶

Annual reported catch for O'ahu has been documented since 1976, and those data show significant declines in catch over the course of the last four decades. For example, from 1976 to 1999, annual reported aquarium fish catch exceeded 90,000 fish at least thirteen times, or in 57% of those years, while over the last 20 years (i.e. since 2000), annual reported aquarium fish catch for O'ahu has exceeded 90,000 fish just three times – in 2006, 2012, 2015 – or 15% of the time.⁴⁷ Importantly, this reduced level of catch has occurred despite a significant increase in the number of commercial aquarium permits since the 1980's, and especially between 2000 and 2017 when that number grew by 85% on O'ahu, and reached a record of 126 permit holders in 2017.⁴⁸ It is likely that the number of commercial aquarium permits issued will remain high or continue to increase in the coming years due to the high demand for aquarium reef fish and their increasing market value.

Historically commercial aquarium collectors have reported catching fish just two to three days per week.⁴⁹ There is nothing preventing them from increasing that effort, via increasing the number of hours and/or days they collect, in response to perceived scarcity from, for example, impacts to habitat from storms and climate change, or from additional collectors seeking permits through the HEPA process (i.e. the “get it while you can” mentality); or, in order to meet the high demand for aquarium reef fish and their increasing market value.⁵⁰

⁴⁵ HAR. § 11-200-12.

⁴⁶ Walsh et al. (2004).

⁴⁷ Walsh et al. (2004); DEIS at 37.

⁴⁸ DEIS at 24.

⁴⁹ Stevenson et al. (2011).

⁵⁰ Friedlander et al. (2008); Stevenson et al. (2011).

Furthermore, the Hawai'i Supreme Court has made clear that the proper inquiry under HEPA is "the outer limits of what the permits allow . . ." ⁵¹ **The outer limits allowed by the permits are the take of every fish and every invertebrate from every reef in the state of Hawai'i that isn't in a protected area. Permits issued under this DEIS would allow just that without a new law, rule, or permit condition, defining geographic and take limits. Further, as there are no limits on the number of commercial marine licenses (CML) issued for aquarium collecting, in the rest of the state, the issue of aquarium trade impacts to Hawai'i's coral reefs remains unresolved.**

The DEIS analyzes the effects of issuing aquarium permits to 20 people on O'ahu, however permits are issued statewide, with no geographic limits, other than those pertaining to managed areas, which are regulated by other statutes. The DEIS identifies this unresolved issue with a statement that, "It is assumed that, upon issuance of an Aquarium Permit, a permit condition would be included in each permit limiting the geographic area covered by the permit to the island of O'ahu."⁵² However, beyond the stated assumption, there is no further discussion of how it will be resolved, though it is legally required.⁵³ Currently the use of fine mesh nets for aquarium purposes is prohibited everywhere, and with the issuance of any geographically limited permits, DLNR would likely be unable to enforce those geographic limits given their extremely limited resources.

Furthermore, the DEIS is for 20 fishers, however nothing prevents more fishers from seeking permits through additional HEPA reviews. In addition, pursuant to HRS § 189-2, DLNR is currently issuing an unlimited number of commercial marine licenses for aquarium collecting. The relationship between the number of participants in a fishery and impacts to fish populations is well-established in the literature. The importance of restricting access to fisheries has been acknowledged and used for thousands of years to conserve and help sustain fish populations.⁵⁴

The DEIS failed to take into account how increasing demand and increasing market value will affect already depleted targeted reef fish species in the coming years, thus resulting in significant environmental impacts. For example, the market value of tropical reef fish (e.g., Yellow Tang) has increased and thus collection/fishing pressure is also likely to increase in the near future. The DEIS fails to properly analyze this relationship, and, fails to propose any mitigation measures to reduce/prevent population declines.

For very long-lived species such as the yellow tang and other surgeonfishes heavily targeted by aquarium collection, which have lifespans measuring decades, and which may not reproduce until they are at least 5 years old, a 5-year analysis period is far too short. The DEIS claims that the high fecundity and long lifespans of reef fishes combined with the limited targeting of adult brood-stock by the trade removes the certainty that the losses will accumulate over time, is demonstrably false.

The DEIS claims that "it is unknown which, if any, species are experiencing population declines, as population trend data is not available for the fish species analyzed in this EIS for

⁵¹ *Umberger*, 403 P.3d at 294.

⁵² DEIS at 16.

⁵³ See HAR 11-200-17 (n)

⁵⁴ Dewees and Weber (2001).

the island of O’ahu.⁵⁵ The DEIS takes this position despite evidence provided by Commenters on the Applicant’s Draft Environmental Assessment (and expanded upon in this document), and it fails to acknowledge the evidence of depletion caused by collection activities that is apparent when using the proper baseline. DLNR has noted that “the precautionary principle calls for applying the lowest estimated percentage of sustainable take in the absence of scientific certainty.”⁵⁶

The failure of the DEIS to conduct a proper analysis, as described above, is not only a legal flaw but also the main reason that the DEIS does not find a significant impact of the aquarium fishing industry on targeted species and their habitat. In addition, by limiting the timeframe of their analysis to five years, the DEIS fails to accurately consider the impacts of one-year collection permits cumulatively with other “past, present, and reasonably foreseeable actions” “over a period of time.”⁵⁷ **A failure to apply the precautionary principle in the absence of essential data leads the DEIS to propose reckless alternatives and zero proper mitigation, leading to potentially catastrophic impacts.**

B. Failure to Analyze Indirect and Cumulative Impacts

Coral reefs are connected by currents which carry and disperse fish larvae to other areas, both near and far. Most fishes on Hawai’i’s reefs are the result of other fishes upstream of that reef.⁵⁸ The currents and conditions that control larval connectivity and dispersal processes are complex. The larvae of some species are able to travel between islands, while others do so to a lesser extent. For example, in one study, some yellow tang larvae on Hawai’i Island travelled on ocean currents for 15 km before settling on a reef while others traveled 184 km.⁵⁹

Recent research into two species of small bodied surgeonfishes, including kole, which is heavily targeted by the aquarium trade, has determined that populations of these fishes are genetically distinct on each of the main Hawaiian Islands. This means that, for at least these two species, there is little genetic mixing between islands, and once species are depleted on any given island, there is no other source for population replenishment. Further, connectivity and dispersal studies on the island scale for certain species have identified important spawning source areas that are essential for maintaining populations on other reefs across the island.

Importantly, larval connectivity between coral reefs serves to highlight areas where indirect and cumulative impacts of the Applicant’s actions may manifest, because the effects occur “later in time [and] farther removed in distance.”⁶⁰ Larval sources on reef areas depleted by aquarium collecting will disperse reduced fish larvae which eventually settle downstream on sink reefs, which may be miles away from source areas.⁶¹ For yellow tangs, most of which are taken when they are less than 2 years old, these effects won’t manifest until years after take has occurred, because yellow tangs don’t mature until they are 4 to 7 years old.

⁵⁵ DEIS at 19.

⁵⁶ DEIS at pdf pg. 291.

⁵⁷ HAR. § 11-200-2.

⁵⁸ Noland (1978); Christie et al. (2010); Coleman (2019).

⁵⁹ Christie (2010).

⁶⁰ HAR 11-200-2.

⁶¹ Coleman (2019).

The DEIS fails to account for this critically important reproductive strategy used by Hawai'i's reef fishes. Instead it uses larval connectivity to justify the use of island-wide populations to measure direct impacts from the proposed activity in the specific areas where it takes place, and provides no information on the larval dispersal patterns and connectivity for the targeted fish populations on the reefs where they are taken.⁶²

Here, the precautionary approach requires the determination of source areas for all species that are taken on O'ahu by the aquarium trade and the establishment of protections for those populations to ensure local species survival. This has not been addressed in the DEIS.

Additionally, the DEIS fails to properly address the true nature of what the Applicant is requesting in its Preferred Alternative whereby:

“DLNR would issue Aquarium Permits to 20 aquarium fishers in O'ahu, thereby allowing these 20 individuals to resume commercial aquarium fish collection on O'ahu. It is assumed that, upon issuance of an Aquarium Permit, a permit condition would be included in each permit limiting the geographic area covered by the permit to the island of O'ahu. Permittees would abide by all rules and regulations set forth in HRS-188-31 (Section 1.2.1), governing Commercial Aquarium Permit use. For the island of O'ahu, these rules and regulations include restrictions on equipment, restrictions on access to various areas, bag limits on various collected fish species, and reporting requirements.

In addition to the existing rules, under this Alternative, the daily bag limit for commercial aquarium collection of Flame Wrasse would be limited to 10 individuals per day, and the Waikiki MLCD would be expanded northward to the southern tip of DAR's Honolulu Harbor Kapalama Canal Fish Management Area...”⁶³

In other words, the Applicant's Preferred Alternative is the collection of an *unlimited* number of over 300 fish and invertebrate species, plus a new bag limit on Flame Wrasse, in addition to the existing bag limits on seven species, which would allow take in numbers ranging from 23% to 1,284% of the entire estimated island-wide populations for these eight species—the limits of what regulation allows. Yet, the DEIS considers only very *limited* collection. HEPA requires that an EIS assess the potential cumulative impacts of what State regulations allow, not what some permittees may claim they *intend* to do, or have historically done, with their permits, and certainly not for only 7 percent—22 fish and zero invertebrates—of the 304 marine animals historically taken under those permits. As the Hawai'i Supreme Court clearly stated, “the properly defined activity for the purposes of the HEPA analysis must encompass the outer limits of what the permits allow and not only the most restrictive hypothetical manner in which the permits may be used.”⁶⁴ The DEIS fails to address this.

“Relatedly, the DEIS assumes that aquarium collection without the use of fine-mesh gear will continue “legally” on Oahu; however, as indicated in a complaint dated January 27, 2020, Kaupiko et

⁶² DEIS at pdf pg. 306.

⁶³ DEIS at 16.

⁶⁴ *Umberger*, 403 P.3d at 294.

al. v. DLNR, such collection also requires HEPA review, which currently is not being conducted.⁶⁵ If this purportedly “legal” collection were halted pending environmental review, then the 20 collectors would have even greater incentive to increase collection levels on Oahu in the meantime. The DEIS fails to consider this effect.

Relatedly, although the DEIS purports to analyze impacts cumulatively with those of other commercial aquarium collection under CMLs, without the use of fine-mesh nets, the DEIS still does not account for the fact that the Agency issues a CML for *every* application that is submitted, and therefore the take under CMLs is potentially unlimited as well.⁶⁶ In addition, the DEIS states that “the impacts of non-aquarium commercial and non-commercial fishing on biological resources cannot be fully quantified,” further noting that “some species are declining in West Hawai‘i. . . and this may be the case on O‘ahu, as well.”⁶⁷ This lack of data is not properly addressed in the EIS.

Likewise, although the DEIS purports to analyze impacts cumulatively with those of recreational collection permits, should they be reinstated, the DEIS still does not account for the fact that, when they were valid, the Agency issued a permit for *every* application that was submitted, and therefore the take under recreational permits is potentially unlimited as well.⁶⁸ And the DEIS admits that, as there is no required reporting for recreational permits, it is currently impossible to know how many of each species are taken under those permits, and therefore, the impact of collection under these permits on species collected under these permits cannot be quantified.⁶⁹ This lack of data is not properly addressed in the EIS.

The analysis of cumulative impacts included the impact of the commercial aquarium fishery, regardless of the gear used to capture the marine life, combined with non-aquarium commercial and recreational fisheries and other activities that impact population abundance, but reached a conclusion that is erroneous. Commercial and recreational fishing combined with the aquarium fishery have a substantial impact on targeted species. The DEIS fails to determine cumulative impact of all fishing on target species. In addition, the DEIS fails to analyze indirect impacts from collection such as vessel traffic and accumulated coral reef damage due to vessel anchoring and collection practices.

The DEIS fails to adequately evaluate the potential of cumulative impacts of climate change (warming, coral bleaching, and ocean acidification) on targeted fish species such as decline of coral coverage which have been demonstrated to influence reef fish species diversity and abundance.⁷⁰ The DEIS recognizes that climate change poses serious threats to Hawai‘i’s coral reefs and the species targeted by the Applicant, yet ironically claims that climate change impacts coupled with the impacts of implementing the Preferred Alternative is expected to be less than significant. These statements completely dismiss the research and data that demonstrate what is stated, that climate

⁶⁵ Kaupiko et al. v. DLNR (2020).

⁶⁶ DEIS at 95.

⁶⁷ DEIS at 109.

⁶⁸ DEIS at 105.

⁶⁹ DEIS at 106.

⁷⁰ Jones et al. (2004); Friedlander et al. (2018).

change impacts, specifically ocean warming, acidification and coral bleaching events will continue, thus further analysis of impacts and exacerbation of impacts due to climate change is required.⁷¹

It is clear from an analysis of cumulative impacts that many of HEPA's "significance criteria" apply.⁷² Had proper analyses been conducted, the Preferred Alternative most certainly would have shown significant effects on the environment due to at the least, the following: the loss or destruction of natural and cultural resources; curtailing the range of beneficial uses of the environment; substantial degradation of environmental quality; cumulative effects on the environment; and potentially substantially affecting rare, threatened or endangered species, or its habitat.⁷³

Flawed analyses prevent the DEIS from accurately assessing and addressing these effects, in part, because the DEIS uses as a baseline, current conditions, which have been impacted by decades of the aquarium collecting activity.⁷⁴ Therefore, the scope fails to factor the impacts of collection pressure over time. Proper examination of the magnitude of the effect of aquarium collecting on natural populations and the coral reef ecosystem over time requires a proper baseline such as occur in MPAs, which reflect natural populations, before they were depleted by this activity, and have been used as such in numerous studies.⁷⁵

IV. Failure to Adequately Analyze and Address Significance Criteria and Other Areas of Concern Proposed by DLNR in NOD

DLNR, in the Final Environmental Assessment, Notice of Determination, described five HEPA significance criteria and eleven additional areas requiring further analysis by the Applicant. Here too, the DEIS is totally inadequate, falls far short of providing proper analyses, and fails to reach conclusions that are supported by the evidence.⁷⁶

- A. HEPA Significance Criteria #1: To the question of "whether the annual take of cumulative numbers of fish as a percentage of estimated population results in irrevocable loss or destruction of populations of fish," the DEIS wrongly concludes "the Preferred Alternative (i.e., Limited Permit Issuance Alternative) does not involve an irrevocable commitment or loss or destruction of any natural or cultural resource."

Fish Populations: Any and all substantial reductions in natural abundance of aquarium species on O'ahu indicate lost natural and cultural resources. While it may be true that a potential *revocable* loss may be indicated by increasing populations of some aquarium species once aquarium collecting is halted, such as occurred for yellow tangs in the WHRFMA FRAs after their establishment in 2000 and in the open areas after collection was prohibited in 2018, there is no evidence that natural abundance will ever return. This is especially true given that **the Preferred Alternative would allow important fish species to be annihilated, some many**

⁷¹ DEIS at 128.

⁷² Haw. Rev. Stat. § 11-200-12(b).

⁷³ Haw. Rev. Stat. § 11-200-12(b)(1), (2), (7), (8), (9).

⁷⁴ DEIS at 13.

⁷⁵ Walsh et al. (2010); Walsh et al. (2013); Walsh (2010); Walsh (2015); Grabowsky (2011); Grabowsky (2014)

⁷⁶ DEIS at pdf pg. 286 – 295.

times over, under the existing and proposed bag limits and would allow for continued unlimited collection under aquarium CMLs.

Furthermore, coral bleaching caused by climate change has already reduced coral cover on O‘ahu and is only expected to worsen, with annual bleaching events that could begin as early as 2030 and which will result in the loss of 70% of Hawai‘i’s reefs. This loss of habitat virtually assures that a depleted population will not be able to rebound to the same extent, or at all, in the future, though it may have in the past.

Further evidence is found throughout this document and all combined point to significant adverse impacts to fish populations as a result of all proposed Alternatives, including the No Action alternative, due to unlimited and illegal collection currently occurring under CMLs.

Reef Habitat: The DEIS wrongly claims that “it is not anticipated that a significant impact on reef habitat as a result of the Preferred Alternative would occur.” Damage to reef habitat from commercial aquarium collection is well documented. See “Damage to Reef Habitat” later in this document and also Appendix 4 where photographs of these practices and their effects can be found.

The DEIS cites a 2003 study (Tissot and Hallacher) in an attempt to conclude that no significant impact on aquatic invasive algae control is anticipated as a result of the Preferred Alternative, noting that the authors “found no increases in the abundance of macroalgae where the abundance of herbivores was reduced by aquarium collecting.” However, the DEIS omits the author’s subsequent conclusion that the study may not be a good test of that hypothesis for several reasons, including that herbivores taken by aquarium collectors primarily consume filamentous algae (i.e. turf), not macroalgae, and that further investigation is warranted.⁷⁷ Additionally, macroalgae accounts for <2% of algal cover in West Hawai‘i – the majority is turf algae, further underscoring the irrelevance of the 2003 study.⁷⁸

Evidence throughout this comment document points to significant adverse impacts to reef habitat as a result of all proposed Alternatives.

Cultural Resources: The DEIS wrongly claims that “populations of the fish species analyzed in this EIS are not anticipated to significantly decline under the Preferred Alternative. Therefore, it is not anticipated that a significant impact on cultural resources would occur as a result of the Preferred Alternative.”⁷⁹ This follows the conclusion in the CIA that “cultural impacts would occur if issuance of Aquarium Permits under an alternative would cause a significant decline in the population of a fish species considered to be a cultural resource, either directly through the collection of fish or indirectly through habitat impacts.” As described in detail in this comment document, a number of species are currently in decline as a direct result of aquarium collecting and will continue to decline as such as long as aquarium collecting occurs on O‘ahu.

⁷⁷ Tissot and Hallacher (2003).

⁷⁸ Gove 2019.

⁷⁹ DEIS at 116.

Additionally, the Preferred Alternative would allow culturally important fish species such as Achilles Tang to be annihilated, some many times over, under the existing and proposed bag limits and would allow for continued unlimited collection under aquarium CMLs. Therefore, cultural resources are in fact impacted.

HEPA Significance Criteria #2: To the question of whether “the take of aquarium fish curtails the uses of the environment, including aquatic invasive algae control, the tourism industry, and the overall integrity of diverse aquatic ecosystems,” the DEIS wrongly concludes “the Preferred Alternative does not curtail the range of beneficial uses of the environment.”

Aquatic invasive algae control: The DEIS wrongly claims that “the pressures from commercial aquarium collection under the Preferred Alternative are anticipated to be lower than rates seen prior to the October 2017 ban on commercial aquarium collection using fine mesh nets; therefore, it is not anticipated that a significant impact on aquatic invasive algae control as a result of the Preferred Alternative would occur.” This is wrong because, the Preferred Alternative would allow four herbivorous fish species to be annihilated, some many times over, under the existing bag limits and would allow for continued unlimited collection of other herbivores under aquarium CMLs.

Further, the DEIS cites a 2003 study (Tissot and Hallacher) to attempt to conclude that no significant impact on aquatic invasive algae control is anticipated as a result of the Preferred Alternative, noting that the authors “found no increases in the abundance of macroalgae where the abundance of herbivores was reduced by aquarium collecting.” However, the DEIS omits the authors subsequent conclusion that the study may not be a good test of that hypothesis for several reasons, including that herbivores taken by aquarium collectors primarily consume filamentous algae (i.e. turf), not macroalgae, and that further investigation is warranted.⁸⁰ Additionally, macroalgae accounts for <2% of algal cover in West Hawai‘i – the majority is turf algae, further underscoring the irrelevance of the 2003 study.⁸¹

Evidence throughout this comment document points to significant adverse impacts to aquatic invasive algae control as a result of all proposed Alternatives.

Tourism: The DEIS wrongly claims that “populations of fish species collected by commercial aquarium collectors are not anticipated to significantly decline, therefore not significantly impacting viewing opportunities. Consequently, continued commercial aquarium collection under the Preferred Alternative, which would limit the number of Aquarium Permits and decrease collection, is not anticipated to significantly impact tourism.” However, this is wrong because, the Preferred Alternative would allow important fish species to be annihilated, some many times over, under the existing and proposed bag limits and would allow for continued unlimited collection under aquarium CMLs. As described below, viewing opportunities and marine tourism revenue losses resulting from depleted populations of beautiful, charismatic

⁸⁰ Tissot and Hallacher (2003).

⁸¹ Gove 2019.

and iconic fishes are captured in studies documenting willingness to pay and consumer surplus losses.

Therefore, there are significant adverse impacts to marine tourism as a result of all proposed Alternatives.

Integrity of Diverse Aquatic Ecosystems: The DEIS wrongly claims that “The pressures from commercial aquarium collection under the Preferred Alternative are anticipated to be lower than rates seen prior to the October 2017 ban on commercial aquarium collection using fine mesh nets; therefore, it is not anticipated that a significant impact on the integrity of diverse aquatic ecosystems as a result of the Preferred Alternative would occur.” However, this is wrong because, the Preferred Alternative would allow important fish species to be annihilated, some many times over, under the existing and proposed bag limits and would allow for continued unlimited collection under aquarium CMLs. As described throughout this document, aquarium species are currently in decline as a direct result of aquarium collecting and will continue as such as long as aquarium collecting occurs on O’ahu.

Therefore, there are significant adverse impacts to the integrity of diverse aquatic ecosystems as a result of all proposed Alternatives.

- B. HEPA Significance Criteria #3: To the question regarding the extent to which the take of aquarium fish conflicts with the state’s long-term environmental goals, the DEIS wrongly concludes that “the Preferred Alternative does not conflict with the State’s long-term environmental policies, goals, or guidelines as expressed in chapter 344 HRS.”

As described throughout this document, significant adverse impacts to natural resources would occur as a result of all proposed Alternatives.

- C. HEPA Significance Criteria #4: To the question of the impact of the take of aquarium fish on cultural practices in the state, the DEIS wrongly claims that “populations of the 23 species analyzed in this EIS are not anticipated to significantly decline under the Preferred Alternative. Therefore, it is not anticipated that a significant impact on cultural practices would occur as a result of the Preferred Alternative.” This follows the conclusion in the CIA that “cultural impacts would occur if issuance of Aquarium Permits under an alternative would cause a significant decline in the population of a fish species considered to be a cultural resource, either directly through the collection of fish or indirectly through habitat impacts.” As described in detail in this comment document, a number of species are currently in decline as a direct result of aquarium collecting and will continue to decline as such as long as aquarium collecting occurs on O’ahu. Additionally, the Preferred Alternative would allow culturally important fish species such as Achilles Tang to be annihilated, some many times over, under the existing and proposed bag limits and would allow for continued unlimited collection under aquarium CMLs. Therefore, cultural resources are in fact impacted.

- D. HEPA Significance Criteria #8: to the question regarding the cumulative effect of the commercial take of aquarium fish using fine mesh nets when combined with the effects of: the commercial take of aquarium fish by other legal methods; the take of aquarium fish for recreational purposes; and, the commercial and non-commercial take of aquarium fish species for consumption as food, particularly including Achilles Tang and kole, the DEIS wrongly concludes “the Preferred Alternative does not involve a commitment for larger actions. When the full range of impacts to the fish species analyzed in this EIS are considered (e.g., recreational aquarium collection, non-aquarium commercial fishing, recreational fishing, tourism, climate change), there may be a significant cumulative impact to some species. However, the Preferred Alternative is not a significant contributor to the cumulative effect upon the environment.” However, this is wrong because, the Preferred Alternative would allow important fish species to be annihilated, some many times over, under the existing and proposed bag limits and would allow for continued unlimited collection under aquarium CMLs.

As described throughout this document, **fundamental errors in the DEIS’s impact analysis resulted in patently false findings of no significant impacts and improper evaluations of these HEPA significance criteria. By failing to properly identify the varied and significant effects of commercial aquarium collection, the DEIS fails to accurately assess the cumulative effects when combined with other extractive activities.**

The evidence is clear that all proposed Alternatives would significantly contribute to the cumulative effect upon the environment.

- E. Additional Areas Requiring Further Analysis as Described in the DLNR NOD: (noted in italics and followed by Commenters response/analysis)

- 1) *“It is also necessary to analyze the potential impacts under the no action alternative resulting from non-issuance of aquarium permits, including the increased take of larger, reproductively mature aquarium fish using legal mesh nets.”*

Since aquarium collecting with fine mesh nets was prohibited in 2017, aquarium take on O’ahu has been “within the range of historic aquarium collection from 2000 – 2017... and suggest that collection may continue to follow historic rates, even without the use of fine mesh nets.”⁸² **Further, take of yellow tang and kole has increased substantially, with a record number of yellow tang taken in 2019 (since at least since 2000).⁸³ Most of the Yellow tang and kole catch since 2017 has been reported from zones 407 (Kaneohe Bay) and 412 (Kahe Pt., Nakakuli, Maili Pt.) (see aquarium fish zones at Appendix 2). In fact, 55% of aquarium fish catch reported in 2018 and 2019 were from those two areas.⁸⁴**

⁸² DEIS at 78.

⁸³ DLNR Catch Reports.

⁸⁴ DLNR Catch Reports.

As previously stated, understanding and factoring larval dispersal and connectivity patterns is critically important for determining impact. It is through the identification of larval source and sink areas that appropriate direct, indirect and cumulative impacts, whether past, present or future, can be assessed and proper levels of take determined in order to prevent permanent harm to populations of targeted species.

The DEIS asserts that under the no action alternative, aquarium take is performed by using purportedly legal nets with larger than 2-inch mesh, and therefore, small fish will not be captured at the same rates as they would be with small (less than 2 inch) mesh. Additionally, the DEIS states that “without the use of fine mesh nets and the regulations that accompany their use (see Section 1.2.3), the size class of fish collected may increase over that which is caught with fine mesh nets (i.e., the smaller fish would escape the larger mesh), but this impact cannot be quantified at this time.”⁸⁵

We understand that because, with few exceptions, catch reports do not require information on fish sizes, it is impossible to determine size-related volumes of catch in the states commercial data. However, information gleaned from the retail market provides ample evidence that fish under 2” (i.e. small enough to escape purportedly legal mesh nets) continue to be captured in very high numbers despite the prohibition on small mesh nets (see Appendix 5 for examples). Further, and as noted in Appendix 1, there was no response to our questions as to the specific methods or net sizes used for ongoing collection under aquarium CMLs.

Further, the DEIS states that the No Action Alternative would have less than significant direct and indirect impacts on reef fish populations and the reefs on which they live.⁸⁶ Inexplicably, the DEIS later contradicts itself by stating that “collection...under the No Action Alternative would result in temporary and localized decreases in the number of fish...and invertebrates over the 5-year analysis period (occurring only at the time and place where collection is occurring), which may provide fewer viewing opportunities for tourists, a decrease in the prey base, and reduced competition between species for available resources.” The DEIS avoids describing the locations and duration of these impacts and attempts to erase them by stating that on the island-wide scale, the annual removal rate is so low that the impacts would be “minor or nonexistent”.⁸⁷

Lastly, the DEIS concludes that under all four alternatives, including the No Action Alternative, the cumulative impact of the activity is insignificant for the majority of species it analyzed, but may be significant for the most heavily targeted species, the yellow tang. However, the DEIS dismisses this by stating this would be the case only if

⁸⁵ DEIS at 103.

⁸⁶ DEIS at 81 and 104.

⁸⁷ DEIS at 103.

significant population declines resulted when combined with the magnitude of the other cumulative impacts, “which cannot be quantified at this time.”⁸⁸

Therefore, the DEIS does not properly and thoroughly analyze the impacts and reaches the wrong conclusions.

- 2) *“The FEA identifies the scope of the analysis as one year and states that an EA with updated data and analysis would need to be completed on an annual basis. This improperly segments the analysis which must include the long-term and cumulative impacts over time of aquarium collection.”*

The DEIS expands the scope of the analysis to 5 years. However, this time frame is too short to adequately analyze long-term and cumulative impacts over time. For example, though collection pressure has been removed from the White List species in the WHRFMA FRAs, populations of once heavily targeted species in those areas, such as yellow tangs, have yet to return to natural levels of abundance, as reflected in the baseline MPAs, even after 20 years of protections. For very long-lived species such as the yellow tang and other surgeonfishes heavily targeted by aquarium collection, which have lifespans measuring decades, and which may not reproduce until they are at least 5 years old, a 5-year analysis period is far too short.

- 3) *“There is no statistical analysis of population growth compared to the life span of each fish and the number of years to and size of first reproduction against which this annual proposed take can be measured for purposes of estimating sustainable take.”*

The DEIS fails to address this issue entirely, providing zero of the statistical analyses that were requested and zero reasons for not doing so. Notably those statistical analyses form the foundation of determining estimations for sustainable in the Ochavillo and Hodgson (2006) work, which is referenced throughout the DEIS concerning what constitutes “sustainable reef fish harvest”. Instead, the DEIS relies solely upon analysis of catch as % of population, which as described here, is far too flawed to be used to legitimately justify the levels of take proposed in the DEIS.

- 4) *“With regard to proposed levels of sustainable catch, using “5% to 25% annual take of estimated populations as proposed in several research papers, we note that 5% to 25% is a wide range, and the precautionary principle calls for applying the lowest estimated percentage of sustainable take in the absence of scientific certainty.”*

The DEIS claims that under the Preferred Alternative, upwards of 14% of yellow tang and 25% of Flame Wrasse island-wide populations would be collected. However, the assumptions the DEIS relies upon to make these determinations renders it useless. It is

⁸⁸ DEIS at 112.

to be expected that inaccurate and under-reported catch levels applied to areas far beyond the directly impacted environment will result in a greatly reduced level of impact. As described earlier, in recent years, 55% of reported catch came from just two report zones while zero take was reported from a number of other zones.

The 5% to 25% annual take of estimated populations, as proposed by Ochavillo and Hodgson (2006) pertains to small finite areas, called “collection areas” where the collection activity occurs. For example, two of the Philippine collection areas that form the basis for Ochavillo and Hodgson’s work, Batasan Island and Clarin, are part of Bohol, an island with a coastline that’s 390 km long and comparable to, though smaller than, Hawai’i Island’s 428 km long coastline and larger than O’ahu’S 180 km of general coastline.⁸⁹

One area is Batasan Island, a minor island of less than 120,000 m² that lies about 6.4 km off the Bohol coast, and is part of the municipality of Tubigon, itself just 81.87 km². The other collection area is the neighboring municipality of Clarin, which has a total municipal land area of 62.79 sq. km and a coastline of approximately 6 linear km.

The Ochavillo and Hodgson total allowable catch (TAC) as % of population is based on estimated natural mortality rates for certain reef fishes in those specific areas. Furthermore, their TAC relates to fish populations in those specific small areas, not the entire island of Bohol. The DEIS erroneously takes their 5% to 25% range, applies it to species that are not included in their work, to an area that encompass the entire island of O’ahu, and is orders of magnitude larger than the collection areas used by Ochavillo and Hodgson.

- 5) *“We also note that there are no bag limits for most species, and that the fishery as currently regulated does not limit the number of permits, so that the annual take as a percentage of estimated population could rise significantly. Alternatives of overall annual take limits, a limited entry aquarium fishery program, and restrictions including full moratoria on the take of herbivores, species of special concern, and species evidencing severe population declines have not been proposed or analyzed.”*

The DEIS does not address this issue. The Preferred Alternative includes limited issuance of permits in this instance, but nothing prevents others from pursuing additional permits for themselves. Additionally, an unlimited number of CMLs are issued for commercial aquarium collection that is purportedly done with legal gear.

Further, under the existing bag limits for seven species and the proposed bag limit for Flame Wrasse, the 20 permits that would be issued under the Preferred Alternative, would allow catch that far exceeds the total island-wide populations

⁸⁹ Spalding and Vosseler.

for several of those species. The DEIS does not propose or analyze any alternatives to address this.

- 6) *“The FEA asserts that certain types of fish such as Psychedelic Wrasse, Tinker’s Butterflyfish, and Fisher’s Angelfish inhabit waters deeper than the CREP monitoring studied, resulting in populations being underestimated and thus the annual take as a percentage of estimated population being overestimated.”*

The inclusion of these species on the state’s species of concern list indicates a heightened need for an accurate and thorough assessment of their populations.⁹⁰ As noted earlier, the annual take as a percentage of estimated population should factor under and non-reporting and should apply to the areas where direct impacts occur. Reporting zones would represent the largest area that might be considered appropriate, however more specific areas would be the most appropriate (e.g. bays, reefs, and depth ranges). Allowing limitless take under the Preferred Alternative is contrary to DLNRs conservation actions identified for these species which includes protecting current populations and establishing further populations to reduce the risk of extinction.⁹¹

- 7) *“In addition, we note the proposed alternatives for reduction in bag limits for Flame Wrasse, but do not see a scientific basis for concluding that the proposed reduction would be sufficient to sustain the population.”*

The DEIS fails to address this issue entirely by omitting an analysis of the proposed daily bag limit of 10 Flame Wrasse, applied to 20 aquarium permittees. The outer possibilities of what the permits would allow must be considered. A cursory analysis of the Preferred Alternative and the data presented in **the DEIS shows that 20 permittees taking 10 Flame Wrasse per day equates to 73,000 fish per year, an amount that exceeds to total island-wide population estimate by 1,284%.** Combined with the unlimited take allowed by aquarium collectors under CMLs, the cumulative impact of aquarium collecting on this important species is extreme.

The DEIS also fails to address the potential for extirpation of Flame Wrasses on coral reefs shallower than 98 feet where collection pressure is the greatest. A recent study found zero Flame Wrasses shallower than 98 feet on West Hawai’i reefs.⁹² The DEIS claims that “the Flame Wrasse spends much of its time below the 98-foot depth limit of population estimate surveys,” but provides no scientific basis for the statement.⁹³ The DEIS then describes the Flame Wrasse as dwelling between 15’ – 600’.⁹⁴ Elsewhere, the Flame Wrasse is described as occurring “generally at depths greater than 60 feet,” and

⁹⁰ DLNR, SWAP (2018).

⁹¹ DLNR, SWAP (2018).

⁹² DEIS at 45.

⁹³ DEIS at ii.

⁹⁴ DEIS at 45.

depicted in several images taken between 40' – 80'.⁹⁵ Further, SCUBA divers, including two of the Commenters, have for decades consistently encountered harems of Flame Wrasses at depths ranging from 50 – 90 feet on multiple dive sites, as long as the sites weren't accessed by the aquarium trade. On sites accessed by the trade, Flame Wrasses at those depths have completely disappeared.⁹⁶ Therefore, the absence of Flame Wrasses in their natural range is more likely an indicator of severe over-collection by commercial aquarium collectors in the shallower depths they once inhabited.

Historical catch records indicate that prior to 2008 collection of Flame Wrasses on O'ahu averaged just under 700 per year. Since 2008, the level of take has dramatically increased with annual catch ranging between 1,000 - >4,000 individuals.⁹⁷ The potential for Flame Wrasses to disappear from their shallower ranges on O'ahu, as they have from West Hawai'i, is very real, and even retailers admit they are becoming rare (see Fig. 2).



Fig. 2. Aquarium fish retailer, TSM Aquatics, describes Flame Wrasse as “Becoming RARE!” in Facebook post.

- 8) *“We note the proposed alternative for an expansion of the Waikiki Marine Life Conservation District, but do not see a scientific review of the beneficial impact of Fishery Replenishment Areas on restoring populations, such as has been demonstrated in West Hawai'i, nor an analysis of the optimal placement of the Fishery Replenishment Areas on O'ahu to protect and restore populations of aquarium fish.”*

⁹⁵ Randall (1996); Hoover (1993).

⁹⁶ Observations communicated by Rene Umberger, Mike Nakachi, Lynn Allen, Warren Blum, all SCUBA instructors with tens of thousands of dives between them.

⁹⁷ DLNR Catch Reports.

The O'ahu FEA proposes to expand the Waikiki MLCD by 740 acres, and to prohibit only commercial aquarium collection within that expanded area. The DEIS fails to analyze the impact of closing a substantial portion of collection zone 400 and, specifically, how marine life populations in the areas open to collection are likely to experience further declines as a result of increased pressure that result from reduced access elsewhere, as has been demonstrated in West Hawai'i.

Further, the DEIS fails to analyze the optimal placement of the Fishery Replenishment Area and, instead, assumes "the expanded Waikiki MLCD would have similar benefits as the Fish Replenishment Areas on Hawai'i Island," while noting research showing that the biomass within the existing Waikiki MLCD is 2.5 times higher than adjacent sites.⁹⁸ While it can be assumed that once collection pressure is removed in an area, once targeted species in that area may increase, this is not always the case. Research in West Hawai'i has shown that multiple factors are associated with effective FRAs, such as successful recruitment (which relies upon favorable currents and sufficient adult populations in source areas), FRA size and habitat quality, especially reef width and "areas of high finger coral cover which is critical habitat for juvenile Yellow Tang and other fishes."⁹⁹ This analysis is completely missing from the DEIS.

- 9) *"Cultural impacts of aquarium fishing need significantly more analysis than provided in the FEA. The OEQC guidelines should be followed for assessing cultural impacts, including consulting with traditional cultural practitioners and other knowledgeable informants and sources about cultural resources, cultural practices, and the proposed action's potential impacts. Traditional Hawaiian practices and subsistence uses, local place-based and life-cycle knowledge, and traditional Hawaiian cultural significance of each type of aquarium fish taken should be reviewed. The indirect impact of modern technologies for highly efficient catch methods on traditional harvest capabilities should be included in the analysis."*

As extensively noted herein, the DEIS' Cultural Impact Assessment (CIA) is extremely flawed and inadequate, with its inherent purpose-- to identify cultural impacts and propose mitigations measures to limit such impacts, not being met.

- 10) *"Enforcement and compliance needs and challenges are key factors in the effectiveness of fisheries management, and should be analyzed as part of the environmental impact statement."*

The DEIS fails to address this issue, citing only an unreliable claim regarding so-called "catch report validation" that did not indicate substantial underreporting of catch by aquarium collectors. DLNR is well aware of the major gaps and flaws in their reporting system that facilitates any amount of under and non-reporting. Additionally, an

⁹⁸ DEIS at 94.

⁹⁹ Tissot et al., 2003; Walsh, 1987.

important avenue for validation, tallies of the species and their numbers leaving the state via air cargo, which are required by federal law, are not being provided, exposing both aquarium trade members and air cargo carriers to violations of the federal Lacey Act.¹⁰⁰

Furthermore, the DEIS fails to analyze other significant gaps in enforcement and compliance, as we, too, spelled out in our comments to the Applicant/Stantec, responding with a single sentence, “enforcement is within the purview of the State of Hawai‘i, followed by a recitation of relevant state laws and penalties.”¹⁰¹

- 11) *“We appreciate that as an applicant action, the applicant can propose but not ensure regulations aimed at protecting and restoring populations of aquarium fish. We are interested in proposals for self-regulation by aquarium permit holders which could be incorporated into permit conditions even in the absence of or prior to establishing other regulations to accomplish the same purposes.”*

The DEIS fails to address this issue, providing no proposals for self-regulation that could be incorporated into permit conditions.

- 12) *“Overall, we appreciate that certain alternatives have been proposed, but believe they are more appropriately proposed as mitigation measures in an environmental impact statement to mitigate potential environmental impacts, rather than as alternatives in an environmental assessment, which, if implemented, might result in a finding of no significant impact. The Department of Land and Natural Resources is obligated to ensure full analysis under HRS Chapter 343 of potential environmental impacts of its actions in issuing aquarium permits. We believe this is most appropriate in an environmental impact statement.”*

The DEIS fails to address this issue and proposes no mitigation measures because their flawed analysis concludes there are no significant impacts to mitigate.

V. Further Impacts Inadequately Analyzed

Environmental impacts from aquarium trade activities have been documented for over forty years. Under the Preferred Alternatives, every fish and marine creature, other than corals and those associated with live rock, could be removed from one, or all, of the State of Hawai‘i’s reefs—with catastrophic effects. This is not speculation: there is currently no law, regulation or enforcement capability that would prevent this from occurring. The potential for unlimited collection is a fact that encompasses the outer limits of what the aquarium permits allow, as was explained earlier.

¹⁰⁰ U.S. Fish and Wildlife Service (2019).

¹⁰¹ DEIS at 11.

Collecting individual species in high numbers poses a significant threat to coral reef health. As explained herein, herbivorous species, such as Yellow Tangs and Goldring Surgeonfishes, are the most heavily targeted.¹⁰² Herbivorous fish are essential to avoid algal overgrowth of corals and concomitant degradation of the reef. Other important functional groups include: planktivores (e.g. Hawaiian Dascyllus), corallivores (e.g. Fourspot Butterflyfish, Multiband Butterflyfish), fish predators (e.g. Hawkfishes, Hawaiian Lionfish) and cleaner fishes (e.g. Hawaiian Cleaner Wrasse).

The reduction of natural populations of species taken by the aquarium trade in any area (e.g. specific site, zone, coastline, island or statewide), and by any amount, whether one or one hundred percent, indicates an irrevocable commitment and loss of a natural and cultural resource.¹⁰³ This very loss curtails the range of beneficial uses that would otherwise be provided by the natural abundance of these populations.¹⁰⁴

We disagree with the DEIS response to our comment above that “this is not an irrevocable action, as commercial aquarium permits may be suspended pursuant to HAR 13-74-3(1) if the department determines that it is necessary for the protection and conservation of aquatic life. In addition, fish will continue to reproduce.” As previously stated, any and all substantial reductions in natural abundance of aquarium species on O’ahu indicate lost natural and cultural resources. While it may be true that a potential *revocable* loss may be indicated by increasing populations of some species when aquarium collecting is halted, such as occurred for yellow tangs in the WHRFMA FRAs after their establishment in 2000 and in the open areas after collection was prohibited in 2018, there is no evidence that natural abundance has or will ever return. The reduced populations of yellow tangs in the FRAs, compared to baseline, natural populations found in the MPAs, even after 20 years of no aquarium collecting, is further evidence of an irrevocable loss that has occurred.

As has been long recognized,

The impact of commercial aquarium fish collecting is a complicated issue. The fish community members are highly dependent on one another. There is a constant interaction between predators and competitors, as well as other members of the food web. There is a lot of variability in the system, even when it is not disturbed by man. Reefs seem to undergo natural cycles. At times they may be very abundant. There is also natural variation in the fish community at different locations.¹⁰⁵

The DEIS fails to assess the high aesthetic value of this beautiful marine life as well as impacts to the complex relationships inherent in coral reef ecosystems and impacts to overall coral reef health. “Animal communities” are included in the rule definition for “environment,” however the EIS excludes any mention of the impact to fish and invertebrate communities, or the impact to the animals themselves.

¹⁰² DLNR Catch Reports.

¹⁰³ Haw. Rev. Stat. § 11-200-12(b)(1).

¹⁰⁴ Haw. Rev. Stat. § 11-200-12(b)(2).

¹⁰⁵ Noland (1978).

The Hawai'i State Wildlife Action Plan (SWAP) states that "Excessive extractive use constitutes a threat to wildlife. Certain reef fishes are harvested for sale in the aquarium trade. . .These activities are not sustainable on a large scale and impact native wildlife."¹⁰⁶

A. General Impacts on Targeted Species

The list of species in the SWAP of greatest conservation need includes at least 18 native fish species that are threatened by the aquarium trade and in need of conservation actions to reduce the risk of extinction (see Fig. 3).



Fig. 3. Native fish species threatened by the aquarium trade.¹⁰⁷

Butterflyfishes are among the most beautiful of coral reef fishes (see Fig. 4). Their bright yellow, white and black markings are especially striking against pale corals and deep blue waters. When encountered by snorkelers/divers the beauty of these species is often breath-taking. They are heavily targeted by the aquarium trade in Hawai'i. In 1976 five of the top ten most collected species were butterflyfish (see Fig. 5).¹⁰⁸

¹⁰⁶ DLNR, SWAP (2018).

¹⁰⁷ DLNR, SWAP (2018).

¹⁰⁸ Katekaru (1978).



Fig. 4. Most heavily targeted butterflyfishes on Hawai'i reefs, statewide: Fourspot Butterflyfish, Longnose Butterflyfish, Teardrop Butterflyfish, Forcepsfish, Multiband/Copperband Butterflyfish.¹⁰⁹

TOP TEN MARINE AQUARIUM FISHES COLLECTED IN HAWAII
(Fiscal Year 1976)

Species	Number	% of Total Catch	Estimated Value	% of Total Value	Estimated Value Per Fish
1. <i>Zebra flavescens</i> (Yellow manini)	35,006	22	\$ 43,235	18	\$1.24
2. <i>Forcipiger longirostris</i> (Long-nosed butterfly)	10,022	6	18,718	8	1.87
3. <i>Centropyge potteri</i> (Potter's angel)	9,299	6	17,919	7	1.93
4. <i>Acanthurus achilles</i> (Naenae)	9,233	6	18,920	8	2.05
5. <i>Naso lituratus</i> (Kala)	6,478	4	14,536	6	2.24
6. <i>Chaetodon quadrimaculatus</i> (Fourspot butterfly)	4,925	3	6,997	3	1.42
7. <i>Zanclus cornutus</i> (Kihikihi)	4,520	3	8,763	4	1.94
8. <i>Chaetodon unimaculatus</i> (Teardrop butterfly)	4,496	3	6,502	3	1.45
9. <i>Forcipiger flavissimus</i> (Long-nosed butterfly)	4,259	3	6,914	3	1.62
10. <i>Chaetodon multilineatus</i> (Copperband butterfly)	3,623	2	3,343	1	.95
TOTAL: top ten	91,861	58%	\$145,938	61%	\$1.67 (avg.)

Fig. 5. Five butterflyfish species were among the top ten marine aquarium fishes collected in 1976, statewide.¹¹⁰

Reported aquarium harvest of those same five species has since plummeted (see Fig. 6). The same is true for other heavily targeted butterflyfish species that have been among the top twenty aquarium fishes collected by the trade since 1976.¹¹¹

¹⁰⁹ Katekaru (1978).

¹¹⁰ Katekaru (1978).

¹¹¹ DLNR Aquarium Catch Reports.

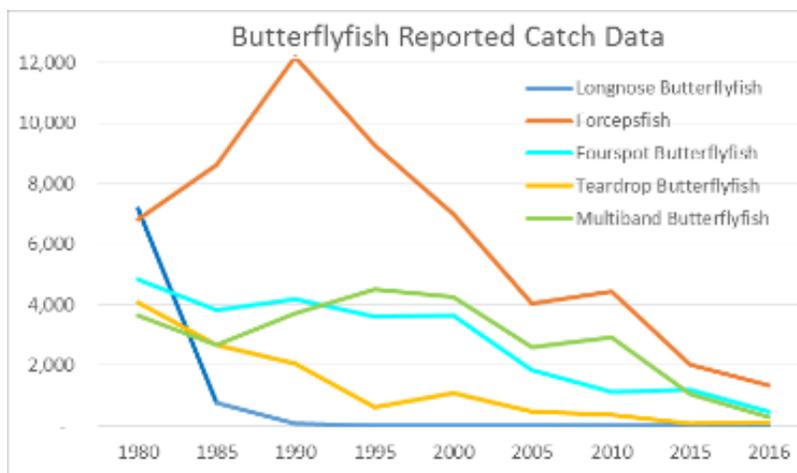


Fig. 6. DLNR reported harvests of the five most heavily targeted butterflyfish species since 1976. Data represents statewide annual average catch over five-year periods.¹¹²

This sharp decline in reported catch is not an indicator that these species are no longer in demand. Continuing demand is confirmed by several examples:

- These species' inclusion in the West Hawai'i White List.
- Their exclusion from the O'ahu rules.
 - The O'ahu aquarium rule prohibits take of three butterflyfishes, citing their "coral diets" as the need for the restriction.¹¹³ Since 1999 total reported take of those three species was 50 fish.¹¹⁴
 - Zero restrictions were provided for three additional coral eating butterflyfishes, with total reported take of over 51,000 individuals since 1999.¹¹⁵
- The Fourspot Butterflyfish catch increase that followed the 2014/2015 warming event and unprecedented fish bloom.¹¹⁶ Subsequently, catch of the Fourspot Butterflyfish declined to an all-time low.¹¹⁷

The EIS fails to use a temporal baseline that captures the impacts of the heavy collection pressure on these species over time, before their natural populations were depleted by this activity.

B. Damage to Reef Habitat

In nearly every encounter with commercial aquarium collectors on West Hawai'i reefs, snorkelers and divers have witnessed and documented destructive practices that harm corals, with the most

¹¹² DLNR Aquarium Catch Reports.

¹¹³ DLNR (2012).

¹¹⁴ DLNR Aquarium Catch Reports.

¹¹⁵ DLNR Aquarium Catch Reports.

¹¹⁶ Talbot (2014).

¹¹⁷ DLNR Aquarium Catch Reports.

damage coming from vessel anchors and chains. There is every expectation that the same practices are used on O'ahu. Sticks, buckets, nets, underwater propulsion devices (scooters) are laid in the corals and the fins, knees and legs of collectors often come in contact with the reef—in fact, they are typically described as “crawling across” or “standing” on the corals. The results of these actions include abrasion and coral breakage. The DEIS refers to studies that determined there was no evidence to indicate the presence of destructive fishing practices (e.g. breaking apart corals to capture hiding fishes).¹¹⁸ However, the abundance of photographic evidence documenting coral breakage from vessel anchoring and fish capture activities, these impacts cannot be dismissed and must be evaluated in the EISs. Photographs of these practices and their effects can be found at Appendix 4.

Abundant coral reefs—put at risk by the Preferred Alternative—have a range of beneficial uses. The DEIS fails to adequately assess the curtailment of “the range of beneficial uses of the environment.”

C. Examples of Impacts in Various O'ahu Regions

Unlike West Hawai'i, no aquarium fish population data was gathered during the early years of aquarium trade operations on O'ahu reefs. More recent data has been gathered in a yet to be published study by Dr. Gail Grabowsky of Chaminade University and is summarized below. Dr. Grabowsky reached the same conclusions reached by Williams and Walsh in a 2007 report documenting declines in populations of certain fishes on two Hawai'i Island reef areas: commercial aquarium collecting is implicated in the declines; and, the greatest declines are seen in the species that have faced the heaviest fishing pressure.¹¹⁹

- Using the same methods described in earlier research on Hawai'i Island documenting the magnitude of the effect of aquarium collecting on natural populations of heavily targeted species, Dr. Grabowski and her team quantified the abundance of aquarium collected fish at over 20 sites around O'ahu from 2008- 2010.¹²⁰
- Surveyed species included Yellow tangs, Forcepsfish, the Hawai'ian “Domino” Damsel fish, as well as additional butterflyfishes, surgeonfishes, and other fishes targeted by the aquarium trade.
- The fish population surveys showed that species targeted by the aquarium trade are ten times more abundant at Hanauma Bay, Hawai'i's first marine life conservation district, protected since 1967, than they are on other O'ahu survey sites.¹²¹ As with the Hawai'i Island studies conducted by Tissot and others, uncollected sites were selected as controls and served as a proxy for estimating natural abundance.¹²²

¹¹⁸ DEIS at 84.

¹¹⁹ Williams & Walsh (2007); Grabowsky (2011); Grabowsky (2014).

¹²⁰ Grabowsky (2011).

¹²¹ Grabowsky (2014).

¹²² Tissot & Hallacher (2003); Tissot et al. (2004).

- The data also showed that aquarium fish are rare at Pupukea and Coconut Island in Kaneohe Bay, both of which are protected similarly to Hanauma Bay, but unlike Hanauma Bay, are easily accessed by poachers.
- There were no juvenile fish smaller than a silver dollar at Hanauma Bay, which led Dr. Grabowsky to surmise that it may be “that the fish are so depleted on O’ahu that those we see are the “living dead” who cannot effectively maintain a population due to their rarity. This is called the Allee effect and has been documented in other rare species.”¹²³

In addition to population surveys, catch data can provide an important view into the status of populations of targeted fishes. As explained elsewhere in these comments, using catch data to estimate the proportion of fishing mortality to total population is highly problematic since catch reports are unverified and both underreporting and non-reporting are highly likely. However, as explained above, where baseline population data are absent, and where consumer demand exists for a particular species or family group, it is highly likely that substantial declines of reported catch reflect reduced abundance of the target sizes. In fact, historical catch reports have been used to document the collapse of the aquarium fishery on southwest O’ahu reefs after hurricane Iwa hit Hawai’i in 1982 and damaged many reefs.¹²⁴ Per anecdotal reports from a number of aquarium collectors, the storm destroyed important habitat for yellow tangs and other targeted species. This resulted in the migration of many fishes to undamaged coral reef areas. Aquarium collectors then concentrated their efforts on these sites and within a few short years, populations of species targeted by the trade completely collapsed.¹²⁵ Referring to these data, researchers noted that since yellow tangs are in high demand, these declines reflect the situation on these reefs (i.e. reduced abundance of the small yellow tangs targeted by the trade).¹²⁶ Catch reports from 2016 confirm that yellow tang populations have yet to recover (see Fig. 7, 8).¹²⁷

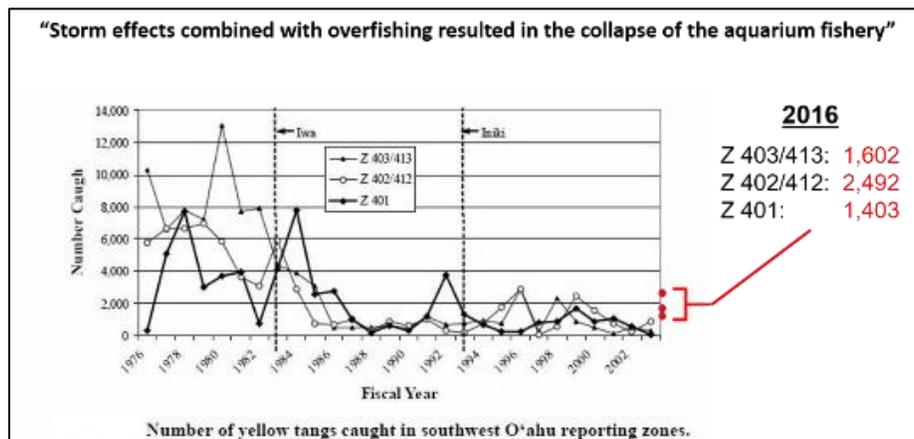


Fig. 7. Catch reports document the collapse of yellow tang populations along O’ahu’s SW coastline.¹²⁸

¹²³ Grabowsky (2011).

¹²⁴ Walsh et al. (2004).

¹²⁵ Walsh et al. (2004).

¹²⁶ Walsh et al. (2004).

¹²⁷ DLNR Aquarium Catch Reports 2017.

¹²⁸ Walsh et al. (2004).

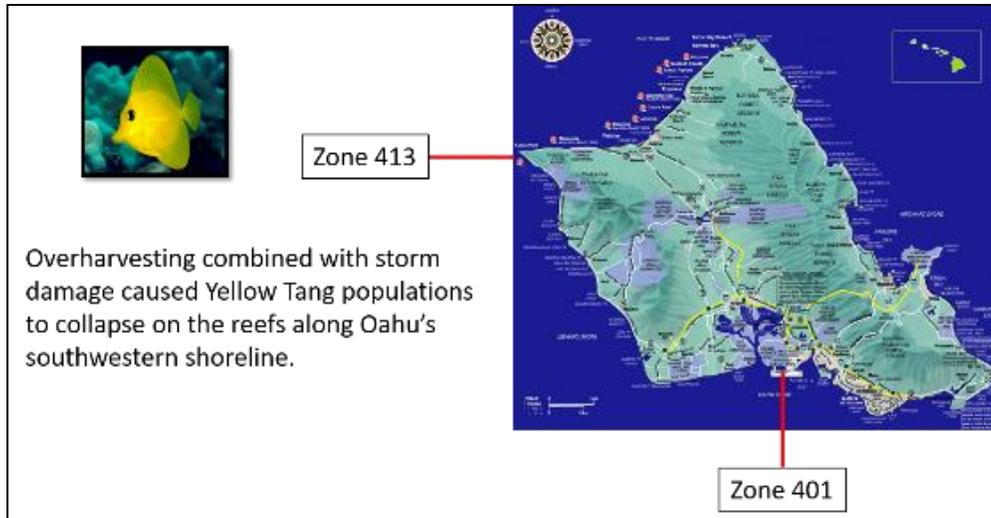


Fig. 8. Map of area encompassed within aquarium catch reporting zones 401 - 413.¹²⁹

D. Examples of Impacts to Species

As previously mentioned, the decline of butterflyfishes on O'ahu has also been documented in the aquarium fish population surveys conducted by Dr. Gail Grabowsky which showed a 90% decline in natural populations of butterflyfishes and other fish species heavily targeted by the aquarium trade.¹³⁰

The Bluestripe Butterflyfish is a highly unique, endemic Hawai'ian species that, having no sister species elsewhere in the Indo-Pacific, is also known as a relic (see Fig. 9).¹³¹ It was among the top 21 aquarium fishes captured on O'ahu through 2005, but by 2019, average annual catch had fallen by 95% (See Fig. 10).¹³² The Bluestripe Butterflyfish is listed in the species of greatest conservation need in the 2015 SWAP. Threatened by the aquarium trade, conservation actions include to "protect current populations, but also to establish further populations to reduce the risk of extinction."¹³³ Despite this listing and the alarming decline in reported catch, no take limits were placed on this species in the 2014 O'ahu Aquarium Rule (discussed below). No longer among the top 20 species collected by the aquarium trade, they are excluded from the DEIS analysis, though still taken by the trade and in obvious need of proper evaluation.

¹²⁹ Walsh et al. (2004).

¹³⁰ Grabowsky (2011); Grabowsky (2014).

¹³¹ Randall (1996).

¹³² DLNR Aquarium Catch Reports.

¹³³ DLNR, Species of Greatest Conservation Need (2018).



Fig. 9. Relic species, Bluestripe Butterflyfish (Photo courtesy of Lynn Allen).

The Teardrop Butterflyfish is beautiful species named for the striking upside-down black teardrop located mid-body (see Fig. 4). As shown below (see Fig. 10): reported catch of the Teardrop Butterflyfish has also experienced drastic declines on O’ahu reefs; from 1976-1990, the Teardrop Butterflyfish was among the top ten to twenty fishes collected on O’ahu,¹³⁴ with an average annual harvest of 2,616 individuals taken in the earlier years; from 1976 to 2019, average annual catch dropped by 95%. Despite this alarming decline in reported catch, no take limits were placed on this species in the O’ahu Aquarium Rule. No longer among the top 20 species collected by the aquarium trade, they are excluded from the DEIS analysis, though still taken by the trade and in obvious need of proper evaluation.

Average Annual Catch								
5 YEAR PERIOD ENDING (except 2016-2019 average)								
Taxa	1980	1985	1990	1995	2000	2005	2015	2016-2019
Bluestripe Butterflyfish	2,226	1,886	2,110	1,629	1,079	127	478	104
Teardrop Butterflyfish	2,616	2,499	1,574	485	896	295	160	58
Bandit Angelfish	1,380	541	154	152	77	70	491	336

Fig. 10. O’ahu Reported Aquarium Catch of the Bluestripe and Teardrop Butterflyfishes and Bandit Angelfish.¹³⁵

¹³⁴ DLNR Aquarium Catch Reports.

¹³⁵ DLNR Aquarium Catch Reports.

The Bandit Angelfish is another beautiful and highly unique, endemic Hawai'ian species with a color pattern unlike that of any other angelfish on Earth (see Fig. 11).¹³⁶ The Bandit Angelfish has been among the top twenty aquarium fishes captured on O'ahu on and off since 1976, most recently in 2016.¹³⁷ For the five-year period ending in 1980, annual reported catch averaged 1,380 individuals (see Fig. 10). Over the next 20 years, annual reported catch rarely exceeded 600 individuals and then beginning in 2000, dropped further to 209 individuals annually per the DEIS.¹³⁸ From 1976 to 2019, average annual catch declined by 76% (See Fig. 10).



Fig. 11. Bandit Angelfish (By NOAA's National Ocean Service)

This fish is included in the DEIS as one of the three species regulated by the O'ahu aquarium rule, though it is not considered to be among the top 20 fish species covered in the statement. The DEIS states that because Bandit Angelfish live in deep water, a reliable population estimate could not be determined (i.e. there is no analysis of the impact of commercial aquarium collection). It also states its deep-water habitat means it is "generally only collected at depths at which normal recreational diving does not occur;" that it is collected in low numbers, averaging just 209 individuals per year, since 2000; and, "due to the complexity and difficulty of collecting the Bandit Angelfish, its population will likely continue to not receive significant pressure from the commercial aquarium fishery."¹³⁹

The DEIS fails to use available data to provide any analysis of the impacts to this important species. As described above, in the absence of population assessments, historic catch reports can reveal the abundance trend and status of high demand species. For example, from 1976 to 1980, the average annual catch of Bandit Angelfish was 6.6 times higher than in the period from 2000 to 2017. It is likely that they were taken in the shallower depths where the trade typically operates, and where they are no longer found in any abundance, because there is no reason to expect that aquarium

¹³⁶ Hoover (1993).

¹³⁷ DLNR Aquarium Catch Reports.

¹³⁸ DLNR Aquarium Catch Reports.

¹³⁹ DEIS at 82.

collectors took them from deeper waters for at least five years, and then suddenly stopped doing so. It is more likely that similar to the Flame Wrasse, they were severely over-collected in the shallower part of their natural range. SCUBA divers, including two of the Commenters, have for decades consistently encountered Bandit Angelfish at diving depths ranging from 20 – 90 feet on multiple dive sites, not accessed by the aquarium trade.

The landed value data found in catch reports also indicate increasing consumer demand for this precious species. From 1976-2003 the average landed value for a Bandit Angelfish was \$10.¹⁴⁰ By 2004 it had jumped to \$54 and in recent years has skyrocketed to \$180 each.¹⁴¹ A similar pattern was noted for Bandit Angelfishes captured in West Hawai'i and prompted University of Hawai'i and DAR researchers to point out that decreasing catch combined with increasing value signals a real population decline.¹⁴²

Not surprisingly, the Bandit Angelfish is also listed among the species of greatest conservation need in the 2015 Hawai'i SWAP. Threatened by the aquarium trade, conservation actions include to “protect current populations, but also to establish further populations to reduce the risk of extinction.”¹⁴³

E. O'ahu Aquarium Life Management

Rules governing the take of certain aquarium species on O'ahu were adopted in 2014.¹⁴⁴ The development and adoption of these rules was highly controversial because they were not scientifically sound and did not address the concerns of stakeholders outside the aquarium trade.¹⁴⁵ **Over 4,000 testimonies were received by DAR, and 98% of the comments preferred that aquarium collecting should end altogether or in the very least should include limits on the number of permits issued, and scientific and community- based limits on species and take levels.** Many comments noted that the so-called “limits” allowed take that far exceeded the number of animals historically taken by the trade, and in fact, allowed limitless catch because they included no restrictions on input (i.e. permit limits), and no meaningful restrictions on output (species or take limits).¹⁴⁶

Among those opposed to the rules was coral reef and marine fisheries biologist, Frazer McGilvray, who was the DAR Administrator at the time. Mr. McGilvray opposed the rules because they were neither based on science, nor were they developed under a multi-stakeholder approach. The

¹⁴⁰ Walsh et al. (2004).

¹⁴¹ DLNR Aquarium Catch Reports.

¹⁴² Williams and Walsh (2008).

¹⁴³ DLNR, Species of Greatest Conservation Need (2018).

¹⁴⁴ Haw. Code R. §§ 13-7-1 et seq.

¹⁴⁵ Board of Land and Natural Resources, Minutes (2014); Hawai'i Small Business Regulatory Review Board, Proposed O'ahu Regulations Analysis (2012); Hawai'i Small Business Regulatory Review Board, memo to DLNR (2012).

¹⁴⁶ Hawai'i Small Business Regulatory Review Board, memo to DLNR (2012); Board of Land and Natural Resources, Item F-2 Submittal (2014). October 24, 2014. Item F-2 Submittal.

written and oral testimony Mr. McGilvray presented to the board governing DLNR included the following:

- “All stakeholders should be consulted and everyone’s opinion should be taken into account.”
- “There appears to be no scientific basis for the proposed bag limits for each species.”
- “The proposed take limits were akin to setting a speed limit at 400 MPH.”
- “These rules do not address the take of undersize, sexually immature fish.”
- “The majority of yellow tang allowed to be taken under this rule are immature and have not contributed to the future of the species.”
- “These rules, driven by the demands of the trade, are contrary to good natural resource management.”
- “The take of juveniles is generally prohibited” in other fisheries, but not by the aquarium trade.
- “The take of adults is allowed, but only where good management practices govern the take” in other fisheries, but not by the aquarium trade.
- “The taking of 100 immature yellow tang per person per day is not consistent with good natural resource management when there are more than 50 licensed aquarium collectors on O’ahu.”
- “It is my belief that these rules require further work and are not yet ready for adoption.”¹⁴⁷

The DLNR submittal to the board conceded that the proposed limits were not intended to reduce take, but were, instead, based on animal welfare.¹⁴⁸ This statement does not stand up to scrutiny since no animal welfare experts or groups familiar with the aquarium trade were consulted, and in fact, the concerns of several of animal welfare groups were dismissed outright.

In addition to the general bag limits described earlier, bag limits were imposed for certain sizes of Yellow tang, *kole*, and Bandit Angelfish. However, DLNR noted that because aquarium catch reports do not capture fish sizes, it is impossible to determine or even estimate the impact of a size limit in the aquarium fishery.¹⁴⁹

Notably, catch reports document that the O’ahu Aquarium Life Rule, once enacted in 2014, did not reduce the level of catch. For example, despite the combined catch, size and number of animals per trip/vessel limits, yellow tang catch in 2015 and 2016 was the highest since 2000, and possibly on record until that point. This was due, in part, to an unprecedented ocean heat wave that bleached and killed many corals, but also brought large numbers of young fishes to Hawai’i’s reefs during

¹⁴⁷ Board of Land and Natural Resources, Minutes (2014); McGilvray (2014).

¹⁴⁸ Aila (2014).

¹⁴⁹ DLNR, Small Business Impacts Analysis (2012).

2014 and 2015. A similar, unprecedented, event occurred in 2019, and yellow tang catch was, once again, record breaking.

F. Other Regulated Species and Invertebrates

The DEIS describes the Achilles Tang, Bandit Angelfish, and Hawaiian Cleaner Wrasse as “not collected to the level of the top twenty collected species.”¹⁵⁰ However, according to both historical and recent catch data, this is inaccurate. These three species have historically, and recently in one case, been among the top twenty collected species on O’ahu as follows:

- Achilles Tang was among the top twenty during the five-year period that ended in 1985
- Bandit Angelfish was among the top twenty during the five-year period that ended in 1980 and again in 2014, 2015 and 2016.
- Hawai’ian Cleaner Wrasse among the top twenty during the five-year period that ended in 1980

Bandit Angelfish have been described earlier, and Achilles Tangs are both a culturally important food source and an important herbivore on the reef. The Hawaiian Cleaner Wrasse plays a particularly critical role in the reef ecosystem by feeding on parasites, dead tissue and mucus of reef and other fishes (see Fig. 12). In 2008 the West Hawai’i aquarium trade included the Hawaiian Cleaner Wrasse in its list of Species of Special Concern that should not be captured, citing the key role the play in maintaining the “health of the reef population, as the doctors of the sea”.¹⁵¹ Obviously this species plays a similar role on reefs throughout Hawai’i. This is another clear example of how the dictates of the North American aquarium trade are driving extremely poor management decisions. The DEIS fails to properly analyze the cumulative impact of long term sustained heavy collecting pressure on these and other important species.



Fig. 12. A pair of Hawaiian Cleaner Wrasses cleaning a Hawaiian Hogfish (photo credit: Victoria Martocci).

In addition to fishes, marine invertebrate species such as hermit crabs, Feather Duster Worms, sea stars and snails, are taken in very high numbers by commercial aquarium collectors. Since 2000,

¹⁵⁰ DEIS at 55; DLNR catch reports.

¹⁵¹ Walsh, Background on Proposed Hawai’i Administrative Rule 13-60.4 (2013).

more than 3 million invertebrates representing 66 species have been reported on aquarium catch reports. These invertebrates play a key role in the coral reef environment, and their overharvesting may have serious ecological consequences.¹⁵² There are no population estimates for these important marine animals and, therefore, the impact has not been assessed.

Further, as noted by DLNR, “collection of attached reef invertebrates like Feather Duster Worms, often is done by breaking apart the reef structure.”¹⁵³ Catch reports indicate that the vast majority of Feather Duster Worms are taken from Kaneohe Bay, and per the DEIS, the 20 aquarium collectors seeking the permits reported taking ~12% of the Feather Duster Worms from 2000-2017.

Additionally, experts have expressed concerns about the very high levels of hermit crab collection, including:

- “The removal of available shells, a critical resource for hermit crabs, will doom the hermit crab population in any given area; replenishment of shells of all sizes due to natural causes will not be able to keep up with the artificial removal by collectors; hermit crabs are essential to the ecosystem. Not only are they grazers but even more importantly they are detritus feeders and scavengers keeping the ecosystem ‘clean’.”¹⁵⁴
- “Collectors do not merely take the crabs, they take also the shells. This amounts to destroying the available habitat for these animals; hermits regularly outgrow their shells and seek new ones, leaving the smaller shells for smaller hermits. When a hermit dies, it leaves its shell for another hermit; taking all the shells will leave no shells for hermits to live in. The population will crash; taking the shells will eventually make shells so uncommon that there are virtually no hermits.”¹⁵⁵

G. Failure to Assess Impacts to Aesthetic Value

In addition to the impacts to biodiversity, ecosystem function, and other fisheries, aesthetic and other social values are also heavily impacted.¹⁵⁶ Species experiencing the heaviest collection pressure, with a corresponding reduction in natural abundance, are Hawai’i’s most beautiful, charismatic and iconic fishes. The diminished aesthetic value from the cumulative and substantial reductions in species such as Yellow Tangs, butterflyfishes and Moorish Idols, which are dominated by vibrant yellows and oranges and striking white and black patterns, cannot be overestimated (see Fig. 13). These colors are more than aesthetically pleasing, as our eyes are physiologically attuned

¹⁵² Livengood & Chapman (2007).

¹⁵³ Clark & Gulko (1999)

¹⁵⁴ Dr. Ernie Reese, UH Professor Emeritus, Biology, Behavioral ecology of coral reef animals. 2008 email communication with Rene Umberger.

¹⁵⁵ John Hoover, Author of Hawai’i’s Sea Creatures: A Guide to Hawai’i’s Marine Invertebrates. 2008 email communications with Rene Umberger.

¹⁵⁶ Walsh, Background on Proposed Hawai’i Administrative Rule 13-60.4 (2013).

to them. The frequencies and wavelengths of yellows, oranges and reds allow them to strike our eyes much faster than the other colors.¹⁵⁷



Fig. 13. Reefs lacking yellow and orange fishes are greatly diminished in beauty.

By removing the species with prominent yellow, orange, red or white coloration and markings, the palette and very essence of what makes a coral reef beautiful to the human eye is diminished and degraded. It is impossible to decrease populations of a coral reef's beautiful wildlife without greatly decreasing the natural beauty of the place. Divers who have frequented these coral reefs, such as some of the Commenters, have noticed decreased abundance of colorful fish in recent years. While acknowledging that "temporary and localized...fewer viewing opportunities for tourists" [and residents] may result from the No Action and Pre-Aquarium Collection Ban Alternatives, for the Preferred Alternative, the DEIS fails to acknowledge and address these cumulative losses and to propose proper mitigation measures. Further, it inexplicably concludes that "regarding the aesthetic values of fish...the percent of each population collected would be imperceptible to observers."¹⁵⁸

H. Failure to Assess Impacts to Property/Amenity Value

The DEIS fails to acknowledge and address the effects of the trade on the amenity/property values and propose proper mitigation measures. Houses that are within a block or 100 meters of beautiful, clean and healthy coastlines, beaches and coral reefs are more valuable and sell for significantly higher prices than comparable properties elsewhere. The same is true for condos and hotels/hotel rooms which generally command higher room and occupancy rates. Healthy coral reefs are also more likely to prevent beach erosion and, therefore, add value as a form of coastal protection. One and a half percent of the sale price of these properties is attributable to the marine ecosystem. Hawai'i's reef-related property value in 2001 was calculated at \$40 million.

I. Failure to Assess Impacts to Recreational Value

The DEIS fails to acknowledge and address the effects of the trade on the recreational value of this marine life and their coral reef homes and propose proper mitigation measures. The annual

¹⁵⁷ Slembrouck (2011).

¹⁵⁸ DEIS at pdf pg.394, response to commenters

estimated expenditures related to marine life viewing (i.e. snorkeling and scuba) in Hawai'i is \$551 million. Reef-adjacent marine tourism expenditures (including hotel rooms) within 30 km of the coastline are an annual \$680 million.¹⁵⁹

These amounts exclude the lost value from declining fish abundance which is captured in willingness to pay surveys and summarized below:

- Healthier reefs lead to substantial economic gains.
 - Recreational users are willing to pay higher rates for a healthier marine environment.¹⁶⁰
 - Snorkel/dive businesses benefit when there are more fish for their clients to see.¹⁶¹ One recent study showed divers were willing to pay \$93 to \$110 more to dive with abundant fish life.¹⁶²
- Without new regulations the potential for increasing losses is real.
 - Inability to stem declining reef fish numbers could cause significant losses to dive tourism industry (i.e. reductions in willingness to pay).¹⁶³
 - These consumer surplus losses could range from \$1.2 million to \$12.2 million annually.¹⁶⁴
 - Areas with degraded reefs and low fish populations could also see significant losses from a decrease in their share of the global dive market.¹⁶⁵
 - Anecdotal reports from long-time residents and visitors point to revenue loss already occurring from reduced abundance of beautiful fishes on Hawai'i reefs.

J. Failure to Assess Impacts to Passive Use Value

The DEIS fails to acknowledge and address the effects of the trade on the substantial non-use values of this marine life and their coral reef homes and propose proper mitigation measures. Intrinsic and social values associated with coral reefs are diminished by reduced fish populations. Concern for the marine environment has increased in recent years and people now place tremendous value on coral reef ecosystems. Many people value beautiful and healthy coral reef ecosystems as part of their legacy and responsibility to ensure future generations are able to experience them. A 2011 report for the National Oceanic and Atmospheric Administration (NOAA) estimated the passive use annual value of Hawai'i's coral reef ecosystems through a willingness to pay survey of U.S.

¹⁵⁹ Spalding (2017).

¹⁶⁰ Davidson et al. (eds.) (2003); FORCE Management Brief #4 for Caribbean Reef Management (P7/2007-2013).

¹⁶¹ Davidson et al. (eds.) (2003).

¹⁶² FORCE Management Brief #4 for Caribbean Reef Management (P7/2007-2013).

¹⁶³ FORCE Management Brief #4 for Caribbean Reef Management (P7/2007-2013).

¹⁶⁴ FORCE Management Brief #4 for Caribbean Reef Management (P7/2007-2013).

¹⁶⁵ FORCE Management Brief #4 for Caribbean Reef Management (P7/2007-2013).

households. The survey included a visual representation of an overfished and an abundant coral reef (see Fig. 14).



Fig. 14. Survey excerpt: NOAA Economic Value for Protecting and Restoring Hawai’ian Coral Reef Ecosystems.¹⁶⁶

The project determined that increased protections and restoration of degraded coral reefs in Hawai’i is worth about \$288 to the average U.S. household which aggregated over all U.S. households amounts to a \$34 billion annual passive use value for Hawai’i’s coral reefs.¹⁶⁷ This and other socio-economic values described here provide meaningful insights into the public’s concerns and should be addressed in a comprehensive EIS.

K. Failure to Assess Impacts to Aquatic Life Post Capture

A major factor that drives the rates of collection is premature mortality rates in captivity. According to a long-time industry insider, most yellow tangs die with the first month in a hobbyist tank and fewer than 1% of those captured survive one year in captivity.¹⁶⁸ A 2012 study determined that mistreatment in capture, handling, transport, and holding plays a larger factor in these premature deaths than hobbyist inexperience.¹⁶⁹ The researchers also determined that each step in the supply chain significantly profits from customer purchases to replace fish that die prematurely, and that profits from replacement fish sales are so high, stores have no incentive to take action to reduce deaths.¹⁷⁰

¹⁶⁶ Bishop et al. (2011).

¹⁶⁷ Bishop et al. (2011).

¹⁶⁸ Fenner, FAQs About Yellow Tangs 4; Fenner. Marine Life Use in the Aquarium Hobby.

¹⁶⁹ Cartwright et al. (2012).

¹⁷⁰ Cartwright et al. (2012).

A number of practices frequently utilized as cost saving measures by the aquarium trade in Hawai'i are inhumane and significantly contribute to the stressors that accumulate and ultimately lead to premature deaths of captive marine life. They include rapid surfacing and subsequent use of a technique known as "fizzing" to mitigate the resulting barotrauma injury to swim bladders; starving fish for 2 – 10 days prior to transport and spine cutting. Alternatives to these practices include slow surfacing, transport in larger volumes of water to dilute any waste produced by fishes during transport, and transport in hard plastic containers that cannot be punctured by fish spines.

Every fish that dies early puts extra pressure on natural resources because of the take of replacements. There is a general consensus in many countries that it is not ethical to trade in live animals, unless their health and welfare are ensured. These unnecessary and early deaths have given the trade a poor image. A \$20 million, multi-stakeholder reform effort failed, in part, because of trade reluctance to address, and take steps to reduce, mortality rates.

Fifty percent of species among Hawai'i's historical top 20 fish list are either not guaranteed to arrive alive or stay alive longer than 7 – 14 days when purchased from online or "brick and mortar" retailers. Examples are found in Appendix 6.

The DEIS erroneously excludes an analysis of impacts to fish and other aquatic life once they are taken, stating "because population effects have already occurred once an individual fish has been removed from the ocean, it is beyond the scope of this analysis to evaluate effects on individual fish once they are removed from the population." One of the core requirements of the aquarium collection statute, HRS § 188-31 is that aquatic life taken under the permit is maintained alive and in reasonable health. Aquarium catch reports capture presumed mortalities between capture and sale to marine dealers and indicate that an average of 3% of captured fishes die at this stage of the chain of custody. Self-reporting by a handful of wholesaler's report that up to 2% more die while in their custody and an additional 1% - 2% die in air cargo transport. Wholesalers receiving fish from Hawai'i report a similar "dead on arrival" rate, and note that the industry standard is to allow up to 5% to arrive dead with no charge-back to the shipper for losses.

Per Appendix 1, the Applicants failed to respond to any questions regarding mortality rates. In order to fulfill its statutory duties to exercise discretion in granting permits, DLNR needs the average and maximum annual mortality rates for fish taken by the 20 fishers. Without this information the state has no way of assessing whether these permittees are responsible aquarium collectors that deserve these exclusive privileges. Furthermore, the public needs this information, as well, which is one of many reasons why withholding the identity of the 20 fishers is unacceptable.

VI. Flawed Analysis of Cultural Impacts and Lack of Proposed Mitigation Measures

As set forth in HAR §§ 11-200-10 and -16 through -18, a complete analysis and discussion of impacts to cultural resources is required. The EIS must acknowledge and address the direct, indirect, and cumulative impacts on cultural resources. The loss and harm caused by the irrevocable commitment of natural resources equally applies to impacts to cultural resources, as well. The EIS must also acknowledge and address the effects of the trade on Native Hawaiians

traditional reliance on species targeted by the trade for subsistence, and most importantly, propose proper mitigation measures.

Decades of Applicant actions have removed millions of animals on O‘ahu; directly impacting at least 238 fish species and 66 invertebrate species found in Hawai‘i’s coral reefs, one of the most complex ecosystems on Earth, where the fate of each species is determined by the existence, abundance and diverse actions of a multitude of other species that inhabit or otherwise rely upon these unique places.

The CIA initially acknowledges “*As stated in the OEQC Guidelines for Assessing Cultural Impacts, the goal of the oral interview process is to identify information ‘relating to the practices and beliefs of a particular cultural or ethnic group or groups’ (State of Hawai‘i, Office of Environmental Quality Control 2012:11). It is our contention that, in addition to assessing the significance of any identified traditional cultural properties, oral interviews should also be used to augment the process of identifying traditional cultural properties.*”¹⁷¹

Thus, it is the researcher’s responsibility to utilize the gathered cultural-historical background information, as well as the information collected through the consultation process, to identify and describe potential cultural impacts to resources, practices, and beliefs, and to propose appropriate mitigative measures for those impacts as necessary.

While the CIA provided an extensive history of native Hawaiians and their symbiotic relationship with the ocean and its animal inhabitants, only 6 of 42 people selected responded to the inquiry for input. The number of respondents consulted is completely inadequate and unacceptable given 80 percent of take of marine life on O‘ahu is from the top 20 species taken by the trade, and the top 3 species collected; yellow tang, kole, and Potters’ Angelfish, all have strong historical significance to native Hawaiian traditional and customary practices.

Of the six who responded, one was a long-time aquarium collector who continues to support the trade and only gave up his aquarium collection permit when he was publicly called out on the conflict of interest in his possessing a permit while at the same time serving as Chair of the Department of Land and Natural Resources. After he left DLNR he immediately renewed his permit and claims to have only stopped collecting due to the 2017 Supreme Court ruling. This individual does not even recognize SCUBA as modern technology that has had a significant impact on the numbers of animals that can be taken for the commercial aquarium trade. Further, he states that “nobody uses slurp guns” due to their being inefficient in capturing marine life for the aquarium trade, while his fellow aquarium collectors claim to be using this method to get around the question of what methods are being used for continued collection given DLNR’s policy states that fine meshed nets are prohibited. When asked what would trigger an impact if at the current effort there is no impact, he replied “*nothing other than people’s emotional objection.*”¹⁷² This response shows his lack of concern for impacts and the need for even the most basic mitigation measures.

¹⁷¹ CIA at 89

¹⁷² CIA at 94.

The 2nd respondent concedes that his support for the trade is based on fear, the “slippery slope” that actions against the aquarium trade could ultimately impact his personal profits in the commercial food fishing industry. When asked for an alternative to mitigate potential impacts if the State chooses the no action option or if there is some sort of middle ground that could be reached between the aquarium fishing industry and the State, he stated “*there is no middle ground for this.*” He went on to say that “*it is all or nothing, because they lose everything and have already lost a lot during the last legislative session.*”¹⁷³

Two other respondents note the importance of mauka to makai—that actions on land impact the ocean and vice versa.¹⁷⁴

Lastly, two respondents, Mr. Crowell and Ms. Punawai, point out their oppositions to the trade stating, respectively, below:

Mr. Crowell finds it acceptable to exhibit Native Hawaiian fish in aquariums for educational purposes, however, he finds it unacceptable for native fish to be displayed in private collections and after much contemplation, concluded that the fish population will be depleted if allowed to be used for any aquarium purpose. He closed his interview with the following statement, “*Again, I oppose all Native Hawaiian fishes for aquarium purpose.*”¹⁷⁵

Ms. Punawai states, “*I do believe that the practice of aquarium fishing will have an impact on traditional cultural practices in these areas. And I think with the ocean—and it’s not just the ocean—I think in general, traditional and cultural practices is not really a site assessment that I can give. It’s just that broader impact and the ability for these things to be considered abundant...The value of the ability for a species to live in its own environment. I have a hard time seeing how taking a hīnālea and putting it in a tank in Nevada can allow that being to continue being a hīnālea. So the traditional practice of our species being able to have their own ‘ōiwi is being affected through the practice of aquarium collecting and having live pets.*”¹⁷⁶

It’s important to note that more than 90 percent (50 of 55) of those interviewed in the CIA for the (recently rejected) West Hawai’i aquarium trade EIS noted how the trade both directly and indirectly impacts their cultural resources, beliefs, practices and values. Yet, in that EIS as well as this DEIS, none of those concerns were included in the conclusion or proposed mitigation measures.

A. Inadequate proposed mitigation measures

Outrageously, the DEIS summarizes the CIA in three sentences by simply stating, “*no significant adverse direct or indirect cultural resource impacts are anticipated under any of the four alternatives under consideration. Significant cumulative impacts are anticipated; however, commercial aquarium*

¹⁷³ CIA at 98.

¹⁷⁴ CIA at 98 and 106.

¹⁷⁵ CIA at 102.

¹⁷⁶ CIA at 103.

*collection is a less than significant factor in the cumulative impact. Therefore, no mitigation is required or proposed.”*¹⁷⁷

While more comprehensive than the applicants summary above, the CIA also fails to propose any substantive mitigation measures to address the biological and various socio-economic impacts to cultural resources and the ethical concerns and harm done to the animals, themselves, offering only meaningless general recommendations, such as providing a document to potential permittees that contains a “synopsis of the traditional cultural significance of the fishery,” and supporting funding for enforcement.¹⁷⁸

Further, while the CIA rightfully recommends that additional research and studies be performed on the top 20 species taken by the O’ahu trade, since both current and historical data are lacking, it is completely ignored in the DEIS.

Finally, the CIA mentions the formation of a Fishery Council on O’ahu similar to the West Hawai’i Fisheries Council (WHFC) but neglects to discuss that the formation of the Council completely dismissed the will and wishes of the native Hawaiian community who recommended stronger protections for many more than the 40 species currently on the West Hawai’i “white list”. Further, the WHFC has to date never provided any comments or even basic input, regarding the West Hawai’i aquarium trade EA or EIS, demonstrating that they have not been engaged in this issue for some years.

B. Flawed data results in flawed assumptions of cultural impacts

The biological assessments used to analyze the impacts of the trade are extremely flawed, thus, the below conclusions, that the issuance of 20 permits will have no significant impact, is equally, inherently flawed. For example, as discussed in detail above, the current and proposed bag limits on eight species, including four that are endemic, would allow annual take ranging from 23% to 1265%, far exceeding the noted threshold of “significant decline” in order for a cultural impact to occur.¹⁷⁹

C. Comments and concerns not adequately addressed

We continue to agree with a number of concerns earlier raised by DLNR and the Office of Hawaiian Affairs:

*“Cultural impacts of aquarium fishing need significantly more analysis than provided in the FEA. The OEQC guidelines should be followed for assessing cultural impacts, including consulting with traditional cultural practitioners and other knowledgeable informants and sources about cultural resources, cultural practices, and the proposed action’s potential impacts. Traditional Hawaiian practices and subsistence uses, local place-based and life-cycle knowledge, and traditional Hawaiian cultural significance of each type of aquarium fish taken should be reviewed. **The indirect impact of***

¹⁷⁷ DEIS at 77.

¹⁷⁸ CIA at 269.

¹⁷⁹ DEIS at 75

modern technologies for highly efficient catch methods on traditional harvest capabilities should be included in the analysis” (emphasis added).¹⁸⁰

The DEIS also failed to respond to numerous questions from our organizations regarding what type of gear/nets are currently being used to collect animals (outside of fine mesh nets).¹⁸¹ The CIA failed to include a discussion on gear types or recommend any regulations or prohibitions on the use of aquarium collection gear, that allows for the take of hundreds more animals per day, than if using traditional subsistence fishing methods, “pono” fishing practices, the foundation of which is taking only what is needed, or a discussion on “resting” (closing) certain areas from commercial extraction.

In summary, the CIA remains extremely flawed, inaccurate and inadequate, with its inherent purpose—identifying cultural impacts and proposing mitigations measures to limit such impacts—not being met.

VII. Additional Deficiencies

A. Lack of Meaningful Alternatives Analyses

The DEIS does not propose or consider adequate alternatives. The Limited Permit Issuance Preferred Alternative is not reasonable, as is required by HEPA.¹⁸² The Preferred Alternative ignores the vast majority of comments submitted on the DEA, FEA and by the consulted parties. Instead, it focuses on just one species, the Flame Wrasse, one area, an expansion of the Waikiki MLCD, and ignores the many comments naming locations where the impacts of collecting pressure are of concern. The conclusion that no significant adverse effects would occur as a result of the Preferred Alternative is erroneous and unsupportable,

The Agency’s letter of determination stated that “because the applicant can propose but not ensure regulations aimed at protecting and restoring populations of aquarium fish, [the Agency] is interested in proposals for self-regulation by aquarium permit holders which could be incorporated into permit conditions even in the absence of or prior to establishing other regulations to accomplish the same purposes.”¹⁸³ We dispute the value of any self-regulation measure. Meaningful change must be binding on the industry, and a meaningful alternatives analysis requires the Applicant to propose binding measures. Here, the Applicant proposed neither self-regulation nor binding measures.

A reasonable alternative would require the Agency to first determine:

- 1) the life history, spawning grounds and offspring/recruitment patterns for each species to be collected for aquarium purposes (see DLNR list of aquarium species at Appendix 3);¹⁸⁴

¹⁸⁰ DEIS at pdf p. 288 and 430.

¹⁸¹ DEIS at pdf p. 320

¹⁸² See HAR. § 11-200-10(7).

¹⁸³ DLNR HRS Chapter 343, Final Environmental Assessment, Notice of Determination for O’ahu at 3.

¹⁸⁴ See DLNR Aquarium Fish Trip Report

- 2) natural abundance (i.e. unfished) levels and complete stock assessments, for each collection zone, for those same species (see aquarium fish zones at Appendix 2);¹⁸⁵
- 3) a definition for “sustainable” as it relates to the natural abundance of coral reef species taken in Hawai‘i for aquarium purposes; and
- 4) annual total allowable catch, by species, designed to restore and then sustain natural abundance levels, with negligible impacts as defined in the Queensland Ecological Risk Assessment of the Marine Aquarium Fish Fishery, for each species to be taken for aquarium purposes, in each zone.¹⁸⁶

After making these necessary threshold determinations, the Agency should issue limited numbers of Aquarium Permits, by zone and by species with corresponding total allowable catch limits, per the above parameters. Additionally, the Agency should require Aquarium Collection Permits, for all take for aquarium purposes, regardless of the method of collection.

B. Lack of Mitigation Measures

HEPA also requires an EIS to consider mitigation measures.¹⁸⁷ With minor exceptions, such a discussion is plainly absent from the DEIS. Decades of Applicant actions have directly impacted more than 300 species and indirectly impacted an unknown number of additional vertebrate and invertebrate species found in Hawai‘i’s coral reefs, one of the most complex ecosystems on Earth, where the fate of each species is determined by the existence, abundance and diverse actions of a multitude of other species that inhabit or otherwise rely upon these unique places. Yet, the DEIS claims there are no significant impacts whatsoever, and therefore, proposes no mitigation measures outside of the bag limit for Flame wrasse and an expanded MLCF found in the Preferred Alternative.¹⁸⁸ The DEIS also fails to propose mitigation measures to address biological and related impacts to the various socio-economic values described herein, and also fails to propose mitigation for impacts to cultural resources, and for the ethical concerns and harm done to the animals, themselves, also described herein.

VIII. **Conclusion**

For the reasons explained above, the DEIS is patently insufficient in its analysis of the impacts of commercial aquarium collection permits.

A serious overhaul of aquarium fish permitting in Hawai‘i is needed.

Because currently there are not restrictions on the number of collection permits or the amount of take per species under a fine mesh net (i.e. aquarium) permit or commercial marine license, the impact that collection may have on target species must be evaluated before issuing permits. As such, each aquarium collection permit or commercial marine license issued for aquarium collecting must show the total allowable catch, per species and ideally per zone that permit holders must

¹⁸⁵ See DLNR Aquarium Fish Trip Report

¹⁸⁶ See Roelofs (2008) for a useful guide for describing the range of impacts to populations of target species in marine aquarium fisheries.

¹⁸⁷ HAR. § 11-200-10(7).

¹⁸⁸ DEIS at 19.

follow to prevent unsustainable fishing. Catch limits per species and per zone should be calculated in conjunction with input from all stakeholders and based on the stock assessment for each target species in the specific areas where they will be allowed to be taken under a permit.

The legislature has decreed it the “policy of the State” that DNLN and other agencies must “[c]onserve natural resources . . . by preserving or augmenting natural resources, and by safeguarding the State’s unique natural environmental characteristics . . .”¹⁸⁹ The Agency must also “[e]ncourage management practices which conserve . . . all natural resources,” and encourage all individuals “to fulfill the responsibility as trustees of the environment for the present and succeeding generations.”¹⁹⁰ In enacting HEPA, the State legislature found “that the quality of humanity’s environment is critical to humanity’s well-being, [and] that humanity’s activities have broad and profound effects upon the interrelations of all components of the environment . . .”¹⁹¹ The Agency simply cannot meet these mandates by continuing to allow unlimited aquarium collection, in light of the serious environmental consequences of those permits.

Respectfully submitted,



Rene Umberger
Executive Director, For the Fishes
rene@forthefishes.org
808.283.7225



Maxx Phillips, Esq.
Hawaii Director, Center *for* Biological Diversity
1188 Bishop Street, Suite 2412
Honolulu, Hawaii 96813
(808) 284-0007
www.biologicaldiversity.org



Mike Nakachi
President, Moana Ohana
PO Box 4454, Kailua-Kona, HI 96745
mikenakachi@hawaii.rr.com
808-640-3871

¹⁸⁹ Haw. Rev. Stat. § 344-3(1).

¹⁹⁰ Haw. Rev. Stat. § 344-4(2)(A), (10)(A).

¹⁹¹ Haw. Rev. Stat. § 343-1.



Kealoha Pisciotta
Founder, Kai Palaoa
keomaivg@gmail.com



Haereticus Environmental Laboratory
P.O. Box 92, Clifford, VA 24533
cadowns@haereticus-lab.org



Keith Dane
The Humane Society of the United States
59-1764 Kohala Ranch Road, Kamuela, HI 96743
kdane@humanesociety.org
(301) 312-1489



Kaimi Kaupiko
Kalanihale, Miloli'i
89-1831 Milolii Rd.
Captain Cook, HI 96704
(808) 937-1310



Wilfred Kaupiko
89-1196 Mamalahoa Hwy.
Captain Cook, HI 96704

CC:

Pet Industry Joint Advisory Council, jim.lynch@klgates.com

Stantec Consulting Services, Inc., terry.vandewalle@stantec.com

References

- Aila, 2014. Submittal to the Board of Land and Natural Resources: Request for Final Approval to Adopt New Hawai'i Administrative Rules, Chapter 13-77, O'ahu Aquarium Life Management, to Establish New Regulations on Gear, Bag, and Size Limits for Aquarium Collecting on O'ahu. Available at: <http://files.hawaii.gov/dlnr/meeting/submittals/141024/F-2.pdf> (accessed on May 6, 2018)
- Bishop et al. 2011. Total Economic Value for Protecting and Restoring Hawaiian Coral Reef Ecosystems: Final Report. Silver Spring, MD: NOAA Office of National Marine Sanctuaries, Office of Response and Restoration, and Coral Reef Conservation Program. NOAA Technical Memorandum CRCP 16. 406 pp. Available at: <https://www.dropbox.com/s/pv1x5lzopq5k9pu/Bishop%202011.pdf?dl=0>.
- Board of Land and Natural Resources 2014. October 24, 2014. Item F-2 Submittal. Available at: <http://files.hawaii.gov/dlnr/meeting/submittals/141024/F-2.pdf> (accessed on May 2, 2018)
- Board of Land and Natural Resources, 2014. October 24, 2014 Meeting Minutes. Available at: <http://dlnr.hawaii.gov/wp-content/uploads/2014/01/141024-minutes.pdf> (accessed on May 2, 2018)
- Cartwright et al. 2012. Saving Nemo: Mariculture and Market-based Solutions to Reform the Marine Ornamental Trade, Bren School of Environmental Science & Management, UCSB. Available at: <https://www.dropbox.com/s/lzfrhkqsyih33s/Cartwright%202012.pdf?dl=0>.
- Cesar, et al. (2002). Economic valuation of the coral reefs of Hawai'i, Hawai'i Coral Reef Initiative, University of Hawai'i, Honolulu. Available at: <https://www.coris.noaa.gov/portals/pdfs/hicesar.pdf> (accessed on May 6, 2018)
- Christie, et al., 2010. Larval Connectivity in an Effective Network of Marine Protected Areas. PLoS ONE 5(12): e15715. Available at: <https://doi.org/10.1371/journal.pone.0015715>.
- Clark, A.M., & Gulko, D. (1999). Hawai'i's state of the reefs report 1998. Hawai'i Department of Land and Natural Resources, Honolulu, HI.
- Davidson, K., Hamnett, M., & Minato, C. (eds). 2003. The First Four Years: Hawai'i Coral Reef Initiative Research Program (1998-2002). Social Science Research Institute, University of Hawai'i at Manoa. 72 pp. Available at: <https://www.dropbox.com/s/vwb4gr4sbqqm2d3/Davidson%202003.pdf?dl=0>.
- DLNR, 2012. Proposed O'ahu Only Aquarium Regulations Small Business Impacts Analysis. Small Business Regulatory Review Board, June 20, 2012. Available at: <https://drive.google.com/drive/folders/1dzFITEDRqLrdqaIMXbPC0PhvzxP9ISQn> (accessed on May 4, 2018)

- DLNR, 2014. Report on the Findings and Recommendations of Effectiveness of the West Hawai'i Regional Fishery Management Area. State of Hawai'i. Available at: https://dlnr.hawaii.gov/dar/files/2015/01/ar_hrs188_2015.pdf.
- DLNR, 2015. State Initiates Comprehensive Coral Reef Management Planning. News Release November 16, 2015. Available at: <https://dlnr.hawaii.gov/blog/2015/11/16/nr15-179/> (accessed on May 2, 2018)
- DLNR, 2017. Testimony before State House Committee on Ocean, Marine Resources and Hawaiian Affairs. Available at: https://www.capitol.hawaii.gov/Session2017/Testimony/SB1240_SD2_TESTIMONY_OMH_03-14-17_PDF.
- Eagle, Nathan, DLNR Urges Ige to Veto Bill Phasing Out Aquarium Fishing in Hawai'i (June 23, 2017), www.civilbeat.org/2017/06/dlnr-urges-ige-to-veto-bill-phasing-out-aquarium-fishing-in-hawaii/.
- Fenner, FAQs About Yellow Tangs 4. Yellow Tang Lifespan. Available at: <http://www.wetwebmedia.com/yeltangfaq4.htm> (accessed on May 7, 2018)
- Fenner. Marine Life Use in the Aquarium Hobby. Available at: <http://www.wetwebmedia.com/marlifeusebiz.htm> (accessed on May 7, 2018)
- Friedlander A, Aeby G, others. 2008. The state of coral reef ecosystems of the main Hawaiian Islands. The state of coral reef ecosystems of the United States and Pacific freely associated states. Available at: http://ccmaserver.nos.noaa.gov/ecosystems/coralreef/coral_report_2005/MHI_Ch9_C.pdf (accessed October 23, 2015).
- Friedlander AM, DeMartini EE. 2002. Contrasts in density, size, and biomass of reef fishes between the northwestern and the main Hawaiian islands: the effects of fishing down apex predators. *Marine Ecology Progress Series* **230**:253–264. Available at: https://drive.google.com/open?id=1pFkRNzW2ibVbAqH5FSE_ci9p037RU2j (accessed May 8, 2018)
- Friedlander AM, Donovan MK, Stamoulis KA, Williams ID, Brown EK, Conklin EJ, DeMartini EE, Rodgers KS, Sparks RT, Walsh WJ. 2018. Human-induced gradients of reef fish declines in the Hawaiian Archipelago viewed through the lens of traditional management boundaries. *Aquatic Conservation: Marine and Freshwater Ecosystems* **28**:146–157. Available at: https://drive.google.com/open?id=17LyZEpFD5ENm15g2ecsOG9X_Q_OKbuD7 (accessed My 8, 2018)
- Friedlander AM, Parrish JD. 1998b. Temporal dynamics of fish communities on an exposed shoreline in Hawai'i. *Environmental Biology of Fishes* **53**:1–18. Available at: <https://drive.google.com/open?id=1PX6K98igAgT05KEN8ACRO6qFJTzCMz67R> (accessed on May 8, 2018)

- Friedlander AM, Parrish JD. 1998a. Habitat characteristics affecting fish assemblages on a Hawaiian coral reef. *Journal of Experimental Marine Biology and Ecology* **224**:1–30. Available at: <https://drive.google.com/open?id=1tOSj1-lkmdh6Nqec5nVdiXPch7RoRK0o> (accessed on May 8, 2018)
- Future of Reefs in a Changing Environment (FORCE) Management Brief #4 for Caribbean Reef Management, Economic value of reef fishes to the dive tourism industry: the implications of reef fish decline, European Union Seventh Framework Program (P7/2007-2013) Available at: <https://www.dropbox.com/s/czum15jpetqv6bc/FORCE%20Management%20Brief%20Divers%20pay%20more%20to%20see%20more%20fish.pdf?dl=0>.
- Grabowsky, 2011. Written and oral testimony before the Hawai'i State Senate Committee on Water, Land and Housing on SB580, a bill to regulate the aquarium trade. Available at: <https://drive.google.com/open?id=13krnibVcDnDugecxH0fWNa8h90IxcJzk> (accessed on May 4, 2018)
- Grabowsky, 2014. Oral testimony before the Board of Land and Natural Resources regarding the O'ahu Aquarium Rules. Available at: <http://dlnr.hawaii.gov/wp-content/uploads/2014/01/141024-minutes.pdf> (accessed on May 4, 2018)
- Hawai'i Department of Land and Natural Resources (DLNR). 2018. Hawai'i's State Wildlife Action Plan. Pg. 4-13 Available at: <https://dlnr.hawaii.gov/wildlife/files/2016/12/HI-SWAP-2015.pdf> (accessed on May 1, 2018)
- Hawai'i Department of Land and Natural Resources (DLNR). 2018. Species of Greatest Conservation Need. Available at: <http://dlnr.hawaii.gov/wildlife/hswap/cwcs/hawaii/species/> (accessed on May 1, 2018)
- Hawai'i Small Business Regulatory Review Board, 2012. Proposed New Hawai'i Administrative Rule, Title 13 Chapter 77, "O'ahu Aquarium Life Management". Available at: <https://drive.google.com/open?id=11Dk1pUKtRQeBVW7llgpuNYeFoDWgj4lg> (accessed on May 4, 2018)
- Hawai'i Small Business Regulatory Review Board, memo to DLNR 2012. DLNR Should Work with Folks: Available at: https://drive.google.com/open?id=16rVDVvo2iyfWPbx6ZOyznwfy1_n0iRI5.
- Hoover, 1993. Hawai'i's Fishes - A Guide for Snorkelers, Divers and Aquarists. Mutual Publishing.
- Jones GP, McCormick MI, Srinivasan M, Eagle JV. 2004. Coral decline threatens fish biodiversity in marine reserves. *Proceedings of the National Academy of Sciences of the United States of America* **101**:8251–8253. Available at: <https://drive.google.com/open?id=1u3sSpW6zY0u6-yQzY6zECTtHsh7Syifn> (accessed on May 8, 2018)

- Katekaru, 1978. Hawai'i Div. of Fish and Game, Regulations of Tropical Reef Fish Collecting, Tropical Reef Fish Conference. Sea Grant College Program, Working Paper No. 34. Available at: <https://www.dropbox.com/s/0e59ieyf3iyc2qg/Noland%201978.pdf?dl=0>.
- Kaupiko et al. v. DLNR (2020). Available at: https://earthjustice.org/sites/default/files/files/2020-1-27_Complaint_DLNR.pdf
- KHON TV 2015. State Initiates Comprehensive Coral Reef Management Planning. Available at: <http://www.khon2.com/news/local-news/state-initiates-comprehensive-coral-reef-management-planning/1025650625> (accessed on May 2, 2018)
- Livengood and Chapman (2007). The Ornamental Fish Trade: An Introduction with Perspectives for Responsible Aquarium Fish Ownership, University of Florida. Available at: <http://edis.ifas.ufl.edu/fa124> (accessed May 5, 2018)
- McGilvray (2014). Testimony regarding the Request to Approve Proposed New O'ahu Aquarium Life Management Rules. Available at: https://drive.google.com/open?id=1NUKu_gmYtyuqg9p2F8DicQWUus5PgUZa (accessed on May 6, 2018)
- Nadon MO. 2017. Stock assessment of the coral reef fishes of Hawai'i, 2016. US Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Pacific Islands Fisheries Science Center. Available at: <https://drive.google.com/open?id=1EOS4GX6fNmKHXogrufucZjrUwZtlQ2IP> (accessed on May 8, 2018)
- Nadon MO, Ault JS, Williams ID, Smith SG, DiNardo GT. 2015. Length-based assessment of coral reef fish populations in the Main and Northwestern Hawaiian Islands. PLoS One **10**:e0133960. Available at: <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0133960> (accessed on May 8, 2018)
- Noland, 1978. Ocean Research Consulting and Analysis, Ltd., Hawai'i Tropical Reef Fish Study, Tropical Reef Fish Conference. Sea Grant College Program, Working Paper No. 34. Available at: <https://www.dropbox.com/s/0e59ieyf3iyc2qg/Noland%201978.pdf?dl=0>.
- Ochavillo D, Hodgson G. 2006. Marine Aquarium Trade Coral Reef Monitoring Protocol: Data Analysis and Interpretation Manual. Page 39. Available at: <http://reefcheck.org/PDFs/MAQTRAC%20Analysis%20Manual%202006.pdf>.
- PIJAC, Draft Environmental Impact Statement for the Issuance of Commercial Aquarium Permits for the West Hawaii Regional Fishery Management Area (2019). Available at: http://oeqc2.doh.hawaii.gov/EA_EIS_Library/2019-11-23-HA-DEIS-Hawaii-Island-Commercial-Aquarium-Permits.pdf
- Queensland Summary Fishery Reports. Available at: <https://www.dropbox.com/s/kdyx9v20bo738mb/Queensland%20Summary%20Fishing%20Report.pdf?dl=0> (accessed on April 30 2018)

- Randall, 1996. Shore Fishes of Hawai'i. University of Hawai'i Press.
- Roelofs, 2008. Ecological Risk Assessment of the Queensland Marine Aquarium Fish Fishery. Department of Primary Industries and Fisheries, Brisbane. Available at: https://drive.google.com/open?id=1kUB3wsFzL_Oh0u4HAtTbgclq8MGrBy6W.
- Slembrouck, 2011. There's Something About Yellow. Visually Blog. Available at: <https://visual.ly/blog/the-use-of-yellow-in-data-design/> (accessed on May 6, 2018)
- Spalding et al. 2017. Mapping the global value and distribution of coral reef tourism. Available at: <https://doi.org/10.1016/j.marpol.2017.05.014> (accessed on May 6, 2018)
- Stevenson TC, Tissot BN, Dierking J. 2011. Fisher behaviour influences catch productivity and selectivity in West Hawai'i's aquarium fishery. *ICES Journal of Marine Science* **68**:813–822. Available from: <https://drive.google.com/open?id=1K369D30-NlGFhVcoD1xcqKVf-73792Yk> (accessed on May 8, 2018)
- Talbot 2014. "Biblical" Spawning Event on Hawaiian Reefs. CORAL Magazine. Available at: <https://www.reef2rainforest.com/2014/08/29/biblical-spawning-event-on-hawaiian-reefs/>
- Tissot, 2005. Integral Marine Ecology: Community-Based Fishery Management in Hawai'i. Washington State University. Available at: <http://www.malama-kai.org/000/docs/WHFC/Community-Based-Fishery-Mgmt-Hawaii.pdf> (accessed on May 6, 2018)
- Tissot B, Hallacher L. 2003. Effects of Aquarium Collectors on Coral Reef Fishes in Kona, Hawai'i. *Conservation Biology* **17**:1759–1768. Available at: Available at: <https://www.dropbox.com/s/bxrvruhs0743gnb/Tissot%20and%20Hallacher%202003.pdf?dl=0>.
- Tissot BN, Walsh WJ, Hallacher LE. 2004. Evaluating effectiveness of a marine protected area network in West Hawai'i to increase productivity of an aquarium fishery. *Pacific Science* **58**:175–188. Available at: Available at: <https://www.dropbox.com/s/0wkw7vskfghoqpc/Tissot%20et%20al%202004.pdf?dl=0>.
- Tissot, BN, Walsh WJ and Hallacher LE. 2003. Evaluating the effectiveness of a marine reserve network in Hawai'i to improve management of the aquarium fishery. *NOAA Technical Report*. 20pp.
- U.S. Coral Reef Task Force, Trade Subgroup Report (2005), What Do We Know About Coral Reefs, International Trade in Coral Reef Animals and the Urgent Need for Action? Available at: <https://www.dropbox.com/s/pw68f7icoszv211/U.S.%20Coral%20Reef%20Task%20Force%202005.pdf?dl=0>
- Walsh, WJ 1987. Patterns of recruitment and spawning in Hawaiian reef fishes. *Environmental Biology of Fishes* **18**(4): 257-276.

- Walsh, 2013. Background on Proposed Hawai'i Administrative Rule 13-60.4, West Hawai'i Regional Fishery Management Area, Hawai'i. Hawai'i Division of Aquatic Resources. Available at: http://dlnr.hawaii.gov/dar/files/2014/05/WHI_HAR_13-60.4_Background.pdf (accessed on May 7, 2018)
- Walsh 2013. South Kohala Reefs in Dire Straits. Briefing document. DLNR/DAR. Available at: <https://data.nodc.noaa.gov/coris/library/NOAA/CRCP/project/20642/S-Kohala-Coral-Reefs-in-Dire-Straits.pdf> (accessed on May 7, 2018)
- Walsh, et al. 2013. Long-Term Monitoring of Coral Reefs of the Main Hawaiian Islands, Final Report. 2009 NOAA Coral Reef Conservation Program, Hawai'i Island Monitoring Report NA09NOS4260100, 10/01/2009 – 12/31/2012. Available at: https://dlnr.hawaii.gov/dar/files/2014/04/NOAA_2013_WHi_Mon_Rep.pdf (accessed on May 2, 2018)
- Walsh WJ. 2015. Report to the Thirtieth Legislature 2015 Regular Session. Report on the findings and recommendations of effectiveness of the West Hawai'i Regional Fishery Management Area. Department of Land and Natural Resources State of Hawai'i. Available at: <https://drive.google.com/open?id=1vbiSzrRHyd3HKnmusucTRcP-MGIweE2K> (accessed on May 8, 2018)
- Walsh WJ, Cotton SS, Dierking J, Williams ID. 2004. The commercial marine aquarium fishery in Hawai'i 1976-2003. Available at: https://drive.google.com/open?id=1xa_fhq5_tBRCaF58ji7xVAxejg5_sUz- (accessed on May 8, 2018)
- Williams and Walsh, 2007. Strengthening Coral Reef Monitoring of Main Hawaiian Islands. Hawai'i Coral Reef Initiative (HCRI) Project Report Format. Available at: <https://www.dropbox.com/s/pztmuf1jifs33nm/Williams%20and%20Walsh%202007.pdf?dl=0>.
- Williams and Walsh, 2008. West Hawai'i Aquarium Species of Special Concern, Initial Considerations and Relevant Data. Powerpoint Presentation. Available at: https://www.dropbox.com/s/sm4psxdgn7w2d8d/Wlliams%20and%20Walsh%202008_West%20HI%20Species%20of%20Special%20Concern_powerpoint.pdf?dl=0
- Williams ID, Walsh WJ, Claisse JT, Tissot BN, Stamoulis KA. 2009. Impacts of a Hawaiian marine protected area network on the abundance and fishery sustainability of the yellow tang, *Zebrasoma flavescens*. *Biological Conservation* **142**:1066–1073. Available at: <https://drive.google.com/open?id=1f0CWb5QB7aKo0dEYJTmpIn8h7w1s0dYO> (accessed May 8, 2018)
- Williams ID, Walsh WJ, Schroeder RE, Friedlander AM, Richards BL, Stamoulis KA. 2008. Assessing the importance of fishing impacts on Hawaiian coral reef fish assemblages along regional-scale human population gradients. *Environmental Conservation* **35**:261. Available at: <https://drive.google.com/open?id=1OMMj1npKxL-J5enF-t88TynBQXISFuM-> (accessed on May 8, 2018)

Appendix 1

Background

We submitted the below comments and questions to Stantec on October 16, 2019. The questions were prompted after we were made aware of the scope of the forthcoming O'ahu DEIS, as well as the DEIS's intent to provide exclusive aquarium collection privileges to 21 individuals (now 20) which was not specified in the earlier Draft Environmental Assessments (DEA). Stantec's failure to provide this crucial information to all Consulted Parties continues to undermine HEPA's notice requirements.

Despite our objections to this flawed process, we submitted the below comments and questions to Stantec in an effort to inform and improve the DEIS and ensure that they were thoroughly evaluating the environmental impacts of this proposed action pursuant to HEPA. Stantec's response to our concerns with compliance with the HEPA process were again dismissed, with the applicants simply stating "*Comment noted. The commenters were included in the consultation process for the DEIS.*"

Outstanding Questions

Below are our outstanding questions that were either inadequate in their response, or were not answered at all, and thus continue to await the applicant and/or DLNR's response:

1. What are the **environmental benefits** of removing tens to hundreds of thousands of animals annually from O'ahu's coral reefs for the aquarium trade? **NO RESPONSE**
2. a) Specifically, why is the proposed DEIS limited to O'ahu? The Hawai'i Dept. of Land and Natural Resources (DLNR) issuance of aquarium collection permits under HRS 188-31.5 applies to collection statewide;
b) Do the 21 (20) collectors propose to collect only on O'ahu?;
c) How would this be regulated given the existing permitting scheme has no geographic limits? **INADEQUATE RESPONSE – APPLICANT ASSUMES DLNR CAN/WILL ADD A PERMIT CONDITION TO EACH PERMIT.**
3. Recent research into two species of small bodied surgeonfishes, including *kole* which is heavily targeted by the aquarium trade, has determined that populations of these fishes are genetically distinct on each of the main Hawaiian Islands. This means that, for at least these two species, there is little genetic mixing between islands, and once species are depleted on any given island, there is no other source for population replenishment. Further, connectivity and dispersal studies on the island scale for certain species have identified important spawning source areas that are essential for maintaining populations on other reefs across the island.

The currents and conditions that control larval connectivity and dispersal processes are complex. The larvae of some species are able to travel between islands, while others do so

to a lesser extent. Regardless of whether larval connectivity exists mainly intra-island or extends inter-island, a depletion of species in important source areas impacts that species in other areas as well. Specifically, what are your plans for ascertaining key spawning source areas for all of the species the applicants intend to take? **INADEQUATE RESPONSE – LARVAL DISPERSAL AND CONNECTIVITY PATTERNS CANNOT BE USED TO JUSTIFY APPLICANT’S ERRONEOUS TREATMENT AND ANALYSIS OF THE 15 (AT A MINIMUM) DISTINCT AND UNIQUE AREAS, SUCH AS REPRESENTED BY THE AQUARIUM TRIP REPORT ZONES, AS ONE LARGE, HOMOGENOUS AFFECTED AREA.**

4. The Proposed DEIS would provide exclusive take and related privileges to 21 individuals that no other person would otherwise have access to. Given these 21 applicants are requesting special permission to take constitutionally protected public trust resources, the below information is needed to explain how and why these 21 applicants should be granted this exclusive privilege, that would otherwise be denied to others.
 - a) Please identify the 21 applicants by name and business or trade name (i.e. “Doing Business As”). **NO RESPONSE/NOT DISCLOSED**
 - b) How many reef animals have been taken by the 21 applicants in the past decade (list per year, per species and method of collection) and in what area, and how many are the applicants proposing to take each year for the next decade (list per species and method)? **NO RESPONSE/NOT DISCLOSED**
 - c) What are the GPS coordinates for the exact sites the 21 applicants propose to operate on? **NOT DISCLOSED**
 - d) Have any of the applicants been charged with any offense related to the aquarium trade or occurring during the course of aquarium trade activities, or county or state natural resource related offenses? If so, include date, offense and outcome of each offense. **NO RESPONSE/NOT DISCLOSED**
 - e) What steps will be taken by the 21 applicants to reduce the impacts of climate change, specifically, coral bleaching and ocean temperature rise, which is predicted to occur more frequently and more severely over the next decade, given they will be removing thousands of herbivorous species? **INADEQUATE**
5. On August 23, 2019, the DLNR warned of possible severe and widespread coral bleaching across the state within the next two months as the result of sea temperatures that are currently 3 degrees above normal. Real-time [reports from across the state](#) indicate that widespread bleaching is occurring. Elevated temperatures are projected to continue at least through the end of October, and the National Oceanic and Atmospheric Administration (NOAA) [bleaching alert](#) remains at the highest level, indicating likely coral mortality. This bleaching event will likely be even worse than the one that damaged so many of Hawai‘i’s reefs 4 – 5 years ago. DLNR and NOAA have asked the public to take actions to minimize any

additional stress to H Hawai'i's reefs. Notably, among the actions to be avoided are many that are widespread and/or inherent to the aquarium trade, referenced below.

a) How will the 21(20) applicants specifically comply with the following recommended actions:

- Reduce or stop taking herbivorous fishes such as surgeonfish which are needed to keep algae growth under control so as not to smother and kill corals stressed from bleaching
- Avoid touching, standing in corals
- Keep vessel anchors and chains off corals

b) Given the extremely limited enforcement resources and capabilities of DLNR, how do they propose to show compliance with the above recommended actions?

NO RESPONSE OR DISCUSSION, ONLY CLAIM TO COMPLY WITH EXISTING LAWS, NO MITIGATION OR PROACTIVE MEASURES

6. How do the 21 applicants propose to prevent population reductions of reef species when, outside of the current court order, there are no limits on:

- the issuance of State aquarium collection permits
- the issuance of Commercial Marine Licenses
- caps on the issuance of the above permits or a limited entry program
- the use of certain types of gear that may be detrimental to the environment
- overall take (Total Allowable Catch)
- area/geographical limitations outside of areas already designated as "no take" areas, such as Marine Life Conservation Districts
- collection of species (despite HAR 13-77 O'ahu Aquarium Life Management, which in effect, imposes no limits on species or numbers taken to those not in possession of a small mesh net).

INADEQUATE RESPONSE – EXISTING AND PROPOSED BAG LIMITS PROVIDE NO PROTECTIONS FOR TARGETED SPECIES

7. The DLNR, specifically the Division of Aquatic Resources and their enforcement arm, the Division of Conservation and Resource Enforcement (DOCARE) has severely restricted resources, such as inadequate staff and funding for enforcement, and there are current statutory restrictions on searches of certain containers carrying marine life and certain vessels.

a) How do the 21 applicants propose that enforcement will be achieved on any proposed limits to their activities, including verifiable compliance with current administrative rules, and state and federal laws, including those listed below. **NO RESPONSE/NO PROPOSED MITIGATION**

b) How are the 21 applicants currently complying with the following? **NO RESPONSE**

- Federal Lacey Act requirements USC Title 16
- Hawai'i Misdemeanor Cruelty to Animals statute HRS 711-1109

8. The commercial aquarium trade has long operated with fewer regulations, oversight and compliance-verification mechanisms than those that commercial food fisheries must adhere to. Further, while the issuance of aquarium collection permits is discretionary, and subjects the permit holder to certain legal obligations, including inspection of facilities holding marine life, many of these regulations have not been actively enforced. For clarification, do the 21(20) applicants cooperate and comply with the following:

- provide open and immediate access to coolers, containers, vessels and other aquarium related gear, equipment and holding facilities upon request of a DLNR DOCARE Officer, as per the conditions of their permits?
- allow observers on their vessels with/without notice?

INADEQUATE RESPONSE; NO PROPOSED MEASURES TO ASSIST WITH ENFORCEMENT; NO OFFER OF VOLUNTARY COMPLIANCE OR OTHER

9. The earlier DEAs for the aquarium trade failed to include data and records which are not readily accessible to the public and other interested parties. Please provide the necessary data and response to the following to address our outstanding concerns with enforceability of the above-referenced laws specifically as it relates to animal health, welfare and mortality rates:

Hundreds of thousands of fish and invertebrates have been taken by the aquarium trade from O'ahu reefs since the Supreme Court opinion and subsequent District Court orders were issued in September and October of 2017 which prohibited the use of fine mesh nets (nets with a mesh less than 2 inches). Ninety plus percent of fish catch prior to the court ruling involved the use of fine mesh nets. **NO RESPONSE/EXPLANATION OF CURRENT CATCH METHODS**

a) Please explain in detail the gear and method(s) of collection currently (October 2017 to present) used by each of the 21(20) applicants and for what species. If the 21(20) collectors did NOT collect during this period please provide that information as well. **NO RESPONSE**

b) For the 21 applicants please provide: **NO RESPONSE TO ANY OF THE FOLLOWING**

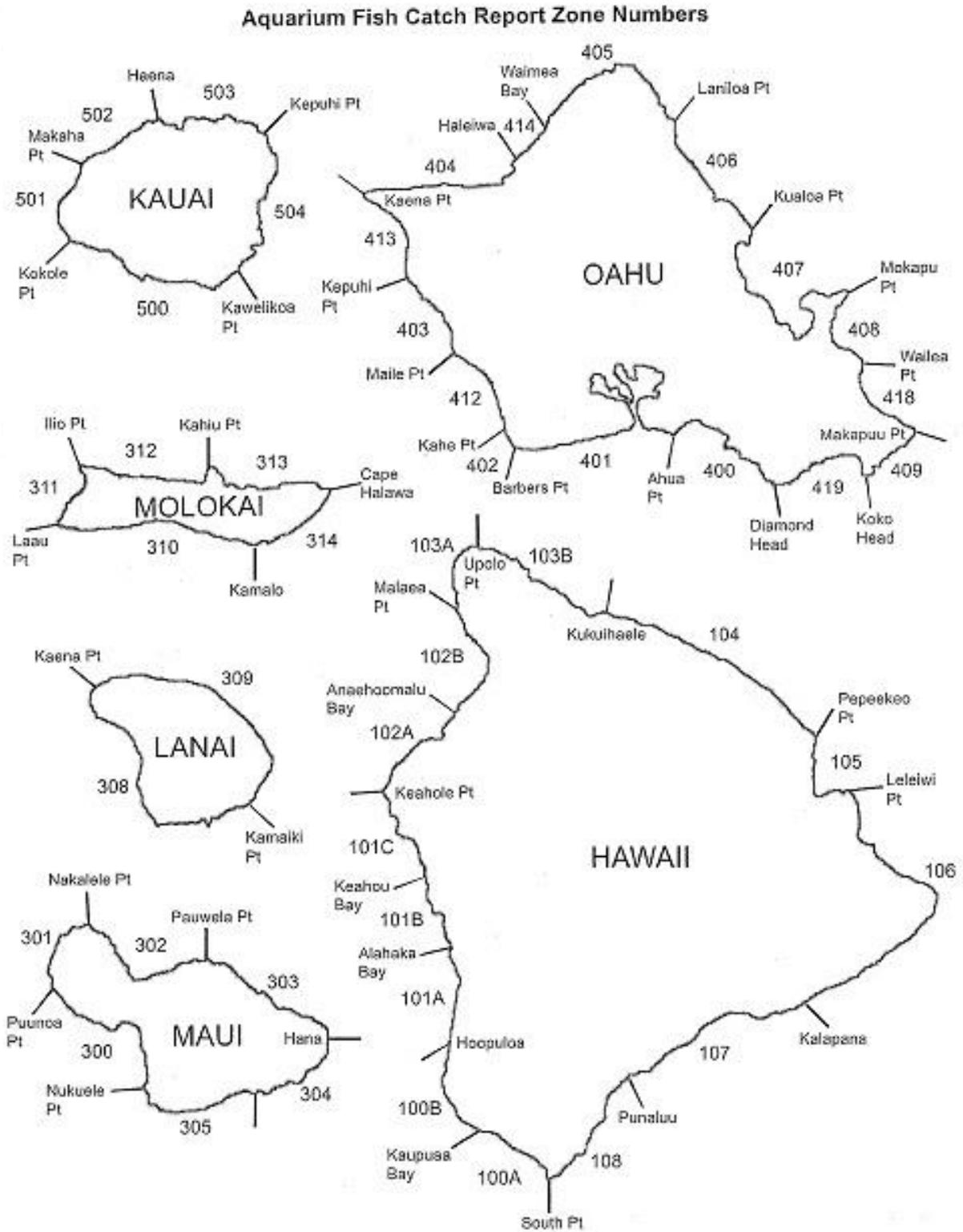
- the numbers of fish/animals that were shipped out of Hawai'i by each applicant per month since October 2017 to the present; and
- specifically, where these fish/animals were shipped to (e.g., interstate or international); and
- the mortality rates for each shipment (a) upon arrival and (b) at 14 days post-shipment; and

- what percentage of animals remain in Hawai'i (for resale) versus those who are shipped 1) to the US mainland and 2) international;
- c) For each of the 21 applicants please note whether the collector is also a dealer. If the collector is not a dealer, provide who the collector sells their catch to; **NO RESPONSE**
- d) For each of the 21 applicants, please note which collectors engage in the following practices in contradiction to HRS 711-1109: **NO RESPONSE TO ANY OF THE FOLLOWING**
- withholding of food (starvation) and for what period of time;
 - fizzing or puncturing of the swim bladder;
 - cutting of spines or dorsal fins;
 - body compression (squeezing animal to force out ejection of fecal matter).
10. The following issues raised by DLNR in the O'ahu FEA still await your response: **INADEQUATE OR NO RESPONSE TO ALL OF THE FOLLOWING**
- a) "There is no statistical analysis of population growth compared to the life span of each fish and the number of years to and size of first reproduction against which this annual proposed take can be measured for purposes of estimating sustainable take."
- b) "With regard to proposed levels of sustainable catch, using "5% to 25%" annual take of estimated populations as proposed in several research papers, we note that 5% to 25% is a wide range, and the precautionary principle calls for applying the lowest estimated percentage of sustainable take in the absence of scientific certainty. We note also that there are no bag limits for most species, and that the fishery as currently regulated does not limit the number of permits, so that the annual take as a percentage of estimated population could rise significantly."
- c) "Alternatives of overall annual take limits, a limited entry aquarium fishery program, and restrictions including full moratoria on the take of herbivores, species of special concern, and species evidencing severe population declines have not been proposed or analyzed."
- d) "The alternatives propose reduction in bag limits for flame wrasse, but there is not a scientific basis for concluding that the proposed reduction would be sufficient to sustain the population."
- e) "The alternatives propose an expansion of the Waikiki Marine Life Conservation District, but do not include a scientific review of the beneficial impacts of Fishery Replenishment Areas on restoring populations, such as has been demonstrated in West Hawai'i, nor an analysis of the optimal placement of Fishery Replenishment Areas on O'ahu to protect and restore populations of aquarium fish."

- f) “As noted earlier, enforcement and compliance needs and challenges are key factors in the effectiveness of fisheries management and should be analyzed as part of the environmental analysis.”

Appendix 2

DLNR Aquarium fishing trip report zones (available in DLNR Aquarium Fish Trip Report Booklet)



Appendix 3: DLNR Commercial Aquarium Species List (available in DLNR Aquarium Fish Trip Report Booklet)

rev. 9/30/2011

Commercial Aquarium Species List

Angelfishes	(Pomacanthidae)	Butterflyfishes (cont)	(Chaetodontidae)
219 Bandit	<i>(Desmoholocanthus arcuatus)</i>	206 Reticulated	<i>(Chaetodon reticulatus)</i>
223 Fisher's	<i>(Centropyge fisheri)</i>	208 Saddleback	<i>(Chaetodon ephippium)</i>
221 Flame	<i>(Centropyge loricula)</i>	210 Teardrop	<i>(Chaetodon unimaculatus)</i>
225 Masked	<i>(Genicanthus personatus)</i>	203 Thompson's	<i>(Hemitaurichthys thompsoni)</i>
220 Potter's	<i>(Centropyge potteri)</i>	209 Threadfin (Cross-stripe)	<i>(Chaetodon auriga)</i>
Anthias & Groupers	(Serranidae)	224 Tinker's	<i>(Chaetodon tinkeri)</i>
663 Bicolor Anthias	<i>(Pseudanthias bicolor)</i>	390 Cardinalfishes	(Apogonidae)
675 Grammistidae		394 Bandfin	<i>(Apogon menesemus)</i>
650 Groupers, Basslets and Anthias		395 Bay	<i>(Foa brachygramma)</i>
661 Hapu'u Grouper	<i>(Epinephelus quernus)</i>	393 Iridescent	<i>(Apogon kallopterus)</i>
664 Hawaiian Longfin Anthias	<i>(Pseudanthias hawaiiensis)</i>	392 Red	<i>(Apogon erythrinus)</i>
667 Redblotch perchlet	<i>(Plectranthias winniensis)</i>	391 Spotted	<i>(Apogon maculiferus)</i>
660 Roi - Bluespot Grouper	<i>(Cephalopholus argus)</i>	195 Damselfishes	(Pomacentridae)
600 Soapfishes		192 Agile Chromis	<i>(Chromis agilis)</i>
662 Thompson's Anthias	<i>(Pseudanthias thompsoni)</i>	187 Backfin Chromis	<i>(Chromis vanderbilti)</i>
665 Yellow Anthias	<i>(Holanthias fuscipinnis)</i>	181 Blackspot Sergeant	<i>(Abudefduf sordidus)</i>
Blennies	(Blenniidae)	185 Blue-eye Damsel	<i>(Plectroglyphidodon johnstonianus)</i>
440 Blenny	<i>(Blenniidae)</i>	183 Brighteye Damsel	<i>(Plectroglyphidodon imparipennis)</i>
449 Biting	<i>(Plagiotremus goslinei)</i>	191 Chocolate-Dip Chromis	<i>(Chromis hanui)</i>
448 Blue-striped	<i>(Plagiotremus rhinorhynchus)</i>	180 Hawaiian Domino	<i>(Dascyllus albisella)</i>
447 Hump-Head	<i>(Blenniella gibbifrons)</i>	182 Hawaiian Sergeant Major	<i>(Abudefduf abdominalis)</i>
445 Istiblennius spp.	<i>(Istiblennius spp.)</i>	193 Indo-Pacific Sergeant Major	<i>(Abudefduf vaigiensis)</i>
444 Marbled	<i>(Entomacrodus marmoratus)</i>	188 Oval Chromis	<i>(Chromis ovalis)</i>
441 Red Sailfin	<i>(Exallias brevis)</i>	184 Rock Damsel	<i>(Plectroglyphidodon sindonis)</i>
443 Red Speckled	<i>(Cirripectes variolosus)</i>	190 Threespot Chromis	<i>(Chromis verator)</i>
442 White speckled	<i>(Cirripectes obscurus)</i>	189 Whitetail Chromis	<i>(Chromis leucurus)</i>
446 Zebra Rockskipper	<i>(Istiblennius zebra)</i>	186 Yellow-eye Damsel	<i>(Stegastes fasciolatus)</i>
Boxfishes - Trunkfishes	(Ostraciidae)	Eels	Moray & Others
323 Spiny Cowfish	<i>(Lactoria diaphana)</i>	423 Brown Moray	<i>(Gymnothorax steindachneri)</i>
320 Spotted Boxfish	<i>(Ostracion meleagris)</i>	422 Common Moray	<i>(Gymnothorax eurostus)</i>
322 Thornback Cowfish	<i>(Lactoria fornasini)</i>	414 Dark-banded Moray	<i>(Echidna polyzona)</i>
319 Trunkfishes	<i>(Ostraciidae)</i>	417 Dragon Moray	<i>(Enchelycore pardalis)</i>
321 Whitley's Trunkfish	<i>(Ostracion whitleyi)</i>	411 Dwarf Moray Eel	<i>(Gymnothorax melatremus)</i>
199 Butterflyfishes	(Chaetodontidae)	410 Moray	<i>(Muraenidae)</i>
207 Blacklip (Kleini, Coral)	<i>(Chaetodon kleinii)</i>	426 Mustache Conger	<i>(Conger cinereus)</i>
205 Bluestripe	<i>(Chaetodon fremblii)</i>	413 Snowflake Moray	<i>(Echidna nebulosa)</i>
218 Chevron	<i>(Chaetodon trifascialis)</i>	429 Tiger Moray	<i>(Scuticaria tigrina)</i>
214 Fourspot	<i>(Chaetodon quadrimaculatus)</i>	425 Undulated Moray	<i>(Gymnothorax undulatus)</i>
228 Golden Banded	<i>(Prognathodes roa excelsa)</i>	416 Uropterygius knighti	<i>(Uropterygius knightii)</i>
216 Lemon (Citron)	<i>(Chaetodon citrinellus)</i>	415 Uropterygius spp.	<i>(Uropterygius spp.)</i>
222 Lined	<i>(Chaetodon lineolatus)</i>	421 Whitemouth Moray	<i>(Gymnothorax meleagris)</i>
200 Longnose	<i>(Forcipiger flavissimus)</i>	424 Yellowhead	<i>(Gymnothorax rueppelliae)</i>
217 Milletseed	<i>(Chaetodon miliaris)</i>	420 Yellowmargin Moray	<i>(Gymnothorax flavimarginatus)</i>
227 Orange Margin	<i>(Prognathodes basabe)</i>	419 Yellowmouth Moray	<i>(Gymnothorax nudivomer)</i>
213 Ornate (Clown)	<i>(Chaetodon ornatissimus)</i>	412 Zebra Moray	<i>(Gymnothorax zebra)</i>
212 Oval	<i>(Chaetodon lunulatus)</i>	428 Magnificent Snake Eel	<i>(Myrichthys magnificus)</i>
215 Pebbled	<i>(Chaetodon multicinctus)</i>	427 Snake Eels and Worm Eels	<i>(Ophichthidae)</i>
202 Pennantfish	<i>(Heniochus diphreutes)</i>	310 Filefishes	(Monacanthidae)
204 Pyramid (Zoster)	<i>(Hemitaurichthys polylepis)</i>	313 Orange-fin	<i>(Cantherhines dumerilii)</i>
211 Raccoon	<i>(Chaetodon lunula)</i>	312 Redtail	<i>(Pervagor spilosoma)</i>
201 Rare Longnose	<i>(Forcipiger longirostris)</i>	311 Scribbled	<i>(Aluterus scriptus)</i>

Commercial Aquarium Species List

Filefishes (cont)	(Monacanthidae)	Surgeonfishes	(Acanthuridae)
314 Squaretail	(<i>Cantherhines sandwichiensis</i>)	103 Achilles Tang	(<i>Acanthurus achilles</i>)
315 Yellowtail	(<i>Pervagor aspricaudus</i>)	107 Bluelined Surgeon	(<i>Acanthurus nigroris</i>)
169 Goatfishes	(Mullidae)	114 Chevron Tang	(<i>Ctenochaetus hawaiiensis</i>)
170 Bandtail	(<i>Upeneus taeniopterus</i>)	104 Goldrim Surgeon	(<i>Acanthurus nigricans</i>)
176 Kumu - Whitesaddle*	(<i>Parupeneus porphyreus</i>)	113 Kole - Goldring	(<i>Ctenochaetus strigosus</i>)
175 Moana kali - Blue	(<i>Parupeneus cyclostomus</i>)	106 Lavender Tang (Forktail)	(<i>Acanthurus nigrofuscus</i>)
177 Moano - Manybar*	(<i>Parupeneus multifasciatus</i>)	120 Long bodied Surgeon	(<i>Naso brevirostris</i>)
178 Munu - Doublebar	(<i>Parupeneus bifasciatus</i>)	101 Manini - Convict Tang*	(<i>Acanthurus triostegus</i>)
172 Red Weke - Yellowfin*	(<i>Mulloidichthys vanicolensis</i>)	118 Naso Tang	(<i>Naso lituratus</i>)
174 Sidespot	(<i>Parupeneus pleurostigma</i>)	109 Orange-shoulder Surgeon	(<i>Acanthurus olivaceus</i>)
171 White Weke - Yellowstripe*	(<i>Mulloidichthys flavolineatus</i>)	110 Palani - Eyestripe	(<i>Acanthurus dussumieri</i>)
330 Hawkfishes	(Cirrhitidae)	111 Pualu - Yellowfin	(<i>Acanthurus xanthopterus</i>)
331 Arc-eye	(<i>Paracirrhites arcatus</i>)	112 Ringtail Surgeonfish	(<i>Acanthurus blochii</i>)
332 Blackside (Freckled, Forster's)	(<i>Paracirrhites forsteri</i>)	116 Sailfin Tang	(<i>Acanthurus veliferum</i>)
336 Longnose	(<i>Oxycirrhites typus</i>)	119 Sleek Unicorn*	(<i>Naso hexacanthus</i>)
335 Redbar	(<i>Cirrhitops fasciatus</i>)	102 Spotted Tang	(<i>Acanthurus guttatus</i>)
333 Stocky	(<i>Cirrhites pinnulatus</i>)	100 Surgeonfishes	(Acanthuridae)
334 Twospot	(<i>Amblycirrhites bimaculata</i>)	108 Thompson's Surgeon	(<i>Acanthurus thompsoni</i>)
Pipefishes	(Syngnathidae)	121 Unicorn*	(<i>Naso unicornis</i>)
504 Fantail	(<i>Doryhamphus exisus</i>)	117 Unicornfishes	
565 Pipefishes		105 Whitebar Surgeon	(<i>Acanthurus leucopareius</i>)
505 Redstripe	(<i>Doryhamphus baldwini</i>)	115 Yellow Tang	(<i>Zebrasoma flavescens</i>)
566 Seahorses		122 Moorish Idol	(<i>Zanclus cornutus</i>)
567 Spotted Seahorse	(<i>Hippocampus kuda</i>)	307 Triggerfishes	(Balistidae)
349 Porcupinefishes	(Diodontidae)	303 Black	(<i>Melichthys niger</i>)
350 Porcupinefish	(<i>Diodon hystrix</i>)	300 Blue-throat	(<i>Xanthichthys auromarginatus</i>)
351 Spiny Balloonfish	(<i>Diodon holocanthus</i>)	299 Crosshatch	(<i>Xanthichthys mento</i>)
290 Pufferfishes	(Tetraodontidae)	302 Lagoon	(<i>Rhinecanthus aculeatus</i>)
293 Amboy Toby	(<i>Canthigaster amboiensis</i>)	301 Picasso	(<i>Rhinecanthus rectangulus</i>)
291 Crown Toby	(<i>Canthigaster coronata</i>)	304 Pinktail	(<i>Melichthys vidua</i>)
294 Maze Toby	(<i>Canthigaster rivulata</i>)	305 Whiteline, Lei	(<i>Sufflamen bursa</i>)
341 Spotted Puffer	(<i>Arothron meleagris</i>)	130 Wrasses	(Labridae)
342 Stripebelly Puffer	(<i>Arothron hispidus</i>)	157 Belted (Orange-bar)	(<i>Stethojulis balteata</i>)
292 White-spot Toby	(<i>Canthigaster jactator</i>)	151 Bird	(<i>Gomphosus varius</i>)
295 Yellowtail Toby	(<i>Canthigaster epilamera</i>)	150 Blacktail	(<i>Thalassoma ballieui</i>)
400 Scorpionfishes	(Scorpaenidae)	146 Christmas	(<i>Thalassoma trilobatum</i>)
405 Devil Scorpionfish	(<i>Scorpaenopsis diabolus</i>)	131 Cigar (Alligator)	(<i>Cheilio inermis</i>)
403 Green Lionfish	(<i>Dendrochirus barberi</i>)	134 Cleaner	(<i>Labroides phthirophagus</i>)
402 Hawaiian Turkeyfish	(<i>Pterois sphex</i>)	144 Dragon	(<i>Novaculichthys taeniourus</i>)
401 Leaf Scorpion	(<i>Taenianotus triacanthus</i>)	139 Eightline	(<i>Pseudocheilinus octotaenia</i>)
407 Speckled Scorpionfish	(<i>Sebastapistes conioarta</i>)	153 Elegant Coris	(<i>Coris venusta</i>)
406 Titan Scorpionfish	(<i>Scorpaenopsis cacopsis</i>)	160 Flag	(<i>Anampses cuvier</i>)
Squirrelfishes & Soldierfishes	(Holocentridae)	162 Flame	(<i>Cirrhilabrus jordani</i>)
376 Bigscale Soldier	(<i>Myripristis berndti</i>)	140 Fourline	(<i>Pseudocheilinus tetrataenia</i>)
377 Brick Soldier	(<i>Myripristis amaena</i>)	133 Hogfish	(<i>Bodianus bilunulatus</i>)
374 Crown Squirrel	(<i>Sargocentron diadema</i>)	155 Lined Coris	(<i>Coris ballieui</i>)
375 Hawaiian Squirrel	(<i>Sargocentron xantherythrum</i>)	165 Moon (Lyretail)	(<i>Thalassoma lunare</i>)
378 Shoulder-bar Soldier	(<i>Myripristis kuntee</i>)	161 Ornate (Pinkface)	(<i>Halichoeres ornatissimus</i>)
370 Squirrelfish	(Holocentridae)	143 Peacock Razorfish	(<i>Xyrichtys pavo</i>)
373 Whitespot Squirrel	(<i>Sargocentron punctatissimum</i>)	156 Pencil	(<i>Pseudojuloides cerasinus</i>)
		158 Potter's	(<i>Macropharyngodon geoffroy</i>)

Commercial Aquarium Species List

Wrasses (cont)	(Labridae)	Algae (Limu - Seaweed) (cont)	
145 Razorfish	(<i>Xyrichtys umbrilatus</i>)	803 Red Kelp	(<i>Halymenia</i> spp.)
159 Red-tail (Psychedelic)	(<i>Anampses chrysocephalus</i>)	805 Sea Lettuce	(<i>Ulva</i> spp.)
136 Ringtail	(<i>Oxycheilinus unifasciatus</i>)	Invertebrates	
148 Saddle	(<i>Thalassoma dupperey</i>)	926 Anemones	
138 Scarlett	(<i>Pseudocheilinus evanidus</i>)	811 Mann's Anemone	(<i>Cladactella manni</i>)
142 Sharp-headed	(<i>Cymalutes lecluse</i>)	812 Scabae Anemone	(<i>Heteractis malu</i>)
132 Sunrise Wrasse	(<i>Bodianus sanguines</i>)	931 Crustaceans: Crabs	
147 Sunset	(<i>Thalassoma lutescens</i>)	863 Aama	(<i>Grapsus tenuicrustatus</i>)
149 Surge	(<i>Thalassoma purpureum</i>)	933 Anemone Hermit (Orange-leg)	(<i>Dardanus gemmatus</i>)
137 Twospot	(<i>Oxycheilinus bimaculatus</i>)	860 Black Zanthid	
152 Yellowstriped Coris	(<i>Coris flavovittata</i>)	861 Flat Rock (Sally Lightfoot)	(<i>Percnon planissimum</i>)
154 Yellowtail Coris	(<i>Coris gaimard</i>)	862 Pom-Pom	(<i>Lybia</i>)
Other Fish		932 Yellow Hairy Hermit	(<i>Aniculus maximus</i>)
280 Aholehole - Hawaiian Flagtail*	(<i>Kuhlia sandvicensis</i>)	937 Halloween Hermit Crab	(<i>Calcinus elegans</i>)
360 Aweoweo - Bigeyes	(Priacanthidae)	934 Hermits (small & misc.)	(Diogenidae)
780 Baitfish		938 Zebra Hermit Crab	(<i>Clibanarius zebra</i>)
630 Bat fish	(Onocephalidae)	854 Arrow	(Majidae)
570 Boarfish	(Histiopteridae)	865 Strawberry	(Xanthidae)
500 Cornetfish	(<i>Fistularia commersonii</i>)	800 Crustaceans: Crayfish	
465 Dartfish	(Microdesmidae)	909 Crustaceans: Lobsters	
680 Dwarf rockfish	(<i>Canthidermis maculatus</i>)	936 Hawaiian Red Lobster	(Enoplometiidae)
610 Frogfish	(Antennariidae)	910 Spiny Lobster*	(Palinuridae)
460 Gobies	(Gobiidae)	912 Slipper Lobster*	(Scyllaridae)
560 Hawaiian Morwong	(<i>Cheilodactylus vittatus</i>)	949 Crustaceans: Shrimp	
670 Helmet Gurnard	(<i>Dactyloptena orientalis</i>)	945 Cleaner	(<i>Lysmata amboinensis</i>)
470 Lefteye Flounders	(Bothidae)	948 Coral-banded	(<i>Stenopus hispidus</i>)
480 Lizardfishes	(Synodontidae)	943 Ghost	(<i>Stenopus pyronotus</i>)
790 Mollies	(Poecilidae)	944 Green	(Hippolytidae)
530 Moi - Threadfin*	(<i>Polydactylus sexfilis</i>)	946 Harlequin	(<i>Hymenocera picta</i>)
700 Mu - Bigeye Emperor	(<i>Monotaxis grandoculis</i>)	866 Opa'e ula - Red Pond	(<i>Halocaridina rubra</i>)
270 Nenu	(<i>Kyphosus bigibbus</i>)	947 Red-Stripe	(<i>Saron marmoratus</i>)
250 Papio - Jacks*	(Carangidae)	880 Echinoderms: Brittlestars (Ophiuroidea)	
715 Redspotted Sandperch	(<i>Parapercis schauinslandii</i>)	952 Echinoderms	
475 Righteye Flounders	(Pleuronectidae)	953 Echinoderms: Sea Cucumbers (Holothuroidea)	
620 Saltwater cats	(Brotulidae)	876 Black	(<i>Holothuria atra</i>)
690 Sand Tilefish	(<i>Malacanthus brevirostris</i>)	877 Strawberry or Pink	(<i>Holothuria edulis</i>)
240 Scaridae	(Scaridae)	878 Stubborn	(<i>Holothuria pervicax</i>)
795 Sharks		955 Echinoderms: Seastars (Asteroidea)	
522 Sharp-jaw Mullet	(<i>Neomyxus leuciscus</i>)	881 Blue Linckia	(<i>Linckia guildingi</i>)
520 Striped Mullet*	(<i>Mugil cephalus</i>)	882 Common Linckia	(<i>Linckia multifora</i>)
510 Stripey	(<i>Microcanthus strigatus</i>)	954 Crown-of-Thorns	(<i>Acanthaster planci</i>)
267 Ta'ape - Blueline Snapper	(<i>Lutjanus kasmira</i>)	883 Cushion Star	(<i>Culcita novaeguinae</i>)
642 Toau - Blacktail Snapper	(<i>Lutjanus fulvus</i>)	884 Orange Knob	(<i>Pentacaster cumingi</i>)
490 Trumpetfish	(<i>Aulostomus chinensis</i>)	957 Echinoderms: Urchins (Echinoidea)	
230 Uhu - Parrotfishes*	(Scaridae)	891 Longspine	(<i>Echinothrix</i> or <i>Diadema</i> spp.)
398 Velvetfish	(Caracanthidae)	892 Pincushion	(<i>Tripneustes gratilla</i>)
Algae (Limu - Seaweed)		893 Shortspine	(<i>Echinometra</i> spp.)
801 Grape Calerpa	(<i>Caulerpa racemosa</i>)	956 Slate urchin	(<i>Heterocentrotus mammillatus</i>)
804 Halimeda	(<i>Halimeda</i> spp.)	928 Jellyfishes	
802 Letuce Cauerpa	(<i>Caulerpa</i> spp.)		
970 Other Algae			

Commercial Aquarium Species List

958 Molluscs	
858 Bobtail Squid	(<i>Euprymna scolopes</i>)
963 Bubble Shells	(order Cephalaspidea)
961 Nudibranchs	(order Nudibranchia)
900 Octopus*	(Octopus spp.)
859 Oval Squid	(<i>Sepioteuthis lessoniana</i>)
962 Sea Hares	(order Anaspidea)
964 Spanish Dancer	(<i>Hexabranchus sanguineus</i>)
959 Cones	(Conidae)
960 Cowries	(Cypraeidae)
852 Reticulated Cowries	(<i>Cypraea reticulata</i>)
851 Tiger Cowries	(<i>Cypraea tigris</i>)
929 Soft Corals	
818 Snowflake Coral	(<i>Carijoa riisei</i>)
965 Sponges	
922 Worms	
921 Featherduster	(<i>Sabellastarte sanctijosephi</i>)
923 Medusa Worms	(<i>Loimia medusa</i>)
825 Zoanthids	
999 Misc. (For any Invert or Fish: please describe specimen)	

Appendix 4

All photos courtesy of Paul Cox.

Aquarium Collecting Vessel Anchored off Black Rock Caves, North Kohala 2011



Aquarium Collecting Vessel Anchored off Papa Bay, Milolii, February 2014: prior coral damage apparent in trench adjacent to current anchor location; newly broken coral indicated by bright white pieces.

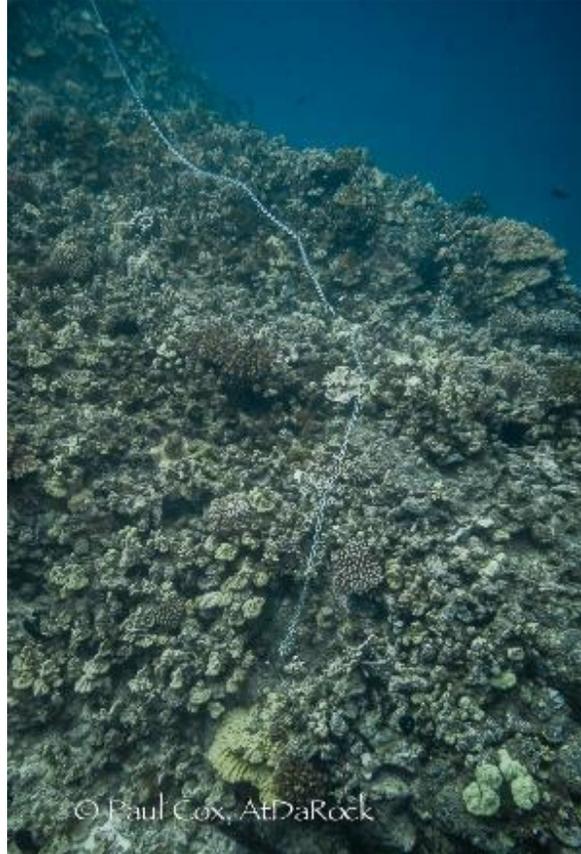


Aquarium Collecting Vessel Anchored off Papa Bay, Milolii, March 2014 (same vessel as in images for Feb. 2014).



Aquarium Collecting Vessel Anchored off Papa Bay, Milolii, September 2014: (different vessel from Feb/March photos).





Aquarium collectors crawling through coral wearing knee pads. Note: none of these divers are wearing buoyancy control devices—used to maintain neutral buoyancy above the coral—which are standard equipment for recreational scuba divers. Instead they use a backpack designed to contribute to negative buoyancy, along with weight belts.





Fins, sticks, nets, buckets in the coral



Appendix 5

Examples of retail offerings of fish <2" captured in Hawai'i.

The screenshot shows the LiveAquaria website interface. At the top, there is a navigation bar with 'LiveAquaria' logo, a search bar, and 'FREE SHIPPING' badge. Below the navigation bar are category links: DIVER'S DEN, FRESHWATER FISH, FRESHWATER PLANTS, FRESHWATER INVERTS, POND, FOODS, AQUARIUM SUPPLIES, SALE & CLEARANCE, MARINE FISH, CORAL, REEF CLEANER PACKS, MARINE INVERT/PLANT, REEF ROCK, and ORA FISH/CORAL/INV. A red banner below the navigation bar reads 'View our Holiday Shipping Schedule for Timely & Safe Delivery SEE DETAILS >'. The breadcrumb trail is 'Home > Marine Fish > Customer Favorites, Marine Fish > Yellow Tang, Hawaii'. The main product image shows a vibrant yellow tang fish. To the right of the image, the product is listed as 'ON SALE! Yellow Tang, Hawaii (Zebrasoma flavescens) Item: CN-74760' with a price reduction from '\$64.99' to '\$44.99' (SAVE up to 31%). Below the image, there is a 'Select Product' section with three options: 'Small' (Was: \$64.99, Now: \$44.99), 'Small/Medium' (\$69.99), and 'Medium' (\$74.99). A 'Quantity' selector is set to 1, and the 'Subtotal' is \$44.99. A yellow 'Add to Cart >' button is prominent. Below the button, there is a section for 'Additional locales and sizes may be available!' with an 'Email me when available >' button.

Overview

The Yellow Hawaiian Tang is for many aquarists, the definitive fish of home saltwater aquariums. With its oval-shaped, vibrant yellow body, *Zebrasoma flavescens* brightens any marine system. The Yellow Hawaiian Tang is an active swimmer that will glide throughout your aquarium in near constant motion, acting as an aquarium tour guide of sorts to any onlooker who follows its meandering swim path.

Though iconic to the reefs of Hawaii, the Yellow Hawaiian Tang's natural habitat is actually widespread throughout the Pacific Ocean as far as Indonesia and the Great Barrier Reef. The Yellow Hawaiian Tang is also known as the Yellow Sailfin Tang or Yellow Surgeonfish. For best care, it should be housed in an aquarium of at least 100 gallons with ample room to swim. Like other Tangs, this member of the Acanthuridae family demonstrates territorial aggression towards its own species, or Tangs in general. Therefore, it is best to keep just one Yellow Hawaiian Tang per aquarium, unless multiple Yellow Hawaiian Tangs are introduced into the system simultaneously.

Although the Yellow Hawaiian Tang will eat meaty foods along with the other fish in the aquarium, it is important the Yellow Hawaiian Tang is offered plenty of marine based seaweed and algae. This will strengthen its immune system, reduce aggression and improve overall health. Offer dried seaweed tied to a rock or use a veggie clip, and feed at least three times per week. Sea Veggies, Seaweed Salad and Ocean Nutrition are all ideal products and are very easy to use.

The Yellow Hawaiian Tang is a very common, extremely popular, and hardy addition to any fish-only or reef aquarium system.

Approximate Purchase Size: Small: 1-1/2" to 2-1/4"; Small/Medium: 2-1/4" to 3-1/4"; Medium: 3-1/4" to 4-1/4"; Medium/Large: 4-1/4" - 5-1/4" Large: 5-1/4" to 6"

Retrieved from <https://www.liveaquaria.com/product/392/?pcatid=392> on Dec. 20, 2019



Due to variations within species, your item may not look identical to the image provided.

Yellow Tang - Hawaii

(*Zebrasoma flavescens*) Item: CN-74760

\$ 54.99

Select Product

Yellow Tang (Hawaii) - Small \$ 54.99	Yellow Tang (Hawaii) - Small/Medium \$ 59.99	Yellow Tang (Hawaii) - Medium \$ 64.99
------------------------------------------	-------------------------------------------------	-------------------------------------------

Quantity

− 1 +

Subtotal: \$54.99

[Add to Cart >](#)

Additional locales and sizes may be available!

[Email me when available >](#)



14-Day Guarantee

[Learn more >](#)

Ships from our [California Facility](#) [Shipping Info >](#)

Overview

The Yellow Hawaiian Tang is for many aquarists, the definitive fish of home saltwater aquariums. With its oval-shaped, vibrant yellow body, *Zebrasoma flavescens* brightens any marine system. The Yellow Hawaiian Tang is an active swimmer that will glide throughout your aquarium in near constant motion, acting as an aquarium tour guide of sorts to any onlooker who follows its meandering swim path.

Though iconic to the reefs of Hawaii, the Yellow Hawaiian Tang's natural habitat is actually widespread throughout the Pacific Ocean as far as Indonesia and the Great Barrier Reef. The Yellow Hawaiian Tang is also known as the Yellow Sailfin Tang or Yellow Surgeonfish. For best care, it should be housed in an aquarium of at least 100 gallons with ample room to swim. Like other Tangs, this member of the Acanthuridae family demonstrates territorial aggression towards its own species, or Tangs in general. Therefore, it is best to keep just one Yellow Hawaiian Tang per aquarium, unless multiple Yellow Hawaiian Tangs are introduced into the system simultaneously.

Although the Yellow Hawaiian Tang will eat meaty foods along with the other fish in the aquarium, it is important the Yellow Hawaiian Tang is offered plenty of marine based seaweed and algae. This will strengthen its immune system, reduce aggression and improve overall health. Offer dried seaweed tied to a rock or use a veggie clip, and feed at least three times per week. Sea Veggies, Seaweed Salad and Ocean Nutrition are all ideal products and are very easy to use.

The Yellow Hawaiian Tang is a very common, extremely popular, and hardy addition to any fish-only or reef aquarium system.

Approximate Purchase Size: Small: 1-1/2" to 2-1/4"; Small/Medium: 2-1/4" to 3-1/4"; Medium: 3-1/4" to 4-1/4"; Medium/Large: 4-1/4" - 5-1/4" Large: 5-1/4" to 6"

Home > Marine Fish > Everyday LOW PRICE Favorites! > Yellow Tang - Hawaii



ON SALE! SAVE up to 20%!

Yellow Tang - Hawaii

(*Zebrasoma flavescens*) Item: CN-74760

~~\$ 49.99~~ **\$ 39.99**

Select Product

<p>Yellow Tang (Hawaii) - Small Was: \$ 49.99 Now: \$ 39.99</p>	<p>Yellow Tang (Hawaii) - Small/Medium \$ 54.99</p>	<p>Yellow Tang (Hawaii) - Medium \$ 59.99</p>
---------------------------------------------------------------------------------------	---------------------------------------------------------	---------------------------------------------------

Quantity

 1 

Subtotal: \$39.99

Add to Cart >

Additional locales and sizes may be available!

Email me when available >

Overview

The Yellow Hawaiian Tang is for many aquarists, the definitive fish of home saltwater aquariums. With its oval-shaped, vibrant yellow body, *Zebrasoma flavescens* brightens any marine system. The Yellow Hawaiian Tang is an active swimmer that will glide throughout your aquarium in near constant motion, acting as an aquarium tour guide of sorts to any onlooker who follows its meandering swim path.

Though iconic to the reefs of Hawaii, the Yellow Hawaiian Tang's natural habitat is actually widespread throughout the Pacific Ocean as far as Indonesia and the Great Barrier Reef. The Yellow Hawaiian Tang is also known as the Yellow Sailfin Tang or Yellow Surgeonfish. For best care, it should be housed in an aquarium of at least 100 gallons with ample room to swim. Like other Tangs, this member of the Acanthuridae family demonstrates territorial aggression towards its own species, or Tangs in general. Therefore, it is best to keep just one Yellow Hawaiian Tang per aquarium, unless multiple Yellow Hawaiian Tangs are introduced into the system simultaneously.

Although the Yellow Hawaiian Tang will eat meaty foods along with the other fish in the aquarium, it is important the Yellow Hawaiian Tang is offered plenty of marine based seaweed and algae. This will strengthen its immune system, reduce aggression and improve overall health. Offer dried seaweed tied to a rock or use a veggie clip, and feed at least three times per week. Sea Veggies, Seaweed Salad and Ocean Nutrition are all ideal products and are very easy to use.

The Yellow Hawaiian Tang is a very common, extremely popular, and hardy addition to any fish-only or reef aquarium system.

Approximate Purchase Size: Small: 1-1/2" to 2-1/4" **Small/Medium:** 2-1/4" to 3-1/4"; **Medium:** 3-1/4" to 4-1/4"; **Medium/Large:** 4-1/4" - 5-1/4" **Large:** 5-1/4" to 6"

Appendix 6

Live Arrive/Stay Alive Restrictions on Guarantees

The screenshot shows the Blue Zoo Aquatics website. The main product page is for "Bandit Angelfish" (Apolemichthys arcuatus). The page includes a navigation menu on the left, a search bar, and a "Subscribe to our e-Newsletter" form. A "Curator's Note" states that the fish are best kept in marine aquariums using live rock for filtration or decoration. A "FREE SHIPPING" banner is visible, along with a "FREE Gift With Every Order Over" promotion. A table lists different sizes of the fish with their prices and stock status. A "Guarantee Restriction" popup is overlaid on the right side of the page, explaining that while all livestock has a guarantee to arrive alive, a guarantee beyond arrival is not offered for this species due to stress factors in aquarium conditions.

Bandit Angelfish

QUICK FACTS

Scientific Name	Apolemichthys arcuatus
Reef Compatible	With Caution
Care Level	Expert-only
Disposition	Semi-aggressive
Minimum Tank Size	100 gallons
Mature Size	7 inches
Diet	Omnivore
Range	Hawaii
Size Class	9

Curator's Note
The Bandit Angelfish is best kept in marine aquariums using live rock for filtration or decoration. They are natural sponge eaters and will graze on the rock work until they can weaned onto prepared foods.

Guarantee Restriction:

All of our livestock has a guarantee to arrive alive. However for this species we cannot offer a guarantee beyond arrival for one or more reasons outlined below.

Some species do not handle stress from environmental conditions well. These stresses can include poor water quality, harassment from tank mates or confined aquarium conditions. When stressed, these species can lose the ability to ward off infection and disease. Other species have such specialized feeding requirements that is difficult to recreate in an aquarium and may succumb to mal nutrition.

[view full terms of guarantee](#)

Available at: <https://www.bluezooaquatics.com/productdetail.asp?cid=8&pid=145&did=1>

Guarantee Restriction: https://www.bluezooaquatics.com/guarantee_restriction.htm

Search Bluezoo
All Departments

butterflyfish



Subscribe to our e-Newsletter

* Email
First Name
Last Name

* Lists
 Collectors Choice Update List
 General Customer Mailing List
* Required Field
Submit

You are here: [Home](#) » [Fish](#) » [Butterflyfish](#) » [Blue Stripe Butterflyfish](#)



Blue Stripe Butterflyfish



QUICK FACTS

Scientific Name	Chaetodon frembli
Reef Compatible	No
Care Level	Intermediate
Disposition	Peaceful
Min. Tank Size	75 gallons
Mature Size	5 inches
Diet	Omnivore
Range	Hawaii
Size Class	9 view chart

view all of our current promotions

- FISH
- GIFT CERTIFICATES
- Captive Bred & Tank
- Raised Fish
- Angels-Dwarf
- Angels-Large
- Anglers & Frogfish
- Anthias
- Batfish
- Basslets
- Blennies
- Boxfish
- Butterflyfish
- Cardinals
- Clownfish
- Damsels
- Dartfish & Tlefish
- Dragonets
- Eels
- Filefish
- Goatfish
- Gobies
- Groupers & Hamlets
- Grunts & Sweetlips
- Hawkfish
- Hoofish
- Jawfish
- Lionfish
- Pseudochromis & Dottybacks
- Pufferfish
- Rabbitfish
- Rays
- Seahorses & Pipefish
- Sharks
- Snappers & Fusiliers
- Squirrelfish
- Tangs & Surgeonfish
- Triggerfish
- Wrasses
- Wrasses-Reef Safe

FREE SHIPPING

FREE Gift With Every Order Over

\$200.00	Zoanthids	OR	Lawnmower Blenny	OR	Shroom Grab Bag	OR	Polyp Grab Bag	OR	Yellow Tang	OR	BZA Mixed Polyp Rock	OR	Blue Tang
----------	-----------	----	------------------	----	-----------------	----	----------------	----	-------------	----	----------------------	----	-----------

PLACE YOUR ORDER HERE | SIZE CLASS CHART | COMPATIBILITY CHART

Item #	Description	Price	Quantity	Stock Status
001583	Blue Stripe Butterflyfish, Small: over 1.5-2", Hawaii * Restriction On Guarantee	\$94.95		email me
001589	Blue Stripe Butterflyfish, Medium: over 2-3", Hawaii * Restriction On Guarantee	\$99.95		email me
001591	Blue Stripe Butterflyfish, Large: over 3-4.5", Hawaii * Restriction On Guarantee	\$119.95		email me

Guarantee Restriction - Mozilla Fir...
https://www.bluezooaquatics.com/ 80%

Guarantee Restriction:

All of our livestock has a guarantee to arrive alive. However for this species we cannot offer a guarantee beyond arrival for one or more reasons outlined below.

Some species do not handle stress from environmental conditions well. These stresses can include poor water quality, harassment from tank mates or confined aquarium conditions. When stressed, these species can lose the ability to ward off infection and disease. Other species have such specialized feeding requirements that is difficult recreate in a aquarium and may succumb to mal nutrition.

[view full terms of guarantee](#)

Available at: <https://www.bluezooaquatics.com/productdetail.asp?cid=26&pid=558&did=1>

Guarantee Restriction: https://www.bluezooaquatics.com/guarantee_restriction.htm

- Search Bluezoo
- All Departments
- FISH
- GIFT CERTIFICATES
 - Captive Bred & Tank
 - Raised Fish
 - Angels-Dwarf
 - Angels-Large
 - Anglers & Frogfish
 - Anthias
 - Batfish
 - Basslets
 - Blennies
 - Boxfish
 - Butterflyfish
 - Cardinals
 - Clownfish
 - Damselfish
 - Dartfish & Tilefish
 - Dragonets
 - Eels
 - Filefish
 - Goatfish
 - Gobies
 - Groupers & Hamlets
 - Grunts & Sweetlips
 - Hawkfish
 - Hogfish
 - Jawfish
 - Lionfish
 - Pseudochromis & Dottybacks
 - Pufferfish
 - Rabbitfish
 - Rays
 - Seahorses & Pipefish
 - Sharks
 - Snappers & Fusiliers
 - Sourleifish
 - Tangs & Surgeonfish
 - Triggerfish
 - Wrasses
 - Wrasses-Reef Safe

butterflyfish



You are here: [Home](#) » [Fish](#) » [Butterflyfish](#) » [Fourspot Butterflyfish](#)



Fourspot Butterflyfish

QUALITY LIVESTOCK GUARANTEE

QUICK FACTS

Scientific Name	Chaetodon quadrimaculatus
Reef Compatible	No
Care Level	Intermediate
Disposition	Peaceful
Min. Tank Size	50 gallons
Mature Size	6 inches
Diet	Carnivore, Pocillopora polyps
Range	Western Pacific, Hawaii
Size Class	9

[view chart](#)

Subscribe to our e-Newsletter

* Email

First Name

Last Name

* Lists

Collector's Choice Update List

General Customer Mailing List

* Required Field

[view all of our current promotions](#)

FREE SHIPPING

FREE Gift With Every Order Over

\$200.00	\$300.00	\$500.00
Zoanthids	Shroom Grab Bag	BZA Mixed Polyp Rock
OR	OR	OR
Lawnmower Blenny	Polyp Grab Bag	Blue Tang

PLACE YOUR ORDER HERE SIZE CLASS CHART COMPATIBILITY CHART

Item #	Description	Price	Quantity	Stock Status
003735	Fourspot Butterflyfish, Small: over 1.5-2", Hawaii * Restriction On Guarantee	\$54.95	<input type="text"/>	email me
005913	Fourspot Butterflyfish, Medium: over 2-3", Hawaii * Restriction On Guarantee	\$64.95 ON SALE \$51.96	<input type="text"/>	in stock
003737	Fourspot Butterflyfish, Large: over 3-4.5", Hawaii * Restriction On Guarantee	\$89.95	<input type="text"/>	email me

Guarantee Restriction - Mozilla Fir...

https://www.bluezooaquatics.com/ 80%

Guarantee Restriction:

All of our livestock has a guarantee to arrive alive. However for this species we cannot offer a guarantee beyond arrival for one or more reasons outlined below.

Some species do not handle stress from environmental conditions well. These stresses can include poor water quality, harassment from tank mates or confined aquarium conditions. When stressed, these species can lose the ability to ward off infection and disease. Other species have such specialized feeding requirements that is difficult to recreate in an aquarium and may succumb to malnutrition.

[view full terms of guarantee](#)

Available at: <https://www.bluezooaquatics.com/productdetail.asp?cid=26&pid=617&did=1>

Guarantee Restriction: https://www.bluezooaquatics.com/guarantee_restriction.htm



Please enter your search term here



Home > Popular Category > Salt Water Fish H-Z > Wrasses > Golden Cleaner Wrasse (Hawaii) - Labroides phthirophagus - Cleaner Royal -

Golden Cleaner Wrasse (Hawaii) - Labroides phthirophagus - Cleaner Royal Cleaner Wrasse



Fresh Marine

roll over image to magnify



Print This Page



Bookmark This Page



Shopping with us is Safe Guaranteed

Aquarium suitability:	
Care level:	Expert Only!!! Not Cover Under Arrive Guaranteed
Behavior:	Peaceful
Minimum tank size:	30 Gallon
Maximum size:	3.9 inches
Reef compatibility:	Yes
Diet:	Carnivore
Origin:	Hawaii
Family:	Labridae
Manufacturer Name:	FreshMarine
Regular Price:	\$62.99
Purchase size:	Small 1" - 2" Medium 3" - 4" Large 5" - 6"
Our Price:	\$50.50
You Save:	\$12.49 (19.83%)
Stock Code :	golden-cleaner-wrasse

Available at: <https://www.freshmarine.com/golden-cleaner-wrasse.html>

Comments on the DEIS submitted by

Angela Huntemer-Sidrane

57-068 Eleku Kuilima Place

Kahuku HI 96731

June 22nd, 2020

Concerning the Issuance of Commercial Aquarium Permits and Commercial Marine Licenses for the Island of O'ahu (Pet Industry Joint Advisory Council, Virginia)

Dear BLNR members and Chair Case,

In an attempt to organize my comments I have quoted and italicized my responses. Boldface was added in an attempt to clarify and underlined to draw attention. I apologize for any errors or shortcomings. Thank you for taking the time to read.

“The HEPA defines cumulative impacts as the impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions.”

This document does not adequately address the cumulative impacts of climate change, particularly ocean acidification and increased storm action. Coral bleaching is only one piece of the puzzle here. This document does not adequately address the cumulative impacts of other fisheries and stressors on the nearshore marine environment and/or the ocean in general.

Regarding numbers used to estimate impact, due to:

1/ self-reported / declared catch numbers,

2/ confidentiality of catches,

3/ no data on morality within the first 24 and 48 hours of captivity,

4/ lack of any reliable numbers for other near-shore fisheries,

5/ a history of unlawful taking,

-the numbers reported in the EIS are virtually meaningless for the purposes of understanding impacts.

“At present, there is no provision for the verification of submitted reports, so any catch numbers and dollar amounts should be regarded as minimum, not absolute values (DAR 2018a).

Predictions rely heavily on two studies, one for population estimates, CREP (2018), and the other for the percentage of marine life that can be extracted sustainably, (Ochavillo and Hodgson 2006).

MITIGATION:

- **Minimizing impact**
- **Limiting the degree or magnitude of action**
- **Rectifying impact**

- **Repairing, rehabilitating, restoring**
- **Reducing or eliminating impact over time**
- **Preservation and maintenance activities**
- **Compensating for the impact**
- **Replacing or providing substitutes**

Regarding potential mitigation measures, there was no mention of:

- 1/reducing pre-retail mortality
- 2/limiting the degree or magnitude of action
- 3/increasing captive breeding
- 4/any other attempt to reduce and limit impact overall.

Regarding questions that needed to be have been answered by the EIS:

1. The effects of the Commercial Aquarium Fishery on Flame Wrasse (*Cirrhilabrus jordani*) and Yellow Tang (*Zebrasoma flavescens*) and the estimated rate of annual take.

- *See above on figures used. There is no way to estimate effects if the correct numbers for population, extraction and reproductive are not available.*

2. The adequacy of the analysis presented in the DEA, including but not limited to removal and replenishment rates for vulnerable species; specifically, how is the estimated sustainable range of 5% to 25% annual take of the estimated total population arrived at, and should the threshold be 5% or 25%.

“Ochavillo and Hodgson (2006) suggest collection of between 5% and 25% is sustainable for various reef species in the Philippines that are similar to those found on O’ahu (e.g., tang, wrasse, butterflyfish, angelfish, triggerfish). Similar data for the species collected on O’ahu are not available to determine DRAFT ENVIRONMENTAL IMPACT STATEMENT Environmental Consequences 79 species-specific sustainable thresholds; therefore, this research represents the best available science.”

- *This is not data on what is sustainable and what is not. These are suggestions. The document clearly says “Similar data for the species collected on O’ahu are not available to determine DRAFT ENVIRONMENTAL IMPACT STATEMENT Environmental Consequences...” If that is the best available science, we clearly need more.*
- *The entire DEIS document relied pretty much exclusively on Ochavillo and Hodgson (2006). There is no detail therein regarding actual population impact or replenishment rates for the impacted areas on Oahu. Oahu has typically experienced more stressors than the Island of Hawaii for example but this DEIS relies more heavily on data from other places and almost none from Oahu. There is no answer to the question of how or why a rate of extraction should be, or could be 5% to 25%.*
- *The extrapolation of figures from a single study, from in the Philippines, referred to over and over again, is clearly inadequate in this regard.*

3. The interpretation of data presented in the DEA, including the analysis of NOAA NMFS Coral Reef Ecosystem Project (CREP) data versus DLNR Division of Aquatic Resources West Hawai'i Aquarium Project (WHAP) data.

- *Comparisons of data from CREP and WHAP may, or may not relate to Oahu's nearshore marine ecosystem for obvious reasons.*

4. Conservation measures to minimize or avoid impacts to target species, and specifically, whether other alternatives might be proposed to minimize or avoid impacts other than the two presented of no action, with no Aquarium Permits issued, and the preferred alternative of programmatic issuance of Aquarium Permits for the Island of Oahu - such as consideration of specific management measures for Flame Wrasse, Yellow Tang, or other species."

- *This study failed to consider many things. One of the most glaring is a lack of "no aquarium collection on Oahu" as an alternative. The No Action alternative would continue to allow unregulated extraction of wildlife from reef habitats which runs contrary to the mission of DLNR.*
- *The action regarding the Waikiki MLCD is indicative of a complete lack of effort in this regard. The aquarium collectors are not the ones mitigating in this regard, it is not theirs to give away, this is an action of the State. This is an action that the State could take, along with others, to protect coral reef habitats.*
- *Regarding Alternatives Dismissed:*

"Full moratorium on commercial aquarium collection - This alternative was dismissed because it does not meet the Applicant's need to continue commercial aquarium fishers' livelihoods."

- *This is not an adequate reason for dismissing this alternative. Livelihoods can change, and sometimes they must, as evidenced by the impacts of COVID 19. Reef habitats cannot.*
- ***Uncertainty regarding population estimates are repeated in proposed alternatives and are dismissed. Uncertainties are no different in the preferred action.***

"Moratorium on species experiencing population declines - This alternative was dismissed because it is unknown which, if any, species are experiencing population declines, as population trend data is not available for the fish species analyzed in this EIS for the island of O'ahu. Therefore, this alternative could not be meaningfully developed or analyzed."

- *This could pretty well sum up the lack of data available.*

• Significance Criteria #1 - Is the annual take of cumulative numbers of fish as a percentage of the estimated population an irrevocable loss or destruction of said populations?

- *The answer to this question remains unknown given the data (or lack thereof) presented.*

• Significance Criteria #2 - To what extent does the take of aquarium fish curtail the use of the environment, including:

Aquatic invasive algae control

Tourism industry

Integrity of diverse aquatic ecosystems

- *Algae control is asserted to be affected to a negligible degree.*
- *Places such as Palau have increased their value on the tourism front by banning aquarium collection and commercial fishing. The modern, sophisticated traveler is attracted to places that values protection over extraction.*
- *There can be no doubt that, given the pressures being placed on all ecosystems today that any removal of "rivets" in said systems is to be discouraged. Although this concept is central to ecosystem management the authors of the DEIS are reticent to point to it.*

• Significance Criteria #3 - Does the take of aquarium fish conflict with the state's long-term environmental goals?

- DLNR Mission Statement:

'Enhance, protect, conserve and manage Hawai'i's unique and limited natural, cultural, and historic resources held in public trust for current and future generations of the people of Hawai'i nei, and its visitors, in partnership with others from the public and private sectors.' In pursuit of this mission, the DLNR has compiled, analyzed, and reported on the many facets of Hawai'i's socioeconomic, cultural, physical, and biological resources that make up the affected environment. The following sections rely heavily on the DLNR's Hawai'i's Comprehensive Wildlife Conservation Strategy (CWCS; Mitchell et al. 2005) and the DLNR's Hawai'i's State Wildlife Action Plan (SWAP; DLNR 2015), with numerous other sources cited as appropriate."

- *This document "relies heavily" on the DLNR documents mentioned above but fails to answer the questions that DLNR posed. The onus is on the applicant, not the approving agency, to provide the answers.*

• Significance Criteria #4 - To what extent does the take of aquarium fish impact cultural practices in the state?

- *That remains unknown. What we do know is, after approximately 100 pages of an interesting Cultural Impact Assessment, that extracting creatures from the reefs for ornamental purposes, does not have any relationship to Hawaiian traditions. It may in fact run contrary to them.*

• Significance Criteria #8 - What is the cumulative impact of the take of aquarium fish when combined with:

Commercial take of aquarium fish using other legal methods

Recreational take of aquarium fish

Commercial and non-commercial take of aquarium fish for consumption (particularly the Achilles Tang and Kole)

- *These questions remain unanswered. There is insufficient data on these activities on Oahu.*

“The commercial aquarium fishery has contributed an average of \$2,172,028 (inflation-adjusted 2019 dollars) to the State’s economy over the past 18 years (Table 4-1). According to DAR (2019a), the marine aquarium fishery is the most economically valuable commercial inshore fishery in the State of Hawai‘i.”

- *So lacking any cultural significance, this fishery is valuable only financially to the recipients of any permits, collectors (legal and illegal) without permits, and dealers and retailers in reef wildlife used for ornamental purposes.*
-

Consider these references to uncertainty:

“For the Yellow Tang, all alternatives under consideration may have a significant negative cumulative impact if the magnitude of the other cumulative impacts, which cannot be quantified at this time, when added to commercial aquarium collection, results in a significant population decline.

“It is acknowledged that, in addition to the number of fish collected, incidental mortality may occur in fish that are released. However, there are no data available to analyze these impacts, and it is therefore assumed that the magnitude of these impacts would not change from what has historically occurred.”

“Sixteen of the 20 top collected species would be collected at a rate of less than 1% of their population annually (Table 5-2). Of the remaining four species, the Potter’s Angelfish and Kole would both be collected at less than 2% of their population annually (Table 5-2). In addition, the IUCN has noted that, while popular, commercial aquarium collection is not considered a major threat to the Kole, and there is no evidence of declines from harvesting (McIlwain et al. 2012b), and that the collection of Potter’s Angelfish for the aquarium trade is not considered to be impacting the global population (Pyle and Myers 2010a). The Flame Wrasse would be collected at a rate of 4.1% to 8.9% of the CREP population estimate; however, as described in Section 4.4.4.6, Kane and Tissot (2007) found densities of Flame Wrasse to be up to 1,000 times greater at depths below the CREP survey limits. Therefore, it is not possible to know the exact proportion of the population that would be collected for this species, though it is assumed to be less than 1% of its overall population.

- *How can we accept estimated percentages of populations - but no comprehensive data exists on actual populations?*

“The last species, the Yellow Tang, would be collected at a rate of 12.6% to 27.5% of the CREP population estimates (Table 5-2), in large part due to the higher proportion of the collection that this species represents under the No Action Alternative when compared to conditions prior to the October 2017 ban on Aquarium Permits (59.2% of the collection without the use of fine mesh nets, compared to 7.0% under the PreAquarium Collection Ban Alternative).”

“However, there is uncertainty about the percent of the population that would be collected due to uncertainty in the population estimate. A recent study (Heenan et al. 2017) found that CREP

data may underestimate some population estimates due to species' behavior; specifically, the SCUBA gear used by CREP surveyors leads to significantly lower counts of target fish species by divers when compared to divers using closed-circuit re-breathers (CCR), which do not emit noisy and conspicuous bubbles. Therefore, it is conceivable that many of the impacts calculated in this DEIS are overestimates, as the populations of reef fish may be higher than CREP surveys report. Lindfield et al. (2014) found that, within areas open to fishing (e.g., not MPAs), bubble-free survey methods may record up to 260% higher fish abundance. If this estimate were applied to the Yellow Tang, the actual population could be as large as 562,962 Yellow Tang, in which case the collection of 27,335 to 59,592 per year would represent 4.9% to 10.6%, which falls within the 5% to 25% sustainable threshold (Ochavillo and Hodgson 2006)."

- *Too much uncertainty. If the data is not there, decisions for take cannot be made.*

An "intermezzo" on invertebrates:

"Between 2000 and 2017, only 44 species were reported by enough permits (>2 permits reporting from each area of collection during each year of collection) to determine total number of individuals collected. Collection areas with less than three permits reporting fall under the DAR non-disclosure agreement, in which totals are not released publicly (Section 5.1). A total of 2,971,008 individual marine invertebrates have been reported under Aquarium Permits since 2000 on the island of O'ahu, which is an average of 165,056 invertebrates per year, and a maximum of 419,804 (Table 4-5). Of the invertebrates collected from O'ahu, 89.7% (2,664,728 individuals) reported represent just three species; hermit crabs (species not specified), Feather Duster Worms, and Zebra Hermit Crabs (Table 4-5). An additional 41 species account for the other 10.3% of invertebrates reported collected (excluding non-disclosed data) (DAR 2018a). While data from 2018 (Table 4-5) show a decrease in collection of invertebrates, it is unclear whether this decrease is related to the ban on fine mesh nets. The decrease in reported collection of invertebrates could be an artifact of data confidentiality rules, or due to reporting of invertebrates via a CML Catch Report rather than the Aquarium Catch Report (see Section 4.4.6). Data on CML Catch Reports are not available at this time. Given that collection of invertebrates is not an activity governed by Aquarium Permits, the issuance or nonissuance of Aquarium Permits is not anticipated to affect the number of individuals or the species of invertebrates collected over the 5-year analysis period. Therefore, it is anticipated that these historic collection levels would continue annually over the 5-year analysis period under any of the four alternatives under consideration, for a total of 825,280 to 2,099,020 invertebrates collected over the 5-year analysis period."

- *The uncontrolled and unmonitored collection of invertebrates needs to be stopped.*

"For the 1 remaining species, the Flame Wrasse, it is estimated that approximately 28% to 61% of the known Flame Wrasse population would be collected annually. However, as described in Section 4.4.4.6, Kane and Tissot (2007) found densities of Flame Wrasse to be up to 1,000 times greater at depths below the CREP survey limits. Therefore, it is not possible to know the exact proportion of the population that would be collected for this species, though it is assumed to be less than 1% of its overall population."

- *Here are two different habitats. A species cannot be extirpated from one and assumed to be healthy, especially when there is so much uncertainty regarding population.*

SGCN

“Psychedelic Wrasse ...and Fisher’s Angelfishboth of these species tend to occur at depths greater than those surveyed by CREP. Therefore, in all likelihood, the actual populations of Psychedelic Wrasse and Fisher’s Angelfish on O’ahu are substantially greater than that reported by the CREP data, and the actual percentage of the populations removed by aquarium collection is likely lower than reported in this DEIS. Additionally, for the Fisher’s Angelfish, Pyle and Myers (2010b) reported that aquarium collection is localized and is not considering to be impacting the global population.”

- *What about the local population?*

“Due to the complexity and difficulty of collecting the Bandit Angelfish, its population will likely continue to not receive significant pressure from the commercial aquarium fishery. As noted in Section 4.4.5.2, the overall global population is considered stable (Pyle et al. 2010b).

- *Again “likely” and what about the local population?*

One cannot possibly estimate or predict the scale of “additional collection from other fishers without Aquarium Permits” because so many unknown variables drive the demand for reef wildlife by aquarium owners.

The Proposed Action is a mess of uncertainties and omissions:

Given the proposed bag limits, who is to say that a bag inspected by a DOCARE officer is not the second or third bag collected by the individual permittee for the day? There is a lack of punitive or corrective fines and confiscations of equipment for violations. The Big Island poaching case, May 2020, is a sad example of this. There must be a policy change to collect fines for infractions to the fullest extent of the regulations that exist already. Given the lack of resources for enforcement, operations should be kept simple, no nets, no bags, no collection of live fish for decoration.

Thank you for your time and consideration.

Angela Huntemer M.Ed.

From: [Diane Ware](#)
To: [Sakoda, David](#)
Subject: [EXTERNAL] DEIS AQ fish collection permits on 'Oahu-No Action Alternative
Date: Monday, June 22, 2020 8:47:12 PM

Aloha,

This DEIS fails to be transparent and identify affected parties, omits fundamental critical analyses, contains multiple inaccuracies, misrepresentations, and fails to address constitutionally protected rights of our resident citizens. If the Draft were to be accepted, the NO Action Alternative is the only acceptable proposal.

After attending the zoom meeting of the BLNR on the West Hawai'i FEIS I feel the O'ahu draft EIS also did not adequately disclose the potential environmental impacts from the issuance of twenty aquarium fishing permits for the island due to lack of meaningful limits on future catch. It does not provide enough attention to our highly depleted stocks like pāku'iku'i (Achilles tang) and other low-number species, and the document lacks adequate analysis of the near-future effects of climate change, ocean warming and coral bleaching on our reefs.

1) The DEIS fails to provide adequate baseline data making it difficult to analyze risks from cumulative factors such as unregulated collecting, under-reporting of catch, changes to habitat and impact on traditional subsistence fishing. I feel baseline data should be based on the numbers and variety of reef fishes before the trade. In the discussion of cultural impacts, we owe the indigenous cultural that relies on subsistence fishing, the abundance their ancestors enjoyed and managed in a pono manner rather than permitting unlimited take from which our reefs now suffer.

2) The Hawaiian culture and people have suffered from colonial racial disenfranchisement and profiteering from the resources of these islands for over 200 years. Now with racial injustice reckoning taking place today the State should turn to giving back and protecting resources supposedly guaranteed in Public Trust Doctrines. Repairing relationships and possibly offering reparations are more appropriate than giving fragile, irreplaceable resources to a \$200 million dollar multinational pet industry trade which is the applicant in this case. They purport to represent 20 local collectors never identified in the document.

3) Regarding the sustainability of unlimited take purported by the

applicant: There are no proposed reductions in bag limits beyond the existing O'ahu bag limits, plus one new bag limit for the flame wrasse. However, if the bag limits were to be applied as described in the DEIS 'preferred alternative', the populations of O'ahu's remaining reef fish could plummet to extinction over the first year of collecting. In fact, the bag limits would allow the total island-wide population of yellow tangs to be wiped out in 4 months, and Achilles Tang and Flame wrasse to be wiped out in less than one month. The applicant admits that data to defend the proposed "take" of our public trust resource is non-existent. (See page 19 of the document): "it is unknown which, if any, species are experiencing population declines, as population trend data is not available for the fish species analyzed in this EIS for the island of O'ahu."

A key 'study' that is referred to over and over again (Ochavillo and Hodgson - 2006) turns out to be nothing more than a guide for aquarium collecting in the Philippines, certainly not a peer reviewed study and not current. The document referenced was funded by the Transforming the Marine Aquarium Trade (TMAT) Project and the International Finance Corporation- Global Environment Facility, Marine Aquarium Market Transformation Initiative in cooperation with the Marine Aquarium Council and the Community Conservation Investment Forum. The species described in the referenced document's "natural mortality models" used to estimate a general "rule of thumb" are not found in Hawaii. And yet, that is precisely what they would pass off as "the best available science". It becomes the linchpin for many of the dubious thresholds for 'sustainability' of individual species. In it, a wide range of 5%-25% was cause for alarm by the receiving agency (DLNR/DAR) scientists. The proposing consultant has not complied with the agency's directive to clarify how its interpretation and latitude can be justified to the species level. This data should be deleted and replaced with relevant data on the subject.

4) The document lacks adequate analysis of cumulative near-future effects of climate change, ocean warming and coral bleaching on our reefs. Future serious impacts to the coastal near-shore habitat due to climate change are ignored in this document, and the proposed action alternatives do not address mitigation for the anticipated loss of coastal habitat. The FEIS preferred alternative proposes to exploit a public resource for the economic benefit of an unidentified few, at the expense of the subsistence communities, the resident public, the visitors, and the health of the state as a whole. A recent DAR announcement appealed to subsistence and recreational reef fishers to refrain from taking herbivorous fish off the reefs. This tacit recognition of the vital symbiotic service they perform in this delicate coral reef ecosystem is overdue and yet completely absent in the DEIS. The 'preferred alternative' in the document would allow (with one exception) for unlimited takes by unidentified permittees of many of these same important organisms. Any declines whether driven by, or contributed to, by the trade are simply not justified by the logic and necessity of sustainability.

Likewise, the consultant fails to address the reef ecosystem as a whole. A recent video documenting the reef ecosystem of Palmyra by The Nature Conservancy has determined that the protected system without human disturbances such as pollution, developments and overfishing is more resilient after recent bleaching incidents in 2015-2016 that were so devastating in the main Hawaiian islands. The degree of bleaching was less and the reefs recovered quickly. We must do everything possible to keep our reefs as resilient as possible and aquarium collection is not needed to sustain our island residents.

Furthermore the trade has proven to be an inhumane practice as outlined by one of the plaintiffs (The Humane Society of the US) in the West Hawai'i DEIS.

Please reject the applicants Preferred Alternative proposed.

Thank you for the opportunity to comment,

Diane Ware
808-967-8642
P. O. Box 698
99-7815 Kapoha
Volcano HI 96785

From: [Robert Culbertson](#)
To: [Sakoda, David](#)
Cc: [Lana Olson](#)
Subject: [EXTERNAL] DEIS comments for Oahu proposed Aquarium Collection
Date: Monday, June 22, 2020 1:31:56 AM

Aloha!

As a member of the Environmental Caucus of the Democratic Party of Hawaii, I submit the following comments on the Draft Environmental Impact Statement for Oahu Aquarium Fishery.

Having just gone through the same extensive process for the West Hawaii Island component, it seems redundant to recite the same flaws and deficiencies in this draft EIS as in the final EIS that was soundly rejected by the Board of Land and Natural Resources on May 22, 2020.

Nevertheless, it must be said again here that the basis for proposed limitless takings on even more wide ranging and critically depleted species listed is shocking for its abuse of logic, and utterly fails again the same legal tests set forth by the receiving agency; the Department of Land and Natural Resources. As Board Chair Suzanne Case stated then, "without meaningful limits on future catch, without enough attention to our highly depleted stocks like Paku-ikui (Achilles tang) and other low-number species, and without adequate analysis of the near-future effects of climate change, ocean warming and coral bleaching on our reefs, [the FEIS] did not adequately disclose the potential environmental impacts of the proposed ten permits."

Now we have 20 applicants for the much smaller island of Oahu amid more competitive demands of recreational and regular commercial fishers as well as expectations for the tourism industry to conserve these precious resources, and yet the industry wants to press on with a carve out of special privileges for 20 anonymous collectors to insure that their profits in markets abroad can be satisfied in perpetuity.

No regard is being paid to the values of the larger public interest or indeed of the values of the host culture as identified in the mandated Culture Impact Statement. In fact, of the 42 persons sought out for the cultural survey, only 6 agreed to collaborate, and of those few, only two including one former DLNR administrator were willing to defend the practices carried out by this

destructive industry. Yet this socio-economic impact was deemed too insignificant to matter by the consultant.

Likewise, the concerns about poaching, under reporting of catches, and inability to verify data within the current system, are all corners routinely cut and which have given rise to decades of public disgust exhibited through majorities in polling data and within many reputable conservation institutions. However, none of this discontent and systematic failures is factored into the socio-economic analysis of the EIS.

Perhaps the document's most monumental failure may be in assessing the 'cumulative' impact that the proposed preferred alternative would have on top of the various threats now looming larger than ever. As begun above by Chair Case, these threats include global warming, ocean acidification, increased frequency of coral bleaching, landward run-off and pollution, other legal forms of fishing tending to overfishing, and the general disruption of under appreciated ecological services by and within living marine communities. The burdens on our marine life are already too high! To allow *effectively* programmatic unregulated takings, in addition to all the other burdens, is the very definition of a 'cumulative' (and unwarranted!) impact. But the document obstinately declares the industry to have *no significant 'cumulative' impact*.

In a glaring admission on page 19 of the 444 page document the consultant writes, ***“it is unknown which, if any, species are experiencing population declines, as population trend data is not available for the fish species analyzed in this EIS for the island of O’ahu.”***

With no mitigations and no practical limits proposed in the EIS, decision makers are really at sea. And this dilemma was noted previously when Chair Case complained, “The fact that there are really no limits on the number of fish that can be taken I think is very, very challenging. I don’t know how you analyze impacts when you don’t know how many fish will be taken out. We don’t have the data available for statistical analysis of the impact of removing a certain amount of fish from the reef of species that are very low numbers already.”

Beyond mere complaints, it would seem most appropriate to now apply the *precautionary principle* and shut down this trade throughout the entire state.

Indeed, the Hawaii Democratic Party officially created a resolution in 2018 calling for just that very action. Now is the time to see it through!

R. A . Culbertson
member Environmental Caucus
Democratic Party of Hawaii



**Analysis of the
Draft Environmental Impact Statement**
Regarding Issuance of Commercial Aquarium Permits and
Commerical Marine Licenses for the Island of O‘ahu
Submitted by the Pet Industry Joint Advisory Council

**Gregory P. Asner PhD, Shawna A. Foo PhD,
Rachel R. Carlson MS, Roberta E. Martin PhD**

ASU Center for Global Discovery and Conservation Science
Hilo, Hawai‘i

22 June 2020

The Pet Industry Joint Advisory Council submitted a Draft Environmental Impact Statement (DEIS) to the State of Hawai'i Office of Environmental Quality Control on their analysis of the ecological and cultural impacts of issuing aquarium collection permits for the island of O'ahu. Our review largely focuses on the scientific integrity and validity of data and conclusions provided in the DEIS as it pertains to Oahu. We do not address cultural issues in our review of the DEIS.

I. Insufficient attention to the role of herbivores and ocean climate

The DEIS does not adequately assess the impacts of the aquarium industry on herbivores. The DEIS briefly mentions herbivores, stating that, "No parrotfishes, damselfishes, or rabbitfishes...occur in the top 20 list of fish species collected on O'ahu" (pg. 83). However, 53.1% of catch from the top 20 aquarium species collected under aquarium permits from O'ahu in 2000-2017 (Table 4-4, DEIS) are herbivores, information we present in **Table 1**.

Furthermore, the DEIS mischaracterizes the ecological importance of herbivores on Hawaiian reefs. Herbivores are imperative for controlling algae that can smother and outcompete corals during and after bleaching events (Hughes et al., 2007). The DEIS cites Tissot and Hallacher (2003) to show that removal of aquarium fish did not affect macroalgal control. However, macroalgae is a relatively small component of O'ahu reefs compared to turf algae, a type of algae which the DEIS does not mention. Many aquarium fish species are important in controlling turf algae and are also shown in **Table 1**, along with their different roles of herbivory.

Like many regions of the world, the Hawaiian Islands have entered a new ocean climate regime that is less favorable to coral reefs as a whole. As a result, building resilient coral reefs must be a focal point for resource management to give reefs the best chance for persistence. One of the major limitations of the DEIS rests in its narrow analysis of the Oahu coral reef ecosystem. Hawaiian reef ecosystems are part of the new ocean climate system that continues to rapidly expand in the Pacific and worldwide. In 2014 and 2015, the Main Hawaiian Islands underwent their first major system-wide ocean climate event, called a marine heatwave, that caused increased water temperatures resulting in large-scale coral bleaching and impacts on fish and invertebrate populations (Bahr et al. 2017; Couch et al. 2017). About half of the corals that bleached in 2015 ultimately died and became algal covered (Kramer et al. 2016). The 2019 marine heatwave again engulfed the Hawaiian Islands, causing an average 40% coral bleaching on reefs of Oahu (NOAA 2020). Marine heatwaves are the new norm, and will be increasing in intensity and/or frequency in the years to come (Frolicher et al. 2018), putting enormous additional stress on coral reefs of Hawai'i.

Ocean temperature around Oahu is projected to increase as a result of climate change. By the middle of the century, average monthly sea surface temperature will be ~1°C (1.8°F) warmer than present-day, and for about 6 months of the year will be warmer than the present-day summertime maximum (27°C; 80.6°F). This increase in ocean temperature is projected to influence the frequency and severity of coral bleaching. For example, severe bleaching is projected to occur on an annual basis in the Hawaiian Islands beginning as early as 2035 (van Hooidonk et al. 2016).

A pivotal issue determining the ability of O‘ahu’s coral reefs to persist in the new ocean climate rests in the abundance and diversity of the herbivore fish community. Herbivore fish are primary determinants of reef algal cover, which competes directly with slow-growing corals for space. Regular marine heatwaves not only cause coral bleaching and mortality, they also promote algal growth that colonizes dead coral and responds well to increased water temperature (Jessen et al., 2013; Graham et al., 2015). Herbivore fish biomass and diversity have become important combaters of algal growth during and between marine heatwave events.

The DEIS states that, “Based on studies in the Great Barrier Reef, fishing pressure had minimal effect on bleaching (Hughes et al., 2017)” (pg. 110). However, the Great Barrier Reef is a different setting than O‘ahu with vastly greater fish diversity and abundance (Stuart-Smith et al., 2013). In addition, the DEIS misinterprets Hughes et al. (2017). The onset of coral bleaching is caused by a variety of abiotic stressors, such as temperature, light and pollution, and, as stated in Hughes et al. (2017), is not related to fish abundance. In contrast, reef recovery after bleaching events is highly dependent on fish abundance, and particularly herbivores (Graham et al., 2015). In fact, Jouffray et al. (2016) found herbivore biomass to be one of the most important predictors of healthy reef regimes after bleaching in the Hawaiian Islands. This is not mentioned in the DEIS, but it is extremely relevant to any evaluation of biological impact of herbivore fish removal on O‘ahu.

II. Missing data on fish population trends on O‘ahu

The DEIS states that “population trend data is not available for the fish species analyzed in this EIS for the island of O‘ahu” (pg. 19). However, the DEIS uses the CREP dataset, for which data are, in fact, publicly available from 2010 to 2016. We present all the data below (**Table 2, Figure 1**) to show the trends in the top 20 aquarium fish species, in comparison to the average of all fish recorded in CREP surveys in abundance per square meter. Several important findings are clear: (1) Fish species collected for aquarium purposes show extremely variable decreases and increases across survey years, (2) these increases/decreases are much larger than the average change seen across all species of surveyed fish, and (3) the impacts of the 2015 bleaching event on fish populations that were also being collected by aquarium fishers are severe, with the majority of species declining sharply in the year following the bleaching event in 2015. The DEIS does not discuss the impact of climate change on aquarium fish populations, despite its clear importance to cumulative impacts.

The DEIS states, “No evidence exists of consistent growth in the number of fish collected on O‘ahu” (pg. 78) and, in several cases, evaluates impact using the average and maximum collection of aquarium fish on O‘ahu from 2000 to 2017. However, during this same period, reporting decreased from 69% of permit-holders in 2000 to 33% in 2017 (DEIS Table 4-2). Given this decline in reporting, data in the DEIS does not accurately show trends in catch.

III. Inaccurate estimates of aquarium fish populations

Population estimates for target fish species in the DEIS are heavily flawed. Most conspicuously, the authors appear to use hardbottom habitat from the Island of Hawai'i, not O'ahu, to derive population estimates. The authors state that, "To facilitate analysis in this DEIS, estimated population size for each fish species for the island of O'ahu was calculated using CREP data by converting survey counts to abundance per unit area, and then multiplying by the estimated area of hard-bottom habitat in < 30 meters of water (16,840 Ha)" (pg. 37).

These data are difficult to trace, as the CREP 2018 citation/link in the DEIS reference list is broken. However, the area cited – 16,840 ha – is identical to the area cited by the same authors in a recent EIS for West Hawai'i Island. In Heenan et al. (2017), hardbottom habitat for O'ahu is 25,119 ha of forereef, which suggests that the authors have been careless in estimating total fish populations. Overall, calculations used by the authors to derive foundational population estimates are not transparent, and show major errors.

The above issues notwithstanding, the DEIS methods for estimating fish populations are non-scientific. As stated, the DEIS simplistically multiplies one year of CREP survey data by all possible hardbottom habitat < 30 m in depth. This method assumes that fish equally inhabit all hardbottom habitat area across O'ahu. Extrapolating based on hardbottom area ignores basic fish ecology, where fish show highly specific spatial distributions. For example, substantial differences occur between reef fish composition and abundances on patch reefs, where on average species are approximately 50% different to each other (Sale et al., 1994). Species diversity of coral reef fishes is significantly different between exposed and semi-exposed habitats, where water depth and wave exposure affect the spatial distribution of many reef fish (Nanami et al., 2005). The assumption that the average of surveys from one year can be multiplied across the entire habitat a fish could occur in ignores a huge wealth of literature dedicated to determining spatial distributions of fish. It also ignores references within the DEIS itself: For example, a survey of 150 species by Kane and Tissot (2017), which demonstrated significant increases in abundance as depth decreases from 30 m to 3 m in Hawai'i, i.e., uneven distributions of fish. The flawed methods of the DEIS have likely resulted in incorrect baselines and overestimations of fish populations, which can misrepresent the effects of aquarium collection on O'ahu's reef systems.

There are several additional errors in the DEIS's evaluation of the most heavily impacted species: *Zebrasoma flavescens* (Yellow Tang) and *Cirrhilabrus jordani* (Flame Wrasse):

- After finding that Yellow Tang catch exceeds TAC under several Alternatives, the DEIS repeatedly claims that Yellow Tang populations are likely underestimated by CREP due to its SCUBA survey methods (pg. 79), and therefore multiplies Yellow Tang populations by 260% based on one publication's estimate of observer bias in Guam (Lindfield et al., 2014). Simplistically inflating population estimates in this manner is not scientifically valid. In fact, it is more likely that the DEIS overestimates, rather than underestimates, fish populations, due to the erroneous use of hardbottom habitat mentioned above.

- The EIS acknowledges that, under the Preferred Alternative, “the Flame Wrasse would be collected at a rate of 9.4-24.5% of the CREP population estimate”, but states that “Kane and Tissot (2017) found densities of Flame Wrasse to be up to 1,000 times greater at depths below the CREP survey limits.” This analysis ignores the fact that populations across multiple depths often subsidize one another, and depth-related niche partitioning may contribute to intraspecific diversity. A 9% collection rate up to 30 meters is therefore still likely to impact the population as a whole.
- The DEIS also uses data from Kane and Tissot (2017) to show that species such as the Flame Wrasse and the Bandit Angelfish are not available from CREP data because they occur deeper than the survey depths. On the one hand, the DEIS claims that fish equally inhabit all the hardbottom habitat, but on the other hand, deeper species “are not observable” because they occur outside of the survey area. These claims are inconsistent, demonstrating DEIS bias.

IV. Inaccurate use of Total Allowable Catch for aquarium fish

The central reference with which the DEIS evaluates all Biological Impact is a manual from Ochavillo and Hodgson (2006), which lists Total Allowable Catch of 5-25% for reef species in the Philippines. According to the DEIS, this comparison is appropriate because published species “are similar to those found on O’ahu (e.g., tang, wrasse, butterflyfish, angelfish, triggerfish)” (pg. ii, 86). However, the DEIS uses these data in error:

- The DEIS considers 5-25% TAC as an acceptable limit for all species targeted by the aquarium industry, and does not distinguish between taxonomic groups. However, TAC varies across taxa. For example, the DEIS claims that a 9.4-24.5% take of Flame Wrasse under the Preferred Alternative is acceptable because it falls within 5 - 25% TAC range, but wrasse species in Ochavillo and Hodgson (2006) have only a 10% sustainable limit (**Table 3**).
- Similarly, Yellow Tang would be harvested at a 7.7-13.7% rate under the Preferred Alternative (pg. 95). However, Yellow Tang is in the family Acanthuridae (e.g., surgeonfish, tangs, unicornfish), which is not represented in Ochavillo and Hodgson (2006).
- More fundamentally, a 5-25% TAC does not represent the best available science for Hawaiian species. Ochavillo and Hodgson (2006) is a manual for evaluating TAC. Instead of borrowing this publication’s demonstration data from the Philippines, the DEIS should apply these methods to Hawaiian species. Without a statistical analysis of population growth, reproduction and mortality rates, TAC cannot be calculated and the impacts of aquarium fishing for O’ahu cannot be determined.

Finally, the use of island-wide populations to evaluate aquarium catch is only appropriate if larval connectivity around the island is absolute, which is likely not the case. Percent catch should be calculated from the hydrodynamically bounded subpopulations that inhabit fished areas. This is especially important as fishers target certain locations consistently, and therefore disproportionately impact place-based populations. While these populations may

be difficult to define, they are likely to be much smaller than island-wide populations, and realistic impacts may be more accurately approximated using annual trend data.

V. Biased Alternatives considered, and invalid dismissal of Alternatives

One of the most fundamental shortcomings of this DEIS is that it does not consider a full suite of Alternatives. It does not consider a full moratorium on aquarium collection, which undermines its ability to fully evaluate impact. Importantly, the DEIS argues that its Preferred Alternative is low impact, simply because it has a lesser impact than other, more intensive harvest scenarios. The DEIS lists a moratorium under “alternatives dismissed from further consideration” because “it does not meet the Applicant’s need to continue commercial aquarium fishers’ livelihoods,” and because this Alternative extends beyond the applicant’s authority (pg. 18). The applicant’s desire to continue aquarium fishing is not a valid reason for dismissing this Alternative. Furthermore, the DEIS considers several scenarios that extend beyond applicant’s authority, such as expanding the Waikiki MLCD. Therefore, this is not a limiting factor.

This biased Alternative selection influences the DEIS’s biological assessment. Specifically, the DEIS’s support for the Preferred Alternative (limited permit issuance) rests largely on its lower impact relative to the No Action Alternative. For example, by the DEIS’s estimate, Yellow Tang would be harvested at a rate of 12.6-27.5% under the No Action alternative, compared to 7.7-13.7% under the Preferred Alternative, with similar discrepancies across other species. This is largely due to the fact that, “under the No Action Alternative, the size and daily bag limits under HAR §13-77 would not apply (see Section 1.2.3), including regulations related to Yellow Tang, Kole, Potter’s Angelfish, Orangespine Unicornfish, and Moorish Idol” (pg. 78). This is a fundamental flaw in the DEIS analysis: the impacts of limited permits cannot be evaluated, since the DEIS confounds the absence of fine mesh nets with other regulatory changes, i.e., relaxed bag limits and looser species restrictions. Instead, aquarium collection methods should be evaluated against a moratorium, or similar.

Several viable Alternatives were dismissed from consideration by the DEIS (pg. 18):

- “Creation of Species-specific bag limits”: This Alternative was dismissed because the DEIS considered this option unnecessary, given aquarium catch estimates are below 2.5% of target species populations. As noted, the DEIS’s population estimates are flawed by (1) scientifically incorrect methods extrapolating CREP surveys across all hardbottom habitat, and (2) inattention to area-specific subpopulations. Therefore, a 2.5% estimate is likely incorrect.
- “Moratorium on species experiencing population declines”: The DEIS claims that it is unknown if species are declining, as population trend data is not available. In fact, CREP data is available from 2010, and can be downloaded from Heenan et al. (2017). **Figure 1** presents this data, which shows that the majority of aquarium species are declining across O’ahu.

Both Alternatives, and a complete Moratorium, therefore deserve proper consideration.

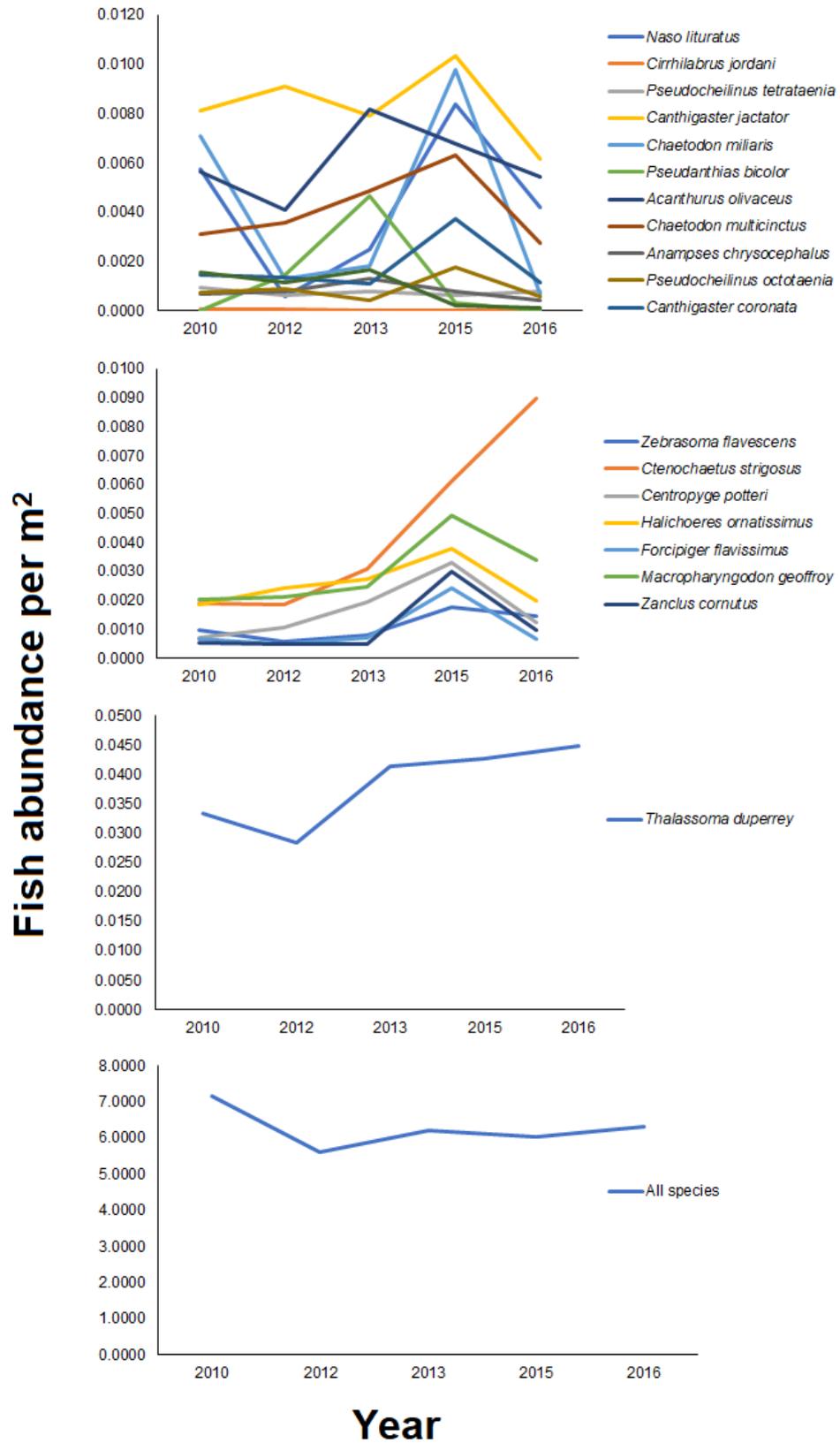


Figure 1. Patterns of average fish abundance per m² recorded in CREP surveys from 2010 to 2016 on O’ahu. The fish are displayed across several panels to facilitate interpretation of the trends across years, e.g. All species and *Thalassoma duperrey* are shown individually due to occurring in much higher abundances than other species.

Table 1. Top 20 aquarium species from the DEIS indicating which are herbivores, what type of herbivore they are, and what percentage was collected under aquarium permits from 2000-2017.

Common Name	Scientific Name	Type of herbivore	Percentage of total collected
Yellow Tang	<i>Zebrasoma flavescens</i>	Grazer	16.5
Kole	<i>Ctenochaetus strigosus</i>	Detritivore	17.4
Potter's Angelfish	<i>Centropyge potteri</i>	Grazer	12.2
Orangespine Unicornfish	<i>Naso lituratus</i>	Browser	4.2
Ornate Wrasse	<i>Halichoeres ornatissimus</i>	N/A	4
Flame Wrasse	<i>Cirrhilabrus jordani</i>	N/A	2.8
Fourline Wrasse	<i>Pseudocheilinus tetrataenia</i>	N/A	3.3
Hawaiian Whitespotted Toby	<i>Canthigaster jactator</i>	N/A	2.1
Forceps Fish	<i>Forcipiger flavissimus</i>	N/A	2.5
Millet Butterflyfish	<i>Chaetodon miliaris</i>	N/A	1.9
Shortnose Wrasse	<i>Macropharyngodon geoffroy</i>	N/A	2.23
Bicolor Anthias	<i>Pseudanthias bicolor</i>	N/A	2.7
Orangeband Surgeonfish	<i>Acanthurus olivaceus</i>	Grazer	1.7
Moorish Idol	<i>Zanclus cornutus</i>	N/A	1.3
Multiband Butterflyfish	<i>Chaetodon multicinctus</i>	N/A	1.2
Psychadelic Wrasse	<i>Anampses chrysocephalus</i>	N/A	1.3
Eightline Wrasse	<i>Pseudocheilinus octotaenia</i>	N/A	1.6
Crowned Puffer	<i>Canthigaster coronata</i>	N/A	1.1
Saddle Wrasse	<i>Thalassoma duperrey</i>	N/A	0.9
Fisher's Angelfish	<i>Centropyge fisheri</i>	Grazer	1.1

Table 2. Mean densities (number per m²) of the top 20 aquarium fish species over every survey year. All species includes the average of 192 different species recorded in surveys. The percentage change between the start and end of CREP surveys is indicated, where decreases are highlighted in red and increases are highlighted in green.

Common Name	Species Name	2010	2012	2013	2015	2016	Change between 2010-2016 (%)
All species	All species	7.1721	5.5922	6.2257	6.0472	6.2978	-12
Yellow Tang	<i>Zebrasoma flavescens</i>	0.0010	0.0006	0.0008	0.0018	0.0015	54
Kole	<i>Ctenochaetus strigosus</i>	0.0019	0.0019	0.0031	0.0061	0.0090	369
Potter's Angelfish	<i>Centropyge potteri</i>	0.0007	0.0011	0.0019	0.0033	0.0013	78
Orangespine Unicornfish	<i>Naso lituratus</i>	0.0057	0.0006	0.0025	0.0084	0.0042	-27
Ornate Wrasse	<i>Halichoeres ornatus</i>	0.0018	0.0024	0.0027	0.0038	0.0020	8
Flame Wrasse	<i>Cirrhilabrus jordani</i>	0.0001	0.0001	0.0000	0.0000	0.0000	-100
Fourline Wrasse	<i>Pseudocheilinus tetrataenia</i>	0.0009	0.0006	0.0008	0.0006	0.0008	-15
Hawaiian Whitespotted Toby	<i>Canthigaster jactator</i>	0.0081	0.0091	0.0079	0.0103	0.0062	-24
Forceps fish	<i>Forcipiger flavissimus</i>	0.0007	0.0005	0.0007	0.0024	0.0007	1
Millet Butterflyfish	<i>Chaetodon miliaris</i>	0.0071	0.0013	0.0018	0.0098	0.0007	-90
Shortnose Wrasse	<i>Macropharyngodon geoffroy</i>	0.0020	0.0021	0.0025	0.0049	0.0034	69
Bicolor Anthias	<i>Pseudanthias bicolor</i>	0.0000	0.0015	0.0046	0.0003	0.0000	NA
Orangeband Surgeonfish	<i>Acanthurus olivaceus</i>	0.0056	0.0041	0.0082	0.0068	0.0054	-3
Moorish Idol	<i>Zanclus cornutus</i>	0.0005	0.0005	0.0005	0.0030	0.0010	88
Multiband Butterflyfish	<i>Chaetodon multicinctus</i>	0.0031	0.0036	0.0049	0.0063	0.0027	-12
Psychadelic Wrasse	<i>Anampses chrysocephalus</i>	0.0007	0.0008	0.0013	0.0008	0.0004	-41
Eightline Wrasse	<i>Pseudocheilinus octotaenia</i>	0.0007	0.0009	0.0004	0.0018	0.0006	-22
Crowned Puffer	<i>Canthigaster coronata</i>	0.0015	0.0014	0.0011	0.0037	0.0012	-21
Saddle Wrasse	<i>Thalassoma duperrey</i>	0.0334	0.0284	0.0413	0.0426	0.0449	34
Fisher's Angelfish	<i>Centropyge fisheri</i>	0.0016	0.0011	0.0017	0.0002	0.0001	-93

Table 3. Estimated sustainable collection levels for aquarium fish from the Philippines. Rates were determined through calculations based on growth, mortality and yield-per-recruit rates for each individual species. Table from Ochavillo and Hodgson, 2006.

Table 3: Proportion of populations of ornamentals suggested as sustainable collection levels based on estimated natural mortality rates.		
Species	Common Name	TAC As % of Pop.
<i>Amphiprion clarkii</i>	African Clownfish	25
<i>Amphiprion frenatus</i>	Tomato Clownfish	25
<i>Amphiprion ocellaris</i>	False Percula Clownfish	25
<i>Amphiprion perideraion</i>	Pink Skunk Clownfish	25
<i>Balistoides viridescens</i>	Titan Triggerfish	10
<i>Bodianus axillaris</i>	Axillspot Hogfish	10
<i>Bodianus diana</i>	Diana Hogfish	10
<i>Bodianus mesothorax</i>	Coral Hogfish	10
<i>Centropyge vroliki</i>	Halfblack Angelfish	5
<i>Chaetodon adiergastos</i>	Panda Butterflyfish	15
<i>Chaetodon baronessa</i>	Baroness Butterflyfish	15
<i>Chaetodon bennetti</i>	Bennett Butterflyfish	15
<i>Chaetodon melannotus</i>	Blackback Butterflyfish	15
<i>Chaetodon octofasciatus</i>	Eight Banded Butterflyfish	15
<i>Chaetodon rafflesi</i>	Rafflesi Butterflyfish	15
<i>Chaetodon speculum</i>	Ovalspot Butterflyfish	15
<i>Chaetodon trifasciatus</i>	Melon Butterflyfish	15
<i>Chaetodontoplus mesoleucus</i>	Queen Angelfish	5
<i>Chelio inermis</i>	Cigar Wrasse	10
<i>Cheilodipterus quinquelineatus</i>	Fivelined Cardinalfish	20
<i>Chelmon rostratus</i>	Chelmon Butterflyfish	10
<i>Coris gaimard</i>	Red Wrasse	10
<i>Dascyllus aruanus</i>	Three Damselfish	20
<i>Dascyllus reticulatus</i>	Reticulated Damselfish	20
<i>Dascyllus trimaculatus</i>	Domino Damselfish	20
<i>Gomphosus varius</i>	Green/Brown Bird Wrasse	10
<i>Halichoeres chloropterus</i>	Green Wrasse	10
<i>Halichoeres hortulanus</i>	Marble Wrasse	10
<i>Hemigymnus melapterus</i>	Black Eye Thicklip	10
<i>Heniochus acuminatus</i>	Black & White Heniochus	10
<i>Heniochus chrysostomus</i>	Brown Heniochus	10
<i>Heniochus varius</i>	Fake Heniochus	10
<i>Pomacanthus sextriatus</i>	Sexbarred Angelfish	5

References

- Bahr, K. D., Rodgers, K. S., & Jokiel, P. L. (2017). Impact of three bleaching events on the reef resiliency of Kāneʻohe Bay, Hawaiʻi. *Frontiers in Marine Science*, 4(DEC)
- Couch, C. S., Burns, J. H. R., Liu, G., Steward, K., Gutlay, T. N., Kenyon, J., ... Kosaki, R. K. (2017). Mass coral bleaching due to unprecedented marine heatwave in Papahānaumokuākea Marine National Monument (Northwestern Hawaiian Islands). *PLoS ONE*, 12(9), 1–27.
- Frölicher, T. L., & Laufkötter, C. (2018). Emerging risks from marine heat waves. *Nature Communications*, 9(1)
- Graham, N. A. J., Jennings, S., MacNeil, M. A., Mouillot, D., Wilson, S. K. 2015. Predicting climate-driven regime shifts versus rebound potential I coral reefs. *Nature* 518: 1-17.
- Heenan, A., Williams, I. D., Acoba, T., DesRochers, A., Kosaki, R. K., Kanemura, T., ... & Brainard, R. E. 2017. Long-term monitoring of coral reef fish assemblages in the Western central pacific. *Scientific data*, 4(1), 1-12.
- Hughes, T. P., Rodrigues, M. J., Bellwood, D. R., Ceccarelli, D., Hoegh-Guldberg, O., McCook, L., Moltschanowskyj, N., Pratchett, M. S., Steneck, R. S., Willis B. 2007. Phase shifts, herbivory, and the resilience of coral reefs to climate change. *Current Biology* 17: 360-365.
- Jessen, C., Roder, C., Villa Lizcano, J. F., Voolstra, C. R., & Wild, C. (2013). In-Situ Effects of Simulated Overfishing and Eutrophication on Benthic Coral Reef Algae Growth, Succession, and Composition in the Central Red Sea. *PLoS ONE*, 8(6), e66992.
- Jouffray, J. B., Folke, C., Graham, N. A., Moberg, F., Olsson, P., & Williams, G. J. 2016. Guiding coral reef futures in the Anthropocene. *Frontiers in ecology and the environment*.
- Kane, C. N., & Tissot, B. N. 2017. Trophic designation and live coral cover predict changes in reef-fish community structure along a shallow to mesophotic gradient in Hawaii. *Coral Reefs*, 36(3), 891-901.
- Kramer, K., Cotton, S., Lamson, M., and Walsh, W. (2016). "Bleaching and catastrophic mortality of reef-building corals along west Hawaiʻi island: findings and future directions," in *Proceedings of the 13th International Coral Reef Symposium* (Honolulu).
- Lindfield, S.J., E.S. Harvey, J.L. Mcllwain, and A.R. Halford. 2014. Silent fish surveys: bubble-free diving highlights inaccuracies associated with SCUBA-based surveys in heavily fished areas. *Methods in Ecology and Evolution*, 2014(5):1061-2069.
- Nanami, A. Nishihara, M., Suzuki, T., Yokochi, H. 2005. Species-specific habitat distribution of coral reef fish assemblages in relation to habitat characteristics in an Okinawan coral reef. *Environmental Biology of Fishes* 72: 55-65.

- NOAA. 2020. Preliminary Results of Patterns of 2019 Thermal Stress and Coral Bleaching Across the Hawaiian Archipelago. NOAA Administrative Report: H-20-04. <https://doi.org/10.25923/8pqg-tq06>.
- Ochavillo, D. and G. Hodgson. 2006. MAQTRAC marine aquarium trade coral reef monitoring protocol data analysis and interpretation manual. Reef Check Foundation. California, USA.
- Sale, P. F., Guy, J. A., Steel, W. J. 1994. Ecological structure of assemblages of coral reef fishes on isolated patch reefs. *Oecologia* 98: 83-99.
- Stuart-Smith, Rick D., Amanda E. Bates, Jonathan S. Lefcheck, J. Emmett Duffy, Susan C. Baker, Russell J. Thomson, Jemina F. 2013. Integrating abundance and functional traits reveals new global hotspots of fish diversity. *Nature* 501, no. 7468: 539-542.
- Tissot, B.N. and L.E. Hallacher. 2003. Effects of aquarium collectors on coral reef fishes in Kona, Hawai'i. *Conservation Biology* 17 (6):1759-1768.
- van Hooijdonk, R., Maynard, J., Tamelander, J., Gove, J., Ahmadi, G., Raymundo, L., ... Planes, S. (2016). Local-scale projections of coral reef futures and implications of the Paris Agreement. *Scientific Reports*, 6(1)

June 20, 2020

To: David Sakoda, DAR 1151 Punchbowl St Room 330 Honolulu HI 96813

David.sakoda@hawaii.gov

FROM: Sierra Club, Hawaii Island Group P.O. Box 1137 Hilo HI 96721

Contact: Deborah Ward, Chair

Email: cordylinecolor@gmail.com

Response to Draft **Environmental Impact Statement** for **Issuance of Commercial Aquarium Permits and Commercial Marine Licenses for the Island of O’ahu**

Aloha,

These comments are prepared by the Conservation Committee of Sierra Club, Hawaii Island Group, on behalf of the members and supporters of the Sierra Club that reside in the Hawaiian Islands.

This DEIS fails to identify affected parties, omits fundamental critical analyses, contains multiple inaccuracies, misrepresentations, and fails to address constitutionally protected rights of our resident citizens. If the Draft were to be accepted, the NO Action Alternative is the only acceptable proposal.

Sierra Club concurs with DLNR’s mission to “Enhance, protect, conserve and manage Hawai’i’s unique and limited natural, cultural, and historic resources held in public trust for current and future generations of the people of Hawai’i nei, and its visitors, in partnership with others from the public and private sectors.” <https://dlnr.hawaii.gov>

The legislature has decreed it the “policy of the State” that DNLR and other agencies must “[c]onserve natural resources . . . by preserving or augmenting natural resources, and by safeguarding the State’s unique natural environmental characteristics”¹ The Agency must also “[e]ncourage management practices which conserve . . . all natural resources,” and encourage all individuals “to fulfill the responsibility as trustees of the environment for the present and succeeding generations.”² In enacting HEPA, the State legislature found “that the quality of humanity’s environment is critical to humanity’s well-being, [and] that humanity’s activities have broad and profound effects upon the interrelations of all components of the environment.”

Chair Suzanne Case stated, after the preceding Environmental Assessment was found insufficient, that “The scope of our review of each commercial aquarium permit EA was thorough. The EIS process for commercial aquarium permits requires an even more in-depth analysis of all available science and data. It will also give interested parties the opportunity to offer additional documentation and comment.”

1) The applicant, however, admits that data to defend the proposed “take” of our public trust resource is non-existent. (See page 19 of the document): **“it is unknown which, if any,**

¹ Haw. Rev. Stat. § 344-3(1).

² Haw. Rev. Stat. § 344-4(2)(A), (10)(A).

species are experiencing population declines, as population trend data is not available for the fish species analyzed in this EIS for the island of O’ahu.”

A key ‘study’ that is referred to over and over again (Ochavillo and Hodgson - 2006) turns out to be nothing more than a field guide for aquarium collecting in the Philippines, certainly not a ‘gold standard’ peer reviewed study. The document referenced was funded by the Transforming the Marine Aquarium Trade (TMAT) Project and the International Finance Corporation- Global Environment Facility, Marine Aquarium Market Transformation Initiative in cooperation with the Marine Aquarium Council and the Community Conservation Investment Forum. The species described in the referenced document’s “natural mortality models” used to estimate a general “rule of thumb” are not found in Hawaii. And yet, that is precisely what they would pass off as “the best available science”. It becomes the linchpin for many of the dubious thresholds for ‘sustainability’ of individual species. In it, a wide range of 5%-25% was cause for alarm by the receiving agency (DLNR/DAR) scientists. The proposing consultant has not complied with the agency’s directive to clarify how its interpretation and latitude can be justified to the species level.

While acknowledging that at least four significant multi-species barriers limit dispersal along the length of the island chain, and that species that appear capable of extensive dispersal (such as Yellow Tang and Kole) show significant population differentiation within the Hawaiian Archipelago, the applicant provides only a vague statement regarding possible replenishment of O’ahu specific populations through the seeding from protected Fish Replenishment Areas (FRA) : ***“It is assumed that this would also be applicable to the smaller island of O’ahu.”*** (Page 32)

Species of Greatest Conservation Need (SGCN) are identified in Hawai’i’s State Wildlife Action Plan (SWAP) but are not threatened, endangered, or otherwise legislatively protected species. However, recognizing the need to take action to protect endemic species, the DLNR identified Hawai’i’s indigenous SGCN in Exhibit 1 of Hawai’i Administrative Rules Chapter 124. The SWAP (2015) addresses these species and identifies the following actions to ensure the species conservation and sustainability:

1. Conservation Actions: The goals of conservation actions are to not only protect current populations, but to also establish further populations to reduce the risk of extinction. Commercial licenses are required for aquarium collectors. In addition to common statewide and island conservation actions, specific actions include: Restoration of habitat; and, Maintaining healthy populations with appropriate fishing regulations and education.
2. Monitoring: Continue to survey for populations and distribution in known and likely habitats.
- 3) Research Priorities: Improve understanding of factors affecting the species population size and distribution; and, Support aquaculture research to develop captive breeding for species used in the aquarium trade.

We see no sincere effort in the DEIS to address or mitigate for these conditions. Three of the fish species taken and reported by O’ahu aquarium collectors are listed as Species of Greatest Conservation Need (SGCN), are identified in Hawai’i’s State Wildlife Action Plan (SWAP).

Perhaps it would be feasible to ascertain the effect aquarium collecting would be on the 238 fish species collected from O’ahu reefs if reporting were accurate and transparent, but some data reporting fall under the DAR confidentiality statute, in which totals are not released publicly. (Pages 37 and 67) We are left to trust the consultant about the accuracy of the statements.

2. The document’s failure to assess the cumulative impact that the proposed preferred alternative would have include global warming, ocean acidification, increased frequency of coral bleaching, landward run-off and pollution, other legal forms of fishing tending to overfishing, and the general disruption of under-appreciated ecological services by living marine communities. The preferred alternative would allow virtually unregulated taking, while claiming that removal of a large quantity of the dwindling reef herbivores would have “**no significant cumulative impact**”.

3) This document was predicated on complaints regarding the open-ended “take” that permittees had been entitled to under the past regulatory regime. The new proposal suggests that a check on unlimited take is to select a limited number of unidentified collectors (20). Like the West Hawaii FEIS rejected by the Board in May, this document forces the hand of DLNR, without providing an opportunity for substantive conditions on self-selected permittees. This has been presented within the ‘preferred alternative’. But such an arrangement leaves the issue of unlimited taking unaddressed on the majority of 238 species of marine organisms now being targeted by the industry. Nor does the issuance of permits under the proposed scheme preclude collectors from ranging far and wide throughout the state and not be tied to Oahu. As a guide for decision making, this still leaves decision-makers adrift.

There are no proposed reductions in bag limits beyond the existing Oahu bag limits, plus one new bag limit for the flame wrasse. However, if the bag limits were to be applied as described in the DEIS ‘preferred alternative’, the populations of O’ahu’s remaining reef fish could plummet to extinction over the first year of collecting. In fact, the bag limits would allow the total island-wide population of yellow tangs to be wiped out in 4 months, and Achilles Tang and Flame wrasse to be wiped out in less than one month.

EIS PREFERRED ALTERNATIVE APPLIED TO OAHU AQUARIUM TRADE BAG LIMITS					
NAME	DAILY BAG LIMIT	APPLIED TO 20 COLLECTORS	OVER 365 DAYS	EST. OAHU POPULATION (PER DEIS)	% of POPULATION
Yellow tang	100	2,000/day	730,000	216,524	337%
<i>Kole</i> *	75	1,500	547,500	1,144,130	48%
Potter’s Angel *	50	1,000	365,000	297,372	125%
Naso Tang	50	1,000	365,000	950,505	38%
Moorish Idol	25	500	182,500	285,677	64%
Achilles Tang	10	200	73,000	5,570	1,265%
Cleaner Wrasse *	6	120	43,800	190,455	23%
Flame Wrasse * (DEIS proposed)	10	200	73,000	5,683	1,284%
* Endemic Species					

The DEIS claims that the ‘preferred alternative’ would provide for a sustainable take of 5% - 25% of a population (annually). To achieve the putative ‘sustainable take’ the proposed “bag limits” should be adjusted, and applied only to the trip collection zones, and not the entire island-wide population.

3. Although the FEIS includes a Cultural Impact Assessment (CIA) as an Appendix, the document itself is essentially dismissive of the cultural impacts to practitioners and their communities. The document references the West Hawaii Regional Fishery Management Area, but does not reflect the incorporation of Hawaiian culture described therein. While acknowledging that commercial aquarium fishing “remains a point of conflict “ and that “many of the fish species collected by commercial aquarium fishers have a cultural significance in Hawai’i, and there are “distinct differences between the traditional Native Hawaiian approach to fish harvest and management and the western model approach” the DEIS claims that there would be no significant adverse direct or indirect cultural resource impact under any of the proposed alternatives.

This document fails to follow in good faith the directive to incorporate the ecological concerns of the host culture and the traditional wisdom associated with pono’ fishing practices. It is interesting to note that of the 42 or so individuals sought out on O`ahu for the mandated cultural survey, only 6 chose to cooperate, and of them few gave tacit approval for the extractive industry as it presently exists. In addition, the history of overwhelming disapproval by the general public has never been adequately addressed in any socio-economic study.

4. Part of the public disgust with the industry has been the lack of effective enforcement and verifications of any regulatory standards such as thorough collection reports and shipping protocols. Waste of public trust resources (mortality rates estimated in the 10 to 20% range) and inhumane treatment of living organisms merely for private ephemeral ornamentation is dismissed as irrelevant. A recent poaching case on Hawaii Island vividly demonstrates the problem of inadequate monetary penalties being applied by a judicial system that is unconcerned about the handicaps and ambiguities under the current system which has allowed unrestricted takings even during the court ordered moratorium AND the business restrictions under 'COVID-19' proclamations. They persist due to the lucrative business prerogatives overwhelming all social norms and expectations for justice. But again, this applicant’s EIS disclaims any admission and responsibility of the industry for a host of unlawful abuses.

5. Future serious impacts to the coastal near-shore habitat due to climate change are ignored in this document, and the proposed action alternatives do not address mitigation for the anticipated loss of coastal habitat. The FEIS preferred alternative proposes to exploit a public resource for the economic benefit of an unidentified few, at the expense of the subsistence communities, the resident public, the visitors, and the health of the state as a whole. A recent DAR announcement appealed to subsistence and recreational reef fishers to refrain from taking herbivorous fish off the reefs. This tacit recognition of the vital symbiotic service they perform in this delicate coral reef ecosystem is overdue and yet completely absent in the DEIS. The 'preferred alternative' in the document would allow (with one exception) for unlimited takes by unidentified permittees of many of these same important organisms. Any declines whether driven by, or contributed to, by the trade are simply not justified by the logic and necessity of sustainability.

Likewise, the consultant fails to account for the myriad ecological services of herbivores and other reef specialists even though these creatures are all nature's essential "tools" of reef recovery and health. (Please note the photographic image following the comments. It depicts the essence of biotic community and mutuality; that fails to register anywhere in this Environmental Impact Statement!)

In sum, the misleading assumptions and gross inaccuracies in this document have been and will continue to be challenged by Hawai'i residents, reputable conservation organizations, and ultimately, the courts. The proposal that taking unlimited numbers of marine animals and selling them to the aquarium pet trade outside Hawai'i would have no significant impacts on cultural, biological, and socioeconomic resources is preposterous. We believe that the aquarium collection industry undermines the public trust for private gain, harming the animals, the habitat, the host culture, the residents, and visitors.

We acknowledge the work and testimonies of the many others providing more detailed analysis and discussion. We look forward to the day when the state agencies can freely and firmly uphold the ideals of our conservation heritage.

Thank you for the opportunity to comment.





June 22, 2020

Suzanne Case, DLNR Director
Board of Land & Natural Resources, Members
1151 Punchbowl Street Room 330
Honolulu, Hawaii 96813

Re: Comments on Draft Environmental Impact Statement
for the Issuance of Commercial Aquarium Permits and
Commercial Marine Licenses for O'ahu

Mālama Pūpūkea-Waimea
Post Office Box 188
Hale'iwa, HI 96712

Board of Directors

Denise Antolini
Anne Chung
John Cutting
Bob Leinau
Jacqueline Leinau

Advisory Council

Athline Clark
Dr. Alan Friedlander
Debbie Gowensmith
Maxx E. Phillips
Bill Quinlan
Palakiko Yagodich

Staff

*Jenny Yagodich, Director of
Educational Programs &
Community Outreach*

Federal Nonprofit Organization
501(c)(3) FEIN 27-0855937
www.pupukeawaimea.org
info@pupukeawaimea.org

Aloha Director Case and Board Members,

Mālama Pūpūkea-Waimea (MPW) is a Hawai'i non-profit organization founded on the North Shore of O'ahu in 2005. Our mission is "working to replenish and sustain the natural and cultural resources of the Pūpūkea and Waimea ahupua'a for present and future generations through active community stewardship, education, and partnerships." For sixteen years, we have focused our stewardship and education efforts on the Pūpūkea Marine Life Conservation District (MLCD), one of only three MLCDs on O'ahu.

We appreciate the opportunity to share our concerns about the Draft Environmental Impact Statement (DEIS) prepared by the Pet Industry Joint Advisory Council (PIJAC) for the proposed Commercial Aquarium Permits and Commercial Marine Licenses for O'ahu ("proposed action") and ask that the Department **reject the DEIS as inadequate**.

Overview

As a preliminary matter, we ask that the *DEIS clarify the prohibitions and boundaries of the Pūpūkea MLCD*. First, the DEIS should more clearly emphasize that **no take** of any of the proposed target fish is allowed, now or under the applicant's proposal, from the Pūpūkea MLCD. Second, Figure 1 on Page 20 *should be redrawn and enlarged to more accurately demarcate the current boundaries of the Pūpūkea MLCD*, specifically because of the applicant's proposed alternative that differentiates between Commercial Marine License (CML) area 414, which overlaps the MLCD, and 405, which is the adjacent, continuing along the North Shore to Ko'olauloa. See Page 165, which further supports the need for visual and written clarification in the DEIS ("a small portion of the nearshore waters located in Pūpūkea

Ahupua'a at the westernmost end of Ko'olaupua is included within FRCA 414 and is thus included in the current [CIA] study area.")

Although the applicant's proposed action would not directly affect the Pūpūkea MLCD because aquarium collection is prohibited in the MLCD, Haleiwa Harbor is one of the four harbors on O'ahu used by the industry (Page 47: "4.3.2 Physical Aspects of the Commercial Aquarium Fishery"), and therefore the MLCD is subject to permittees "accidentally" or illegally coming into the MLCD waters to collect from boats along this shoreline. Poaching continues to be a major problem in the Pūpūkea MLCD given the abundance of marine life within its boundaries and the nearly unrestricted access. In addition, MPW is concerned about the overall welfare and sustainability of the nearshore marine ecosystems of the North Shore of O'ahu in particular and the future of coral reef ecosystems throughout the archipelago. In short, given the inadequacy of information displayed in the DEIS that would allow DLNR to uphold its public trust responsibilities regarding the commercial take of the targeted reef fish, we support the **No Action Alternative** (Page 31) – that is, we support the continued ban on commercial aquarium take with fine mesh nets.

Before addressing some of the specific points in the DEIS, we share three overarching points.

*First, MPW finds it unusual, confusing, if not improper, to have a private party such as PIJAC prepare an EIS for what is a state-administered program of permits. Under H.R.S. Chapter 343, and H.A.R. 11-200 (2018, revised) the commercial aquarium permit program would best be characterized as an "agency" not an "applicant" program or action. Is the "action" the "PIJAC's application for 20 commercial aquarium permits"? Or, is the "action" the "DLNR's program of issuing commercial aquarium permits"? Looking at the alternatives proposed, which are really *policy choices*, not private-applicant "give me a particular permit" choices, the confusion grows over the applicant v. agency roles. The options of limiting the overall number of permits, closing down certain zones, expanding an MLCD, and other proposals are governmental policy choices, not something that a private applicant should be the driving force behind proposing or analyzing in an applicant EIS. Thus, the essential framing of the DEIS seems wrong - and the involvement of a trade organization and private consultants essentially doing the HEPA work of a state agency when the focus is on the *entire program of permits* seems out of sync with the letter and spirit of HEPA. Given the statewide significance of aquarium collection permits, DLNR should have either prepared the DEIS itself or have a neutral entity prepare the DEIS to assist the public understanding of these issues and to ensure that DLNR carries out its public trust responsibilities to protect the public trust nearshore reef resources at stake. An EIS done by DLNR would have, we suspect, taken a different approach to the analysis and alternatives.*

*Second, the entire DEIS is riddled with indications that data are inadequate to make a decision on the permit program for various reasons including the undue restrictions placed by DLNR on sharing CML take information. We would support DLNR using its departmental discretion to remove data restrictions on public access to take reports from CMLs under H.R.S. § 189-3. (Permittee names could still be withheld but the data and locations of take should be public information.) As pointed out below, the DEIS data on "other means" of aquarium collecting and on CML take generally is sorely lacking, creating an overall blurry picture of reef fish depletion on O'ahu and weak understanding of the potential impacts on this island for these target fish (and invertebrate) species, which is contrary to the public trust and the precautionary principle. The secrecy particularly does not make sense given that reef fish are a public trust resource, and that even a single permittee can take an **unlimited** number of fish and have a big impact on a small area that may have special ecological significance.*

Third, PIJAC's "20 fishers" proposal is – well, fishy. Who are the 20 fishers “who would be issued commercial Aquarium Permits under the Proposed Action.”? See Page 40. Are the permittees pre-determined? By PIJAC? PIJAC knows who they are, and perhaps DLNR knows who they are, but they are not disclosed in the DEIS. Certainly it cannot be up to PIJAC to determine who receives the permits from DLNR. A key purpose of HRS Chapter 343 is disclosure to the public and a DEIS cannot hide the ball. A lot of economic information in the DEIS assumes that all 20 fishers rely on the aquarium collection permits for full-time employment, which is unlikely. (See Page 87 - the preferred alternative would “create a minimum of 20 jobs for the 20 fishers who would have permits.”). This truly odd “pre-selection” and “veil of mystery” over the 20 permittees further confirms that DLNR - not PIJAC - should be preparing the EIS for the commercial aquarium permits.

1. Purpose & Need Misframed

The focus of DLNR's aquarium fish collection permit program is, as it PIJAC sees it, focused on propping up the livelihoods of a handful of commercial permittees on O'ahu. But that should not be the focus on DLNR, which manages marine resources for the benefit of the public trust. There is no cultural, sustenance, or ecological “need” to collect fish for display in private aquarium tanks. While there may be a justification to collect these species for educational purposes, for scientific research, or captive propagation – uses that MPW could support, if done sustainably and with proper analysis and regulation -- that is not the core purpose of the proposed action, which is to re-open commercial licenses for collecting targeted fish for captive display in private tanks primarily outside of the islands.

Understandably but improperly, PIJAC focuses only on its clients' interests (and not the broad public interest), and therefore unduly narrowly describes the purpose of the proposed action as to “ensure that commercial aquarium fish collection” continues through the issuance of 20 permits, and describes the need as “to continue commercial aquarium fishers' livelihoods.” (Action Summary). See also Page 32: “Applicant's purpose and need [is] to continue fishers' livelihoods.”

The DEIS should disclose the nature of the “20 permittees” including how many of them are truly dependent on this license. See Page 85 (indicating they have other means of livelihoods). The DEIS states that “Commercial aquarium fishers may no longer find it feasible to target aquarium fish and may begin to participate in other fisheries, but this is not possible to quantify at this time.” If these are PIJAC members, the information about alternative livelihoods should be readily available and must be disclosed to have any validity, to allow agency evaluation, and facilitate public participation.

Moreover, when the DEIS narrows down the economic focus to the difference between the proposed permits and “other means,” see Page 86, it acknowledges that aquarium collectors *have* been using other legal means to collect reef fish since the Hawai'i Supreme Court decision, therefore the loss of *these particular fine mesh permits* means the economic value at stake (if No Action were adopted) is much *less than* stated in the document – it is only “(average of \$167,065 per year).” (Emphasis added.)

Yet, elsewhere, the “need” for the proposed action is what appears to be an over-stated estimated economic benefit to the handful of individuals in the collection trade (assuming an estimated 14 jobs) of “\$422,612 to \$642,225 per year” (page 135). Note also that the proposed alternatives do not appear to include any give back – no permit fees are discussed and no give-back required to the resource or communities from where the fish were extracted.

Where do the fish go? The DEIS should clarify the actual venues to which the collected fish are sold and end up. On Page 26, the DEIS states that the species are “intended for live aquarium displays, HAR §13-

77.” The DEIS description on this issue is vague and misleading. In section “4.2.1.1 Public and Private Aquariums,” it first mentions public zoo and aquaria and then private owners, without any detailed information about where the O’ahu fish end up and which is a more significant market for the take from O’ahu. This is a glaring omission in the DEIS. How can the environmental effects be evaluated without information on the “end use” of the public trust resource?

The reality seems to be that Hawai’i’s reef fish, including many endemic species, are being collected and exported for purely aesthetic pleasure outside of Hawai’i, which is for one type of personal luxury not a “need.” See Page 43: “Although specific export data do not exist for the aquarium fishery, it is clear that most of the aquarium catch is shipped out of the state to dealers on the mainland United States, Europe, and Asia (Dierking 2002).” The fish are not eaten, used for research or propagation, or – it seems – used of public education. This omission prohibits any comparative analysis the “value” of their export and captive lives v. leaving them in their natural habitat. The slant of the preparer’s perspective is underlined when the DEIS makes a rather sad attempt to argue the value of the calming effects of viewing fish in a tank (Page 46: “Aquarium fish are also sold to home aquaria owners, of which 70% report that their fish are calming and stress reducing . . .”), but fails to provide any mention of the psychological value of residents of Hawai’i viewing fish in the *native* habitat.

2. Unsustainability of Collection of Targeted Species

Fish caught for the aquarium trade experience a high mortality and morbidity rate. The DEIS States, Page 120, “Under all alternatives, mortality of fish post-harvest will occur,” but does not provide any data, which should be made available and part of the analysis. See Page 120: “Additional mortality may occur during transportation, shipping, or once the fish has reached its final destination. No post-collection data are available for fish collected in Hawai’i.” Why is the data not available? PIJAC and the State should have the data and make it accessible. Also, no information is presented on mortality during the process of take. See Page 95 “It is acknowledged that, in addition to the number of fish collected, incidental mortality may occur in fish that are released. However, there are no data available to analyze these impacts.” These questions should be answered in the DEIS.

One particularly visible gap in species mortality or morbidity is for the endemic Bandit Angelfish, a deep-water fish. If, as stated on Page 74, the fish is “seldom seen at depths less than 30 feet,” how does it fare being collected, decompressed, packaged up, traveling across the Pacific, and then living out a confined life in a tank in a dentist’s office in Ohio?

Also consider that many of the targeted reef fish are long-lived. The DEIS notes one Yellow Tang was found to be 41 years old. (Page 103, “While studying habitat- and sex-specific life history patterns of Yellow Tang, Claisse et al. (2009) found a 41-year-old individual.”). So how does collecting process affect the life-span and health of these otherwise long-lived fish? The data are absent.

Information on this issue of trade mortality and morbidity abounds but is not included in the DEIS. See, e.g., <http://divemagazine.co.uk/eco/7098-the-deadly-trade-in-reef-fish> (“it is the incredibly high mortality rate among the fish that are taken that necessitates so many being caught. Most start dying from the moment they are captured, and the losses continue during the time they are in the holding tanks, while in transit to Europe and the US and then when they are on sale in the aquarium shop. It’s reckoned that 90 per cent of collected fish die before they even reach the hobbyist’s tank. Sadly that high death rate continues even then as marine systems are very difficult to keep stable in a small tank. This then drives further demand as the dead fish need to be replaced.”).

PIJAC could have obtained this information from its members or from the “20 fishers” proposed to obtain permits and its other trade members. Moreover, DLNR should unquestionably have this kind of information in order to evaluate the impacts of these permits. At minimum, such information should be a reporting requirement of any such permit.

Similarly, how do we properly view what is “sustainable” for the ecosystem left behind? The DEIS admits that we do not know important information and the preparers have to really stretch to fill the analytical space. See Page 103: “While specific research into sustainable levels of take has *not been conducted for the majority of reef fishes*, as discussed previously, Ochavillo and Hodgson (2006) *suggest* collection of between 5% and 25% is sustainable for various reef species in the *Philippines* that are similar to those found on O’ahu (e.g., tang, wrasse, butterflyfish, angelfish, triggerfish).” (Emphasis added.) Unfortunately, this “suggested” 25% level inappropriately becomes the mantra for sustainability in the DEIS.

PIJAC also dismissed the "moratorium on species with declining populations" alternative (Page 36) because it is unknown if *any* species are experiencing population decline due to lack of population trend data. This must suggest the same for target aquarium fish, no? Under the precautionary approach, DLNR must recognize the lack of certainty behind an environmental threat when there is not clear evidence of the threat before the damage occurs. PIJAC is operating on the assumption that reef fish can sustain high levels of continuous harvest because of high fertility and long-life spans but the effect of removing juveniles from the population has not, apparently, been studied. This does not appear to be a form of sustainable collection, nor does it reflect sustainable thinking. Also under this assumption, PIJAC theorizes that the Bandit Angelfish (as well as a few other species) populations are much higher because they are out of the depth range of the CREP reef surveys and human pressures. A larger than estimated population cannot be confirmed, especially with the "lack of [reef fish] population data;" therefore, the precautionary approach here is to reject the take until further data are available. This should be true for all species.

The total number of fish estimated to be taken under the Preferred Alternative proposed 20 permits (not including by other legal means, such as without a fine mesh net) (see Page 112) is “269,600 fish . . . over the 5-year analysis period.” Adding in “other means,” the collection projections increase by “31.2% of the impacts” to a total of “265,041 to 426,633 fish over the 5-year analysis period.” (Page 112, emphasis added.) This indicates the serious questions about sustainability.

The DEIS also highlights that some of the target fish as on the State’s list of Species of Greatest Conservation Need (SGCN) yet rejects that alternative (Page 35). See also Page 51 (“Three of the SGCN fish species that have been reported as being collected by commercial aquarium collectors on O’ahu between 2000 and 2017 are analyzed in this EIS.” These are the Psychedelic Wrasse [see Section 4.4.4.16] 2. Fisher’s Angelfish [see Section 4.4.4.20] 3. Bandit Angelfish [see Section 4.4.5.2]). It seems completely contradictory for the State to list such species at SGCN yet to allow commercial aquarium collection take that can be unlimited and under-reported.

What is the impact of removal of almost half a million reef fish from O’ahu? Who will do the appropriate monitoring of the impact of the take? DAR and DOCARE do not have the resources to monitor these permits and will simply have to trust there is no impact, which is not an acceptable management approach. The DEIS is overly optimistic in painting a picture of DLNR’s post-permit monitoring ability. The suggested “annual review” of all permits seems laughably unrealistic given DLNR’s lack of resources and other pressing priorities. See Page 30: “20 fishers who would be issued Aquarium Permits under the Proposed Action come up for renewal each year, *DLNR will evaluate* whether there are significant new

circumstances or information relevant to environmental concerns and bearing on the commercial aquarium fishery *or its impacts* requiring a supplemental HEPA review.” (Emphasis added.) Adaptive management sounds nice but it simply *not realistic* particularly given the current lack of monitoring and data gaps acknowledged all throughout the DEIS, so “allowing for the HEPA process to quickly recognize and address any potential issues (i.e., adaptive management)” is simply a nice thing to say to fill the DEIS with promises, but is not meaningful. Does the preparer have any examples of it working and being well resourced in Hawai’i?

Another major weakness in the DEIS is the odd focus on tourism and real estate economics instead of the value of reef fish in their natural habitat, which is a value (economic, personal, and spiritual/cultural) enjoyed by residents. See Page 88 (“tourist businesses such as snorkel and dive operations that rely on seeing and interacting with a healthy reef ecosystem. The presence of a healthy reef ecosystem may also impact overall land/home values on the island of O’ahu.” See also Page 89, looking only at tourism and land values.) This odd tourism lens may be attributable to the preparer being from outside Hawai’i?

The DEIS only glancingly mentions the value of fish left in their natural environment and appears not to give any value to resident enjoyment or non-tourist recreational value of fish in situ, which is significant. Valuing reef ecosystems is a sophisticated approach that looks at way more than tourism. See Page 37: “In 2002, the Hawai’i Coral Reef Initiative funded a study regarding the economic valuation of the coral reefs of Hawai’i, where the value of coral reefs to the Hawai’i economy was estimated to be about \$380 million dollars per year (DLNR 2015). In 2001, Cesar et al. documented the annual recreational value of the coral reefs of the Hawaiian reefs for snorkelers and divers was estimated to be \$281 million and \$44 million, respectively.”

3. Inadequate Alternatives and False Preferred Alternative

PIJAC’s alternatives appear to be based on politics and strategy, and not science and sustainability of the resource. Again, as stated above, it is very odd to have a private applicant proposing policy alternatives for a program from which it hopes to receive permits for its members.

The “3.3 EXPANDED WAIKIKI MLCD AND FLAME WRASSE CONSERVATION ALTERNATIVE,” described on Page 33, would increase by “10.5 times the size of the current Waikiki MLCD.” All other fishing would be allowed, only aquarium collection would be banned. In other words, PIJAC is willing for its members to give up Waikiki – for which it provides no estimates of past collection data -- in the interest of increased collecting on the rest of the island? What is the rationale?

This does not make sense given the purpose and need. The only plausible (but not acceptable) explanation is on Page 90: “The expanded Waikiki MLCD is located near Waikiki and Honolulu, an area used quite extensively by tourists and tour operators.” Thus the justification is tourism? Or there are too many tourists who bother the collectors? The DEIS further just tosses out the idea, without support, that the expanded MLCD would “eliminate any user conflict there and potentially serve as a refuge for fish populations.” Page 90. Anyone with experience with MLCDs in Hawai’i knows that creating a marine protected area is just not that simple, and that the Waikiki shoreline, sadly, is not a good refuge given the multiple use and sources of pollution, and the severe lack of attention paid to the existing MLCD there. This alternative seems like a loss leader.

Similarly, PIJAC has another shiny lure alternative called “Limited Permit Issuance (Preferred) 20 Aquarium Permits issued; bag limit reduced for Flame Wrasse, expansion of the Waikiki MLCD.” The proponent suggests it is the preferred alternative – “reducing the number of Aquarium Permits issued,

implementing a daily bag limit for Flame Wrasse, and expanding the Waikiki MLCD (which would only apply to commercial aquarium collectors),” and at Page 132, states “it results in the lowest collection of the 23 species analyzed and includes a bag limit for the Flame Wrasse. In addition, the Preferred Alternative is the only Alternative under consideration which limits the number of permits that would be issued (20 permits).” But this is simply a made-up alternative without scientific justification and still allows for essentially unlimited collection of all target species except for the Flame Wrasse.

Page 86 of the DEIS says it has no data for the Waikiki area: “However, the data available for this DEIS cannot be used to quantify the number of fish collected or the species collected from this area.” And the DEIS states that in any event fishers would just redirect effort elsewhere so there is no gain “through redirection of effort and resources.” See Page 111 (“any reduced collection of aquarium fish within this area would be offset by redirection of effort and resources by commercial aquarium fishers to other areas of O’ahu”).

Indeed, the DEIS provides no explanation for the Flame Wrasse limit and the justification given in fact undercuts the entire case for the permits. The DEIS says if the State allows less take, the value of each fish will *increase*: “This impact may be buffered however, as the *cost per fish may increase* as the supply of Flame Wrasse decreases, negating any socioeconomic impact to the fishers. If this were to be case, the socioeconomic impact of the bag limit would be seen on the consumer side (i.e., those purchasing aquarium fish, who would have to pay a higher premium due to decreased supply).” Page 87 (emphasis added). Under this rationale, the take per permit should be 1 fish per year of each species, because the value would adjust to be very high to reflect the rarity of the fish. That is way more sustainable for the resource than more voluminous take and cheaper pricing. Was a limited take to change the market pricing considered in the DEIS?

In short, the alternatives appear to be simply made up for political and strategic reasons and are impossible to evaluate in terms of feasibility or environment impact. The Waikiki MLCD expansion, as proposed, would not prohibit other kinds of fishing. Creating a “leaky MLCD” does more harm than good and creates public confusion and enforcement issues. A true MLCD could be done separately from the proposed action. It makes no sense other than as an artificial sweetener for the PIJAC DEIS.

MPW suggests that alternatives that do not depend on wild stock should be explored to satisfy the purported “purpose and need,” if the “need” is to display certain species of reef fish in private tanks. PIAJC should have considered and supported aquaculture as recommended by the 2015 State Wildlife Action Plan (SWAP), see Page 52 “Support aquaculture research to develop captive breeding for species used in the aquarium trade.” That solution is more sustainable and could potentially garner wide support.

4. Failure To Consider Coral Reef Resiliency and Climate Change Link to Target Species

With an increase in global warming and major coral bleaching events creating stress on coral reef ecosystems especially here in Hawai’i, it makes no sense that the for-profit aquarium trade would be allowed to take an *unlimited* amount of valuable reef fish out of Hawai’i to sell to aquarium hobbyists across the nation.

While climate change is discussed generally in the DEIS, the link to stocks of reef fish, including the threats to the populations at low-lying atolls of Papahānaumokuākea Marine National Monument, which is used as an indirect justification for take on O’ahu is not analyzed.

5. Inadequate Public Information on Take

Key flaws in the entire proposal by PIJAC are the big holes in the information available to the public on aquarium fish collecting.

Despite that these fish have been collected for years, until the ban, there is a serious lack of information due to an archaic DLNR “confidentiality” rule. See Page 111 : “Of these 238 [collected] species, 124 species account for less than 1% each of the total aquarium fish catch from 2000-2017. An additional 94 species do not have data available due to the DAR confidentiality requirements (Section 5.1).” (Emphasis added.)

See also Page 125: “Data evaluated for non-aquarium commercial fishing is [sic] lacking due to the DAR confidentiality regulations (HRS §189-3). Since most nonaquarium commercial fishers do not target aquarium species, *there are usually less than three fishers reporting*. Therefore, the data presented in Table 5-5 is *underestimated*.” (Emphasis added.)

See also Page 54: “*Only 161* species [of the 238] were reported by enough permits (>2 permits reporting from each collection area (Figure 1) during each year of collection) to determine total number of individuals collected (Table 4-3). Collection areas with less than three permits reporting fall under the DAR confidentiality statute, in which totals are *not released publicly* (Section 5.1).” (Emphasis added.)

See also Page 75, re Invertebrates: “*Only 44* species [of 66] were reported by enough permits (>2 permits reporting from each area of collection during each year of collection) to determine total number of individuals collected. Collection areas with less than three permits reporting fall under the DAR non-disclosure agreement, in which totals are not released publicly (Section 5.1).” (Emphasis added.)

DAR apparently has discretion to collect the data, or could condition the permits on waiver of confidentiality, but takes the position that under H.R.S. § 189-3, “The DAR complies with this statute by keeping confidential any catch data when less than three collectors report from an individual collection zone (Figure 1).” Page 84.

See also Page 84: “The impact of this statute on data analysis is minimal but can cause confusion when numbers in the text or in the tables do not exactly match up, or do not match previously published reports for which the n.d. data were available (i.e., DAR reports). Although it is possible for 1-2 aquarium fishers *to collect large numbers of fish and skew the data*, this concern was minimized by the manner in which data were analyzed. Data provided by the DAR for this DEIS were evaluated using many parameters, thereby minimizing bias due to confidentiality. The data were also viewed in aggregate and over extended time periods (i.e., 2000-2017) to further minimize confidentiality issues. *Additionally, the 20 fishers included in the Proposed Action waived their right to confidentiality, so all data from 2000 through 2017, as well as from 2018, for these 20 fishers were released for analysis in this EIS.*” (Emphasis added.). This explanation makes the data problem even worse in terms of public disclosure requirements under HEPA. For PIJAC, the collectors waived their confidentiality but not for the public? The information that PIJAC obtained and used for the DEIS should not also be made public so that it can be considered and reviewed by DLNR and the public.

An example of why the data gap matters is for the Achilles Tang. On Page 104, the DEIS states that “The Yellow Tang has been the most collected species every year since 2004.” and “In recent years (2014–2017) Yellow Tang were collected nearly twice as much as the next highest collected aquarium fish (Kole).” “Since 2000, 273,356 Yellow Tang were collected on the island of O’ahu.” Page 104. Yet, the DEIS states there is “no data” (n.d.) for commercial *non-aquarium* collectors of this fish, for O’ahu or

Statewide. Table 5.5, Page 125. Thus, the collection could be in the thousands by two such permittees, and still not disclosed. Thus, the ability to understand cumulative impact is frustrated.

The data are also simply lacking on related key issues of cumulative impacts. See Page 126: “some species are declining in various management areas (i.e., both within areas open to commercial aquarium collection as well as within areas closed to collection) due to factors other than commercial aquarium collecting, which include non-aquarium commercial and non-commercial fishing. This may be the case on O’ahu as well. However, there is *no way to fully quantify* the cumulative effects of past and ongoing non-aquarium commercial and non-commercial fishing on biological resources. Given the assumed past and present impacts of non-aquarium commercial and non-commercial fishing on biological resources, foreseeable future actions would likely result in some impacts to biological resources.” (Emphasis added.). This paragraph involves a lot of guessing, assumptions, and windy statements, and a leap to a conclusion, without support.

Moreover, cumulative impact cannot be assessed because DLNR does not collect data on recreational aquarium fish permit take. See Page 129: “The DAR collected recreational aquarium fish catch information from 1975 until 1985, after which, data collection was *discontinued*, and currently *no reporting of catch is required for recreational aquarium permit holders*.” (Emphasis added.) “Because reporting of recreational aquarium catch is not required, the impact of recreational collection on species collected on O’ahu *cannot be quantified*.” (Emphasis added.)

Even further, as stated on Page 120, and even with CML, the size of fish is not reported: “the size of fish collected under CMLs is not required to be reported to the DAR, and thus these data are not available.” Without this CML information, which is possible to require and not an unreasonable ask given all the other reporting and bag limitations, any analysis of the cumulative impact in terms of age and size of the fish is stymied.

And, as stated at Page 39, there is no agency *oversight* over the data that are submitted: “As throughout the state, O’ahu fishers are required to report their monthly catch on an aquarium fish catch report separate from, and more detailed than, the Commercial Marine License (CML) reports. At present, there is *no provision for the verification of submitted reports*, so any catch numbers and dollar amounts should be regarded as minimum, not absolute values (DAR 2018a).” (Emphasis added.) Without quality control, the data should be regarded as suspect.

All of these data gaps mean that the public – and the agency – are deprived of an array of vital information to determine the take and impact of take in various coastal areas on O’ahu. The CML secrecy might have made sense “back in the day” when it was first conceived a way to preserve “secret fishing spots,” but it particularly does not make sense today given the evolution of public trust law, the Supreme Court’s guidance in the aquarium fish case, the purpose of HEPA, and that even a single licensee can take an unlimited number of fish and have a big impact on a small area. This flawed DEIS underscores why DLNR should abandon the CML confidentiality policy.¹

¹ Laws must evolve to meet modern times and changing resource information. For example, the DEIS notes – *mistakenly* – that sand can be taken from the public beaches up to 1 gallon. See Page 27 (“The taking of sand, coral rubble or other marine deposits is permitted in certain circumstances. The material may not exceed one gallon per person per day.”) But *that law changed* - due to the evolution in our

Therefore, the use of “CML data zones” for managing the proposed commercial collection of aquarium fish is seriously flawed. For example, Pūpūkea sits in Zone 414 and near Zone 405. There appears to be no information about commercial take, historically or current, in either zone. Therefore, as mentioned above, it is not possible to assess impacts or to determine the rationale behind excluding one zone and not the other in the proposed action. See Page 1 (“405 and 406 that encompass nearly all the nearshore region of the Ko‘olauloa District”) – what is the explanation for that proposal? MPW believes this information is important to protecting the integrity of the Pūpūkea MLCD.

6. No Cultural Foundation for Aquarium Take

In Hawaiian culture, taking of fish is traditionally for subsistence or spiritual reasons, was fully regulated by the konohiki, in real time, in specific places, and violations of kapu could have harsh punishment .

The idea of taking reef fish for aquarium display, for pure entertainment and for trade, has no clear cultural foundation. Moreover, the taking of fish without regard to contextual information about seasons, place, and the health of the stock does not align with Hawaiian cultural tradition of careful management of fisheries.

The DEIS’s attempt to somehow cloak the proposed take permits in Hawaiian culture is questionable. See Page 45: “4.2.1 Cultural Aspects of the Commercial Aquarium Fishery” somehow suggesting that because permittees appreciate Hawaiian culture (without any proof), that take is a cultural practice. Again, without any support for take as a cultural practice, the DEIS states, Page 45: “Native Hawaiians do participate in the fishery and Hawaiian culture has been a significant aspect of the fishery’s management since the 1970’s.” While it is true that some of the fishers are Native Hawaiian, that does mean they are practitioners or justify the cultural connection. Native Hawaiians are widely engaged in commercial enterprises today, but that does not automatically make these economic activities a cultural practice or culturally grounded.

Overall, the Cultural Impact Statement (CIA), while containing some helpful interviews, appears to act more like a stakeholder interview exercise (e.g., with “*aquarium collectors, subsistence and commercial fishers, charter boat operators, and researchers*, Page 92), and does not comply with OEQC guidelines and Act 50 (amending H.R.S. Chapter 343), which encourages interviews with a particular type of stakeholder: cultural practitioners. See http://oeqc2.doh.hawaii.gov/OEQC_Guidance/1997-Cultural-Impacts-Guidance.pdf

The DEIS also takes the strange view that there is no impact on culture unless there is a significant decline in a particularly culturally important resource. Cultural impact cannot be quantified in that way and should be viewed through a value-based perspective. The interview with Noelani Puniwai ends with this statement “I do believe that the practice of aquarium fishing will have an impact on traditional cultural practices in these areas. It’s just that broader impact and the ability for these things to be considered abundant...The value of the ability for a species to live in its own environment. I have a hard time seeing how taking a hīnālea and putting it in a tank in Nevada can allow that being to continue being a hīnālea. So the traditional practice of our species being able to have their own ‘ōiwi is being affected through the practice of aquarium collecting and having live pets.” Page 264.

understanding of the importance of this natural resource and public trust law. In 2013, the “sand ban” was passed by our State Legislature. See H.R.S. §205A-44 Prohibitions.

The CIA itself makes this point. See Page 92 “However, some interviewees expressed the belief that collection for aquarium purposes, regardless of impact or sustainability, is a violation of traditional beliefs (see Appendix A).”

MPW believes that the views of Dr. Puniwai best capture the cultural concerns about the commercial aquarium trade proposed by PIJAC.

Mahalo for considering our comments and MPW’s request to reject the DEIS as inadequate.

Sincerely,

A handwritten signature in black ink, appearing to read "Denise Antolini". The signature is written in a cursive, flowing style.

Denise Antolini
President, MPW

Aloha Mr. Sakoda,

The original limits were not based on any kind of ecological data and as such were a matter of huge contention and fiction. They were determined by fish collectors and not scientists or scientific reasoning. I did calculations years ago when the "limits" were first proposed that showed that they would be completely unsustainable and if carried out would lead to higher numbers of take than the entire population size estimated on Oahu in the DEIS. The then Chair of DAR resigned on the day of testimony saying that the limits were like a 400-mile-an-hour speed "limit."

Here is the original Table I created:

Calculations for testimony based on State of Hawaii abundance data....

Species	PROPOSED REGS			STATEWIDE DATA	
	# fish per day per person UNDER PROPOSED "DAILY BAG LIMITS"	# per DAY if 20 permit holders	# per YEAR if 20 permit holders collect everyday	2010 STATEWIDE reported catch	1976 STATEWIDE reported catch (first year data were recorded)
Tellow Tang	100	2000	730000	360,633	35006
Kole Tang	75	1500	547500	57,469	
Potter's Angelfish	50	1000	365000	10,445	9299
Naso Tang	50	1000	365000	8,574	6478
Moorish Idol	25	500	182500	1,531	4520
Achille's Tang	10	200	73000	8,728	9233

Pulling numbers out of the sky is not science. The fish collectors simply chose a number so high that they could collect business-as-usual without any justification for the number. The "limits" are not scientific or management or sustainable.

Also, I have conducted research counting aquarium fish using the methods of Tissot and Hallancher (2003 "Effects of Aquarium Collectors on Coral Reef Fishes in Kona, Hawaii" Cons Bio 17(6)) who found that: "Aquarium collectors had significant effects on 7 of the 10 species of reef fish we examined." We

reported on the abundance of aquarium-collected fish around Oahu by comparing fish abundances in open collection areas to two protected locations within Hanauma Bay. Six species of reef fish – *Acanthurus triostegus*, *Chaetodon lunula*, *Ctenochaetus strigosus*, *Naso lituratus*, *Zanclus cornutus*, and *Zebrasoma flavescens* – exhibited significantly lower populations in collection areas. The greatest decreases were observed in the four most heavily-collected species, three of which are not taken as food fish suggesting that ornamental collection is primarily responsible for the differences in abundance. This paper has not been published because we are told that we need more control counting areas. This cannot be achieved since less than 1% of Oahu is protected and only Hanauma Bay is free from poaching (personal observation).

Lastly, the climate crisis threatens coral reefs and all reef species and requires that we model any sustainable collection at all using forward thinking prudent paradigms that include cautionary buffers for the confounding effects of climate change on reef health. Herbivorous reef fish are absolutely essential to reef health. Using past business-as-usual models and false limits will be detrimental to the health of the reef. Collection has already impacted fish populations negatively on Oahu and is therefore not sustainable. There is nothing in the DEIS to rectify that fact and so it should be rejected.

Thank you for your consideration,

A handwritten signature in cursive script, reading "Gail Grabowsky".

Dr. Gail L. Grabowsky

Director, Environmental Programs
Interim Dean of Natural Sciences & Mathematics
Chaminade University

Re: the Draft EIS for Commercial Aquarium Permits for Oahu of April 27, 2020.

Comment of William Graham, submitted on June 16, 2020

I will focus on 3 issues that I believe are most important and which are in need of attention and amplification when preparing the final EIS.

1. Lack of appropriate alternatives
2. A need for clarity about the nature of this application
3. Absence of forward looking analysis

LACK OF ALTERNATIVES

The current request is for the issuance of 20 collection permits for use by 20 individuals. Three additional alternatives are considered, one of which is the No Action alternative, meaning that the permits are not issued.

The other two are not alternatives related to this application for the 20 individuals. Rather they are suggested alternatives for how the Division of Aquatic Resources (DAR) might perform its future duties. They both consider whether the DAR should issue unlimited permits to other, future applicants. They are not alternatives that this applicant controls or is considering.

Summarizing, the true alternatives are only the preferred alternative and the no action alternative which is simply a rejection of the preferred alternative. Thus the alternatives do not fulfill the requirements of HRS343. The final EIS must evaluate additional alternatives of substance. Given the relatively large expected take of yellow tang relative to the population, stricter limits on yellow tang collection would certainly be a reasonable alternative.

UNUSUAL NATURE OF THIS APPLICATION

I call your attention to the "Applicant Publication Form" which is found at the very beginning of the draft EIS (DEIS). The applicant is the Pet Industry Joint Advisory Council (PIJAC).

The "Permit(s)/Approval(s)" represent the discretionary action that the applicant is seeking from the DLNR. Both Commercial Aquarium Fishing Permits and Commercial Marine Licenses are sought.

I attach a PDF file which is the Commercial Permit application form recently used for these permits/licenses. Hawaii Administrative Rules 13-74-20 and HRS189-2 govern the issuance of Marine Licenses, HRS188-31 applies to aquarium fishing permits.

Reading the governing law and rules makes it clear that these licenses/permits are intended for Hawaii residents. Furthermore the licenses/permits are non-transferrable. But the applicant in this proceeding (PIJAC) is not a fisherman nor a Hawaii resident. Hence the nature of this application is unusual and does not appear to conform to Hawaii rules and law.

A final EIS must clarify and explain the specifics and the legality of the requested action upon which this DEIS is based. A copy of the written application should be included. Merely stating purposes and objectives is not sufficient.

Since the activities of 20 fishermen are an important component of the DEIS, and they are not applicants for licenses/permits, their names should be disclosed. Failure to disclose the names inhibits the public's ability to evaluate the DEIS.

NO FORWARD LOOKING ANALYSIS

A. The DEIS analysis is based on estimated historical population levels of various species of fishes in conjunction with the take from those populations by the 20 individual fishers. The DEIS claims that reported past counts are within 3.5% of their actual take (p.111), citing DAR(2014a). That citation is a report to the legislature on the West Hawaii Fishery Management Area, not Oahu. Since past underreporting could be a major issue affecting reliability throughout this DEIS, please make available all documents related to this area of concern.

No constraints on annual future collection are proposed. HAR 13-77 imposes limits on a daily basis only. The only way to justify reliance on the historical approach is to propose strict limits on the annual collection of fish in the future. The final EIS must include such proposed limits if its prognosis is to be trustworthy. We also must recognize that future collection activity will depend on market demand at the time. It can readily shift from one species to another. Annual limits are a must. At a minimum, annual limits observed by the 20 fishers could be included as an alternative action.

B. The final EIS must closely evaluate the future impact of collection on our coral reefs. We know that corals are also under ever increasing stress for reasons unrelated to this application. Much existing research on future coral viability is available and pertinent research should be incorporated into a final EIS. The research provided should indicate the degree of likely degradation of the reefs (for whatever reason) and the likely effect of that degradation on the future population levels of the target species being collected. As well as the likely effect of reef fish collection on the ability of algae to compromise the viability of the coral population. Clearly the corals and the algae grazing fish are in a symbiotic relationship.

C. The draft EIS relies on the ability of the DAR to renew or not renew permits annually as one justification for its failure to be more forward looking (page 13). It assumes that the basis for informed yearly renewal or non-renewal will be available to the DAR. Does the DAR have the staff and resources to support well informed future decisions? I believe the final EIS must itself look many years into the future for its investigation of likely environmental effects. The purpose of this EIS should be to make such information available to the DAR.

D. I take specific note that the Division of Aquatic Resources prominently displays a "Saving Coral and The Coral Pledge" page within its current website. Link to <https://dlnr.hawaii.gov/dar/coral-bleaching/>

The first bullet point on that page tells us to "avoid taking herbivorous fish like uhu and surgeonfish; they help control algal growth." (Yellow tang and kole are both surgeonfish). The applicant appears to be seeking permission for activities

that are frowned upon by the permitting body. The final EIS should certainly address this conflict.

Speaking broadly, the final EIS must examine the likely state of our coral reefs and the impact of the proposed collection activities on the reefs. And do this examination over a forward looking, multi-year time span.

ISSUES OF FORMAT

I would like to request that the Index in the final EIS include where to find individual public comments. This is customary in many Hawaii EIS documents. Also, when comments are substantial and refer to information within the body of the EIS, please make appropriate revisions within the body of the EIS. Don't respond solely within the comments and responses section.

COMMERCIAL MARINE FISHERIES INDIVIDUAL LICENSE/PERMIT RENEWAL APPLICATION FORM

*** Complete this Form**

* Review and **Sign the General Fisheries License & Permit and Specific Terms and Conditions (reverse side).**

* **Write your license number** on check or money order payable to: **Division of Aquatic Resources**.

* If you are interested in obtaining a new license type, contact the DAR office listed on the attached cover letter.

* Please send payment and form to:

**DIVISION OF AQUATIC RESOURCES
ATTN: STATS UNIT/Licensing
1151 Punchbowl St. RM 330
Honolulu, HI 96813**

Check License/Permit types (s) that you intend to renew:

- Commercial Marine License
- Commercial Aquarium Permit
- Recreational Aquarium Permit
- Bait License

PLEASE TYPE OR PRINT INFORMATION CLEARLY:

Fishing License No. _____		Last Name _____		First Name _____		Middle Name _____	
<u>M / F</u>	__ __	<u>Y / N</u>	<u>Y / N</u>	_____	_____	_____	_____
Sex	Social Security Number	U.S. Citizen	HI Resident	Alien Number	ID Number	ID Type	
/ /	_____	ft.	in.	_____	_____	_____	_____
Date of Birth (MM/DD/YY)	Birth Place	Height	Weight	Hair Color	Eye Color		
Residence Address _____			City _____	State _____	ZIP Code _____	Country _____	
Mailing Address _____			City _____	State _____	ZIP Code _____	Country _____	
Cell Phone _____	Home Phone _____	Business Phone _____	E-mail Address _____				

VESSEL INFORMATION

<u>Y / N</u>	<u>Y / N</u>	_____	<u>Y / N</u>	<u>Y / N</u>	<input type="checkbox"/> Required to Report? _____ Paper Report given/mailed?
Captain	Crew	Number of Crew	Charter	Full Time	
Vessel Name _____			Captain's Name _____		
HA -	_____	_____	_____	_____	_____
HA - No.	USCG No.	Vessel Owner	Home Port		

<p><u>Fishing Gear/Method (in order of preference):</u></p> <p>1 _____</p> <p>2 _____</p> <p>3 _____</p>	<p>Do you intend to file your Fishing Report online?</p> <p><i>efile?</i> Y / N</p> <p align="center">please circle one</p>	<p>Do you intend to peddle any of your catch to friends, neighbors, on the street/rd, or online sales?</p> <p><i>non dealer</i> Y / N</p> <p align="center">please circle one</p>
----------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

TURN OVER FORM TO REVIEW AND SIGN COMMERCIAL FISHERIES LICENSE & PERMIT GENERAL TERMS AND CONDITIONS.

Department of Land and Natural Resources (DLNR)

Division of Aquatic Resources

State of Hawaii

FISHING LIC NO. _____

**Commercial Fisheries License & Permit
General Terms and Conditions**

NAME _____

These general terms and conditions apply to all licenses and permits, herein after referred to as “licenses” contained in Chapter 13-74, Hawaii Administrative Rules (HAR) of DLNR.

I understand that:

1. I must provide true, complete and accurate information on any license application, or any report that I am required to submit.
2. I am responsible for renewing my license even without notification from DLNR. Unless some other expiration period is specified, licenses are valid no longer than one year from the issuance date.
3. Upon request, I must present my license to any officer authorized to enforce State laws.
4. I must allow my catch to be inspected by any officer authorized to enforce State laws.
5. The State, or its agents, shall not be liable for any personal injury, death or property damage resulting from any action or activity authorized by this license.
6. DLNR may suspend my license when such action is necessary for the protection and conservation of marine life.
7. The Board of Land and Natural Resources may revoke any license. I may not renew a revoked license or permit for one year from the date of revocation.
8. DLNR may refuse to issue any or all licenses if I do not comply with the terms and conditions of this or any other license.

Terms and Conditions:

I understand and agree to abide by all general terms and conditions of the license as specified in the General Terms and Conditions, on applicable Specific Terms and Conditions forms, and as, may be provided elsewhere by law. I understand that any violation of any term or condition of this license, including any misstatement of fact or circumstance, may result in the invalidation and/or revocation of this license, and the prosecution of an enforcement action against me as specified in the Hawaii Revised Statutes, Chapters 187A, 188, and 189. In the event of any difference between the terms and conditions of this license, as stated above, and the applicable administrative rules or law, the rules and law shall apply.

My signature or electronic signature shall be considered as my agreement to comply with all requirements and may be recorded electronically through the Internet licensing application. This procedure is deemed lawful under the Uniform Electronic Transactions Act, Section 489E, Hawaii Revised Statutes.

Signature: _____ **Date:** _____

Signature is required to renew license/permit, otherwise, the application will be returned.

Department of Land and Natural Resources (DLNR)
Division of Aquatic Resources
State of Hawaii

Aquarium Fish Permit
Specific Terms and Conditions

The *permittee* refers to any person issued an aquarium fish permit. The aquarium fish *permit* allows the permittee to use fine meshed traps or fine mesh nets, except thrownets, that would otherwise be illegal, to take marine life and non-game freshwater fishes for aquarium purposes. Aquarium purposes means to exhibit or display aquatic life within man-made facilities designed to maintain the aquatic life alive for a reasonable length of time.

I understand that:

1. Licenses issued to individuals are non-transferable and cannot be used by anyone else.
2. This permit does not exempt me from any other regulation, except that I may use fine meshed traps or fine meshed nets, except throw nets, to take marine life and non-game freshwater fishes for aquarium purposes.
3. I may not take any aquatic life that is regulated (minimum size, closed season, bag limit, etc.) or use nets in any area prohibited by provisions of the Hawaii Revised Statutes or Administrative Rules of DLNR, Title 13.
4. I may not use any chemicals, electro-fishing devices or explosives to take aquatic life.
5. I may not kill, damage or take any live rock or live coral.
6. I may not collect any aquatic life in any area where the taking of aquatic life is prohibited.
7. I may not sell any aquatic life unless I have a valid commercial marine license. All such aquatic life must be sold for aquarium purposes, and not for sale as food.
8. If I intend to sell any aquatic life, I must submit reports as required by the commercial marine license.
9. I may not take any of the following:
 - a. `oama (juvenile goatfish less than 7" fork length)
 - b. `o`opu (freshwater goby)
 - c. halalu (akule less than 8.5" fork length)
10. I must maintain the proper operation of facilities designed to keep fish alive and in reasonable health.
11. I must keep all aquatic life taken under this permit alive and in reasonable health.
12. I must allow DLNR to enforce its regulations and to inspect the facilities where the aquarium life is kept.
13. I must carry the permit while engaged in collecting aquatic life for aquarium purposes.
14. If I do not have a valid commercial marine license, I may not take more than a total of five aquatic life specimens per person per day.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Tuesday, June 23, 2020 10:42:11 AM

Name: David Mason

Email: dvmsn@hotmail.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

Please let SCIENCE rule your decision.

From: [Oahu DEIS](#)
To: david.sakoda@hawaii.gov; [VanDeWalle, Terry](#)
Subject: Oahu DEIS Comments
Date: Saturday, June 6, 2020 7:18:08 AM

Name: Julian Sprung

Email: julian@twolittlefishies.com

State Of Residency: Visitor/Non-Resident/Concerned Citizen

I support DLNR's adoption of the Draft Environmental Impact Statement analyzing Issuance of 20 Commercial Aquarium Permits for the island of Oahu.

I believe that the DEIS analyzes the potential impacts the 20 Oahu aquarium fishers may have on the environment under each of the proposed alternatives.

The DEIS proposes measures to avoid and minimize already insignificant impacts on fish species and the environment around Oahu.

The Oahu aquarium fishery is one of the best managed fisheries in the State of Hawaii.

Native Hawaiian and local fishermen are actively engaged in Oahu's aquarium fishery and depend on its sustainable yield to support their families.

The Oahu aquarium fishery contributes to the local economy and provides critical revenue to the State of Hawaii and its residents. The fishery does not rely on tourism and can withstand local economic downturns.

While many methods of fishing exist, small mesh net (less than 2inch stretch) is the best method for safely and humanely catching live fish. Furthermore, small mesh net has virtually zero bycatch of undesired species.

The proposed action will result in an overall reduction in fish collected, when compared to the pre-ban alternative.

The limitation on the number of permits assists DOCARE/enforcement as they will easily know who is legally allowed to fish by the limited number of boats which are registered. This will make fishery management practical for law enforcement.

I am a graduate of the University of Florida with a Bsc. in Zoology, and am an author of numerous books about marinelife and aquarium keeping.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Website Template; each commenter could select any or all of these items	I am concerned about the impacts of the aquarium trade on the following species: Yellow tangs Butterflyfishes Herbivores/Surgeonfishes Bandit Angelfish kole Achilles tang (paku ikui) Cleaner Wrasse Flame Wrasse Moorish Idol	NOTE: Info from the rows labeled "Website Template" are the options from a template web form. Most commenters below selected all of these, but some selected only a few. We did not show which commenters selected which options from the web form but instead referred back to these items each time. Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative. Additional information on the role of herbivores has been added to the FEIS.
Website Template; each commenter could choose whether to select this concern.	The natural beauty of coral reefs is diminished by aquarium collecting.	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Website Template; each commenter could choose whether to select this concern.	Species abundance is significantly reduced by aquarium collecting.	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Website Template; each commenter could choose whether to select this concern.	Communities of reef species are disrupted by aquarium collecting.	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Website Template; each commenter could choose whether to	Marine life is threatened with local extinction	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
select this concern.		
Website Template; each commenter could choose whether to select this concern.	The real possibility that future generations may not encounter these species	<p>Your comment has been forwarded to the decision makers.</p> <p>The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.</p>
Website Template; each commenter could choose whether to select this concern.	DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.	Your comment has been forwarded to the decision makers.
Website Template; each commenter could choose whether to select this concern.	Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.	<p>Your comment has been forwarded to the decision makers.</p> <p>Additional details on the role of herbivores has been added to the FEIS. The Preferred Alternative includes a proposed White List of 31 fish species and an individual catch quota for each species, including all herbivores on the proposed White List, which provides a hard upper limit on the number which could be collected in a given year. Existing daily bag and size limits will also remain in effect.</p>
Website Template; each commenter could choose whether to select this concern.	70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.	Your comment has been forwarded to the decision makers.
Website Template; each commenter could choose whether to	Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
select this concern.		
Website Template; each commenter could choose whether to select this concern.	Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.	Your comment has been forwarded to the decision makers.
Website Template; each commenter could select any or all of these items	<p>I believe some of all of the species identified above have been impacted on reefs I am familiar with on Oahu:</p> <ul style="list-style-type: none"> North Shore Leeward Oahu Windward Oahu Kaneohe Bay Kailua Waikiki <p>Unfamiliar with these reefs, but still concerned</p>	Your comment has been forwarded to the decision makers.
Website Template; each commenter could choose whether to select this statement.	<p>It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts.</p> <p>This DEIS is completely flawed.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.</p>
Jo Alexander	See above comments (template format)	Your comment has been forwarded to the decision makers.
Lynn Allen	See above comments (template format)	Your comment has been forwarded to the decision makers.
Lynn Allen	<p>These “limits” are irresponsible and will have extensive consequences.</p> <p>It is critical that the welfare of the marine life and reef ecosystem (which impacts many people and resources) be prioritized over a small group of collectors.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.</p>
Anne Allison	See above comments (template format)	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Anne Allison	You have got to be kidding. Who and at what offices is getting paid off by the Aquarium rape trade?????	Your comment has been forwarded to the decision makers.
Geri Allison	See above comments (template format)	Your comment has been forwarded to the decision makers.
Geri Allison	Completely unacceptable	Your comment has been forwarded to the decision makers.
Linda Anderson	See above comments (template format)	Your comment has been forwarded to the decision makers.
Linda Anderson	Please lay off our reef fish. Close pet shops and disallow all sales. It is harmful and frivolous to use this as a job. Become ocean tour guides or find other work.. A photo op company ocean tour, but let the fish recover!!!!	Your comment has been forwarded to the decision makers.
Caroline Azelski	See above comments (template format)	Your comment has been forwarded to the decision makers.
Caroline Azelski	The pandemic has proven that when left alone animals populations rebound.	Your comment has been forwarded to the decision makers.
Robert Babson	See above comments (template format)	Your comment has been forwarded to the decision makers.
Robert Babson	I moved to Maui in 1991 and live in Kihei. During the 1990's, I snorkeled all over Maui, but mostly in Kihei, Wailea, Makena and La Perouse. There used to be schools of fish up and down the Kihei coast, but not anymore. Please do not approve any collectors taking fish from the coral reefs. 50% of all collected fish that are shipped to the mainland for sale, die in transit. The rest don't last long in captivity. Please preserve these fish for our children and grand children to enjoy. The only place there are still fish in La Perouse is the Ahihi Kinau Natural Area Reserve which is a "no take" reserve. "no take" means no line fishing, no spear gunning, no lay nets and no collectors. What we need is more "no take" natural area reserves all over Hawaii, all islands. Many reef fish do not become sexually active until they are five years old. To remove these older fish from the reef is also removing all their future offspring.	Your comment has been forwarded to the decision makers. A discussion on post-collection mortality has been added to Section 5.4.2.
Bette Belanger	See above comments (template format)	Your comment has been forwarded to the decision makers.
Christopher Biltoft	See above comments (template format)	Your comment has been forwarded to the decision makers.
Christopher Biltoft	The proposed "limits" presented in the DEIS are actually no limits at all. The "Aquarium Trade" is a superfluous business that is ultimately destructive to native marine habitat. There is no reasonable justification for continuing it. Those engaged in this awful business need to find some socially responsible thing to do other than despoiling our marine reserves. The Big Island lost a significant marine sanctuary as a consequence of the June 2018 lava flow. There is no need or justification for further reducing fish stocks by "Aquarium Trade" poaching.	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Marjorie Bonar	See above comments (template format)	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Marjorie Bonar	They have had a flagrant disregard for the data collected over many years. This is not science, it is marketing. With a very uncontrolled collection method, the industry has shown it cannot be trusted in any fashion. There should be no take of reef fish, except for those that are taken for personal human consumption.	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Heidi Bornhorst	See above comments (template format)	Your comment has been forwarded to the decision makers.
Heidi Bornhorst	Overfishing is detrimental to Hawaii. Salt water aquariums are fish killers. they belong on our reefs. NO fishing of reef fish for commercial trade. We would also like to see Waikiki to Maunaloa closed to Spear and net fishing. Permanently. these are keiki fish nurseries.	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Jane Bowman	See above comments (template format)	Your comment has been forwarded to the decision makers.
Jane Bowman	Please LIMIT aquarium collecting on Oahu. Without the abundant marine life of Hawaii's reefs I would seriously consider vacationing elsewhere. I was disappointed in my last trip to Oahu because of the barren nature of some reefs. Thanks you	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Bill Bugbee	See above comments (template format)	Your comment has been forwarded to the decision makers.
Bill Bugbee	Aquarium reef fish extractors are NOT compatible with Hawaii's environmental, sustainability, and economic goals. It doesn't take a scientist to connect the dots between the health of Hawaii's reef system and the essential role that abundant and varied reef fish play in ensuring a healthy ecosystem, both are essential and interdependent in their role in maintaining a healthy marine ecosystem, and both are under attack from multiple manmade stressors: 1) global warming from rising levels and concurrent shifts in temperature, circulation, stratification, nutrient input, oxygen content, and ocean acidification, all with wide-ranging biological effects. 2) Hawaii's state-wide 2015-16 coral bleaching event is a case in point, which reef systems on every island, including suffered and five years later have not recovered, creating a two-fold impact on fish and coral. 3) Recent scientific findings have demonstrated the spread of coral diseases may be mitigated by reef fishes, further mitigating global heating impacts, and recognizing the value-added role of Hawaii's reef fish to Hawaii and the need to ensure their preservation. 4) There are strong mutual dependencies between the reef-building corals and reef-inhabiting fishes, with many Hawaiian reef fish species depending on corals for food and habitat, while corals depend on the grazing by certain fishes for reproductive success.	Your comment has been forwarded to the decision makers. Additional details on climate change have been added to the FEIS.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Bill Bugbee	<p>Make no mistake: the health of Hawaii’s marine reefs ecosystem, and the fish which inhabit them are fish prized by reef extractors are both major contributors to a healthy marine ecosystem and the state’s largest economic segment: Tourism. The aquarium trade claims that the limitless collection of Hawaii’s reef animals has a minimal impact on the state’s coral reef ecosystem, even in the face of ongoing, unprecedented coral bleaching and climate change. The aquarium extractors take the majority of Achilles tangs and yellow tangs on the reefs where they operate, amounting to more than 80% in some years. DEIS skews this data by comparing catch numbers to estimates for fish populations on the entire island and concludes that the trade would be taking just 1%, which misleadingly minimizes impacts to localized reef ecosystems. Allowing the extraction of Hawaii’s reef fish, which are at the present and for the foreseeable future facing unprecedented stressors – is a prescription for species extinction, and would be a wanton disregard for common sense policy designed to protect Hawaii’s environmental assets and the public interest.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative. Collection of Achilles Tang would not be permitted under the Preferred Alternative.</p>
Patricia Cadiz	See above comments (template format)	Your comment has been forwarded to the decision makers.
Patricia Cadiz	<p>The health of our reefs is inextricably linked to the health of our beaches. Both beach and reef depend on a balanced and thriving reef ecosystem. Please do not allow the aquarium trade access to these proposed permits.</p>	Your comment has been forwarded to the decision makers.
Francesca Carey	See above comments (template format)	Your comment has been forwarded to the decision makers.
Francesca Carey	<p>Already there are NO yellow tangs in Maui!! The reef fish need our protection - it should be ILLEGAL to take them at all! Find a way to raise them in captivity if you can - but do NOT ALLOW collecting in ANY of our islands!</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The permits issued under the Preferred Alternative would be limited to the island of O’ahu and would not permit collection on Maui. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species, including Yellow Tang, has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.</p>
Heather Carollo	See above comments (template format)	Your comment has been forwarded to the decision makers.
Heather Carollo	<p>Fish populations are declining all over the world, now is not the time to allow anyone the ability to catch unlimited amounts of any animal. We need to protect our environment and that includes the animals that are essential for it's survival. Our reefs will only die faster without these species. Please do not allow this to pass.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative. Collection of Achilles Tang would not be permitted under the Preferred Alternative.</p>
Mia Charleston	See above comments (template format)	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Mia Charleston	<p>Aloha and thank you for considering comments to the DEIS. I feel the DEIS is not accurate, overlooks a lot of data and does not provide enough information to support or prove there won't be negative affects on the populations of fish they are proposing to take off the reef. This statement alone "it is unknown which, if any, species are experiencing population declines, as population trend data is not available for the fish species analyzed in this EIS for the island of O'ahu" does not provide an acceptable conclusion that the proposed reef ecosystem will not be affected. I have lived in Hawai'i for 14 years. My degree is in Oceanography with a background in Marine Science. Having worked on snorkel boats for about 8 years on Maui, I have seen the decline in so much marine life from corals to fish. It would be a shame to basically allow additional impacts to the reef ecosystem. Weren't some of the collectors who are behind the proposal to take off the reef, have been caught illegally taking marine life. I understand this is a difficult time for so many people but it doesn't mean that we need to sacrifice some of our resources that bring in monies in different ways to the State such as the tourism industry and diving industry. I remember going to an interview for a job in Florida that was associated with the marine trade industry. I walked in for the interview and saw hundreds of tanks with living (for sale)and so many dead fish- that I turned around and walked right out- it was terrible to see the amount of loss first hand. I am lucky to be able to get out snorkeling and diving at least once a week still even though I am not on the boats anymore. Based on what I have seen on Maui, Hawaii and Oahu, it would not be in the best interest of the community to to take these fish species without have something to replace them with. These fish species create a type of balance and in these times, that balance is under threat having so many detrimental obstacles to deal with, it needs all the help it can get. Also there are other means such as certain types of fish being raised in captivity that should be supported instead (win-win). I hope you will take these comments into consideration and thank you for your time. Mahalo</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>A captive breeding alternative was considered in Section 3.7 of the FEIS.</p>
Debbie Collins	See above comments (template format)	Your comment has been forwarded to the decision makers.
Alissa Collins	See above comments (template format)	Your comment has been forwarded to the decision makers.
Alissa Collins	STOP PILFERING OUR LOCAL OCEANS.	Your comment has been forwarded to the decision makers.
Keoki Cortez	See above comments (template format)	Your comment has been forwarded to the decision makers.
Keoki Cortez	<p>I believe that we should not allow the aquarium fishing industry remove any of our tropical fih from our waters. There is a reason why West Hawaii was called the Gold Coast. There was such an abundance of Yellow Tang that when they fed on the reefs, it would look like "gold" in the waters. You can't find this any longer. It needs to stop. When you harvest, you are destroying the balance of nature.</p>	Your comment has been forwarded to the decision makers.
Antoinette Davis Davis	See above comments (template format)	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Antoinette Davis Davis	Please reject this proposal - let the north American Pet trade address North America - this is Hawaii and these unique and fragile fishes need protection not harvesting from our Ocean. In Hawaii our economic engine is Tourism - these fish need to stay here - all of them. In their natural habit for all to enjoy and treasure.	Your comment has been forwarded to the decision makers.
Tom Davis	See above comments (template format)	Your comment has been forwarded to the decision makers.
Tom Davis	This is a rhetorical question. When do we just stop this bullshit and cease pushing any species to extinction for the pleasure of selfish hobbyists. I want my Grand Children to have the same opportunities that I have had to enjoy the reefs around the world.	Your comment has been forwarded to the decision makers.
Jill Dietmeyer	See above comments (template format)	Your comment has been forwarded to the decision makers.
Jill Dietmeyer	No one should be allowed unlimited access to Hawaii's natural resources to profit from mainland sales. Once the fish are gone, they are gone. If you don't know how many of these species are still surviving on Oahu's beleaguered reefs how on earth can you vote on how many mainlanders or "residents" can come in and take for free? I'm a long distance ocean swimmer and have seen the dead, fish-less beaches and reefs on ALL shores of our island. How many of you have swam from Sunset beach to Ehukai, or Kaimana to the Hilton and really looked at the condition of our reef ecosystems. Well, I have and I must tell you that it's mostly dead. Maybe things have improved slightly due to the massive decrease in tourists and their sunscreen, perfumes, deodorants, wastes and garbage in our waters. But now is not the time to allow the mainland pet trade to destroy something so incredibly beautiful and valuable that can never be replaced. I support a ban on all reef fish collection for the aquarium trade as it benefits a tiny group at the expense of all Hawaii Kamaaina.	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Karen Dorrance	See above comments (template format)	Your comment has been forwarded to the decision makers.
Karen Dorrance	This is a criminal act against our fragile marine fishes and should never be allowed.	Your comment has been forwarded to the decision makers.
Kimberley Emmons	See above comments (template format)	Your comment has been forwarded to the decision makers.
Kimberley Emmons	INCREASE RESTRICTIONS for aquarium collectors and ALL fishermen. Please save our reefs and the sea life that keeps them vital!!!	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Scott Fallon	See above comments (template format)	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Scott Fallon	As a former and enthusiastic marine aquarist, my perspective is broader than just this DEIS. I oppose all taking of marine fish from natural environments for these reasons: 1. By encouraging this sort of trade in a tragedy of the commons manner, we enable and encourage takings in other regions that will not use environmentally sound collection methods. We should, therefore, not encourage a market for trading in wild animals. Trading in wild animals beyond marine fish is rarely allowed. 2. The death rates of wild-capture marine fish are unacceptably and shockingly high. A tragedy by itself, this also encourages increased takings to replace deaths in the to-market pipeline. Some of the fishes taken such as Achilles Tangs and Moorish Idols have very little chance of surviving for even the most advanced aquarist and should never be taken. 3. Climate change is impacting reef health, and we just don't understand enough about these ecosystems to risk altering them through marine fish takings. 4. There are now acceptable private property solutions to supplying the marine trade. Captive breeding of a high number of species--and growing--makes taking from the wild for the aquarium trade unnecessary. The aquarist has tremendous options and choices among captive-bred fish now. This solves the tragedy of the commons problem through solid application of the principles of private property and capitalism. Look at the trade in dart frogs-literally no frogs offered are wild-caught anymore. The entire hobby is successfully supplied by a capitalism approach: private captive breeding which places no burden on wild populations or ecosystems. The same is now possible for marine aquaria. I intend to someday again be a marine aquarist and will at that time buy only captive-bred fish.	Your comment has been forwarded to the decision makers. A discussion on post-collection mortality has been added to Section 5.4.2. No collection of Achilles Tang would be permitted under the Preferred Alternative. Additional details on climate change have been added to the FEIS. A captive breeding alternative was considered in Section 3.7 of the FEIS.
Karen Foster	See above comments (template format)	Your comment has been forwarded to the decision makers.
Karen Foster	Our fish belong in our ocean! They are not "ambassadors" for anyone. Ban reef rapers! Please!	Your comment has been forwarded to the decision makers.
Brooke Friswold	See above comments (template format)	Your comment has been forwarded to the decision makers.
Brooke Friswold	My specific comment: I am a wildlife biologist and avid free diver here. I have personally witnessed a decline in biomass in reefs I have dived in and understand the impacts of removing important grazers like parrotfish and how opening up the trade would devastate not only fish populations but can collapse reef ecosystems all to support the corrupt aquarium trade. Please respect the delicate biodiversity of our reefs and do not allow it to be squandered for private interests.	Your comment has been forwarded to the decision makers. No parrotfish would be permitted to be collected under the Preferred Alternative.
JoAnn Garrigan	See above comments (template format)	Your comment has been forwarded to the decision makers.
JoAnn Garrigan	The number of fish and other species of ocean wildlife seen while swimming and snorkeling in Hawaii is scant. Why would any oven lover who enjoys seeing wildlife bother to visit our islands? We must conserve reef fish and wildlife in all forms for those of us who live here and for visitors to our islands. Promotion of ecotourism in Hawaii depends on the presence of wildlife in our ocean reefs. Tourism remains highly desirable and dependent on offering a colorful ocean for viewing.	Your comment has been forwarded to the decision makers.
Robert Gibson	See above comments (template format)	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Cat Gould	See above comments (template format)	Your comment has been forwarded to the decision makers.
Cat Gould	My dad was a fish collector when I was a kid, they all had terrible survival rates. It is damaging to the reef diversity to allow collection. Leave them there for their own sake and the sake of those wanting to swim and see them.	Your comment has been forwarded to the decision makers. A discussion on post-collection mortality has been added to Section 5.4.2 of the FEIS.
Gail Grabowsky	See above comments (template format)	Your comment has been forwarded to the decision makers.
Gail Grabowsky	<p>The original limits were not based on any kind of ecological data and as such were a matter of huge contention and fiction. They were determined by fish collectors and not scientists or scientific reasoning. I did calculations years ago when the "limits" were first proposed that showed that they would be completely unsustainable and if carried out would lead to higher numbers of take than the entire population size estimated on Oahu in the DEIS. The then Chair of DAR resigned on the day of testimony saying that the limits were like a 400-mile-an-hour speed "limit." I am sharing the table with Mr. Sakoda in a separate letter because it cannot be downloaded into this text box. Pulling numbers out of the sky is not science. The fish collectors simply chose a number so high that they could collect business-as-usual without any justification for the number. The "limits" are not scientific or management or sustainable. Also, I have conducted research counting aquarium fish using the methods of Tissot and Hallanher (2003 "Effects of Aquarium Collectors on Coral Reef Fishes in Kona, Hawaii" Cons Bio 17(6)) who found that: "Aquarium collectors had significant effects on 7 of the 10 species of reef fish we examined." We reported on the abundance of aquarium-collected fish around Oahu by comparing fish abundances in open collection areas to two protected locations within Hanauma Bay. Six species of reef fish – Acanthurus triostegus, Chaetodon lunula, Ctenochaetus strigosus, Naso lituratus, Zanclus cornutus, and Zebrasoma flavescens – exhibited significantly lower populations in collection areas. The greatest decreases were observed in the four most heavily-collected species, three of which are not taken as food fish suggesting that ornamental collection is primarily responsible for the differences in abundance. This paper has not been published because we are told that we need more control counting areas. This cannot be achieved since less than 1% of Oahu is protected and only Hanauma Bay is free from poaching (personal observation). Lastly, the climate crisis threatens coral reefs and all reef species and requires that we model any sustainable collection at all using forward thinking prudent paradigms that include cautionary buffers for the confounding effects of climate change on reef health. Herbivorous reef fish are absolutely essential to reef health. Using past business-as-usual models and false limits will be detrimental to the health of the reef. Collection has already impacted fish populations negatively on Oahu and is therefore not sustainable. There is nothing in the DEIS to rectify that fact and so it should be rejected. Thank</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative</p> <p>Of the 31 fish species on the proposed White List, 18 would be collected at <1% of the population, 5 would be collected at <2%, 3 would be collected at <4% and 2 would be collected at up to 4.5% of their population estimate.</p> <p>Of the six specific species mentioned by the commenter, only three are on the proposed White List (kole, orangespine unicornfish and yellow tang). Yellow Tang would be collected at up to 3.23% of their estimated population size, kole would be collected at up to 0.71% of their estimated population size, and Orangespine Unicornfish would be collected at up to 0.29% of their estimated population size. In addition, all three of these species also have size and/or bag limits that would remain in place, as outlined in Section 1.2.4 of the FEIS.</p> <p>Additional details on climate change have been added to the FEIS.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
	<p>you for your consideration, Dr. Gail L. Grabowsky Director, Environmental Programs Interim Dean of Natural Sciences & Mathematics Chaminade University</p>	
Mary Groode	See above comments (template format)	Your comment has been forwarded to the decision makers.
Mary Groode	<p>PLEASE STOP THE AQUARIUM TRADE IN HAWAII. There are so few fish left on our reefs. Even on Maui where we voted to stop the trade the reefs have not recovered. We have many fewer fish than ever before. Not only from the few people making money from selling these valuable creatures, but from spear fishermen and women, people throwing nets, poachers taking fish even from protected areas, Roi eating local fish. We DESPERATELY need laws and enforcement of those laws. The ancient Hawaiian had periods of time where fishing was kapu. We need a sustainable way to protect our environment, the fish and the coral reefs on which they depend. We must have serious consequences for those breaking the law. To fine \$260 for taking \$37,000 worth of tropical fish is ridiculous !</p>	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
	PLEASE STOP THE AQUARIUM TRADE IN HAWAII FOR FIVE YEARS. Then, we can see if the fish and reefs have rebounded.	
Gregg Gruwell	See above comments (template format)	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Gregg Gruwell	<p>My first trip to Hawaii was in 1980. I had just received my commission as an Ensign in the US Navy and a group of us were on our way to deployment in the Indian Ocean. We found time to make a snorkel trip to Hanauma Bay. Fish were super abundant and this magical experience stuck in my heart! Fast forward to 2000's and I am at DLNR to testify for the fish. During a break, fish collectors seated behind me are bragging about how easy getting fish is. They wait outside Hanauma Bay and when the fish school out the bay entrance, they scoop them up. Anyone who snorkels Oahu regularly knows the reef fish population has been decimated. From Maunalua Bay to Waikiki and the North Shore for example. Yellow Tang are seemingly gone. Collection reports show the yellow tang were once abundant in Waikiki and other areas. Collectors continue to push a false narrative that there are plenty of fish. The fact is DLNR have never counted fish populations and has no real idea what % of fish have been taken. My estimate is that 70% of the fish population are gone. For years, DLNR has aided and abetted the fish collection industry at every turn. A fish collector was even appointed as Director of DLNR. A DLNR scientist, Alton Miyasaka, (for years the lead scientist in charge of this fishery for DLNR) even published a guide, "Hawaii's Aquarium Fish Industry: A Business Profile", to assist Aquarium Collectors in catching and exporting fish.. Here is a review of the book, "A helpful guide for aquarium collectors in the 1990's. Miyasaka's small book is a business guide on how to run a fish collection operation. Licensing, shipping, etc. Written in a time when reef fish were in abundant supply and aquarium fish collection was a budding industry in Hawaii. Miyasaka himself is an aquarium enthusiast and an collector for personal use." (source https://books.google.com/books/about/Hawaii_s_Aquarium_Fish_Industry.html?id=61BGGwAACAAJ) DLNR's role is to protect Hawaii's natural resources! Instead, their partnership with the collection industry has gone from a glaring conflict of interest to outright corruption. It is finally time for the State/DLNR to do the right thing and stop all aquarium collection! At the present rate, aquarium collection along with climate change and pollution will wipe out the vast majority of these beautiful creatures. They are a huge draw of tourist revenue and there will be no turning back the clock if we wait too long! This Draft Environmental Impact Statement (DEIS) is deeply flawed! Please take action for future generations and reject this fictional document. Hawaii reef fish need to stay in Hawaii! Mahalo for hearing my testimony! Gregg Gruwell Honolulu, HI</p>	Your comment has been forwarded to the decision makers.
Jodi Gunderman	See above comments (template format)	Your comment has been forwarded to the decision makers.
Matthew Gurwitsch	See above comments (template format)	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Matthew Gurwitsch	I am horrified. This deceptive, predatory, irresponsible DEIS must be rejected out of hand. According to this document, "It is unknown which, if any, species are experiencing population declines, as population trend data is not available for the fish species analyzed in this EIS for the island of O'ahu." As anyone who keeps an eye in the waters knows, this is a lie. But even if it were true, let our watchword be: FIRST, DO NO HARM. It is time to shut down, once and for all, the removal of our native fish from their habitat to stock aquariums on the mainland and elsewhere. The survival rate of the stolen fish is heartbreakingly low. And obviously, fish that do survive in distant aquariums do not reproduce in sufficient numbers to satisfy collectors' desires. We must protect these creatures. They are our kuleana. Fail them now and we will have failed them forever.	Your comment has been forwarded to the decision makers. A discussion on post-collection mortality has been added to Section 5.4.2 of the FEIS.
Robert Guzman	See above comments (template format)	Your comment has been forwarded to the decision makers.
Robert Guzman	The Draft Environmental Impact Statement proposed will help accelerate destruction of our coral reef ecosystems.	Your comment has been forwarded to the decision makers. The Preferred Alternative has been revised to include a proposed White List of species that can be collected, and individual catch quotas to provide a hard upper limit on the number of fish that can be collected.
Taylor Hall	See above comments (template format)	Your comment has been forwarded to the decision makers.
Cory Harden	See above comments (template format)	Your comment has been forwarded to the decision makers.
Cory Harden	Our public trust resources should not be wiped out to enrich a few people.	Your comment has been forwarded to the decision makers.
Yuk Heath	See above comments (template format)	Your comment has been forwarded to the decision makers.
Yuk Heath	Continuously take marine animals will establish an unbalanced ecosystem.	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Teresa Hill	See above comments (template format)	Your comment has been forwarded to the decision makers.
Teresa Hill	Over the years I have seen a big decline in our beautiful Hawaiian tropical fish We need to protect our beautiful resources and aquatic Life life here	Your comment has been forwarded to the decision makers.
Elizabeth Hird	See above comments (template format)	Your comment has been forwarded to the decision makers.
Elizabeth Hird	I am very concerned that there are not enough protections for reef fish.	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Patricia Hoskin	See above comments (template format)	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Patricia Hoskin	I have lived on Maui for 11 years. I purchased my condo before that move. I have always enjoyed snorkling. My sons enjoy snorkling as do my three grandsons. I do not appreciate your organization having the right to give away or sell this precious resource. All citizens have the right to see these fish in their native habitat. That is why tourists go into the ocean. I do not think you should have the right to allow these individuals or companies to come and steal our fish. I wish we could vote your power out of existence.	Your comment has been forwarded to the decision makers. The Preferred Alternative would limit collection to the island of O'ahu, and would not permit any collection on Maui.
Phillip Hoyle	See above comments (template format)	Your comment has been forwarded to the decision makers.
Phillip Hoyle	Not responsible stewardship of our valuable wildlife.	Your comment has been forwarded to the decision makers.
Alice Hughes	See above comments (template format)	Your comment has been forwarded to the decision makers.
Alice Hughes	We need our fish to thrive so our reefs can be heAlthy for future generation and or visitor industry . I can not go to parks and harvest plants to sell . why should Aquarium collectors be allowed to pillage are reefs of rare and endangered fish for profit.	Your comment has been forwarded to the decision makers.
Shauna Ikaiahifo	See above comments (template format)	Your comment has been forwarded to the decision makers.
Shauna Ikaiahifo	I am a diasporic Kanaka Maoli living on the continent. When I return to my ancestral homeland, it is always heartbreaking to see how much of our islands natural beauty & resources have been commercialized with nothing to show for the Hawaiian people. You cannot continue to take what doesn't belong to you in the first place and the come back for more and more. When will you be satisfied? When the i'a who have called these waters their home for centuries are driven to extinction? Enough is enough. PAU ALREADY!	Your comment has been forwarded to the decision makers.
Ara Johnson	See above comments (template format)	Your comment has been forwarded to the decision makers.
Ara Johnson	I am a former Hawai'i resident who returns every year. The reefs need to be saved.	Your comment has been forwarded to the decision makers.
Bradley Jones	See above comments (template format)	Your comment has been forwarded to the decision makers.
Bradley Jones	The capture of fish and animal's on Hawaii's reefs has gone on for far too long. Corruption at the highest levels of state government has allowed this to continue for decades and it must stop now. There is no real economic benefit to Hawaii for the plunder of its natural resources including the coral reefs, except for a few selfish individuals who profit from the abduction and destruction of marine life and ecosystems in Hawaii. Enough is enough. The aquarium trade must be completely banned in Hawaii forever starting now. End of story. End this now, or the political careers of those who are supporting this travesty will be over. It's that simple. Public sentiment has turned completely against this barbaric practice and it's long past time to stand on the right side of history. Please do the right thing and abolish the aquarium trade in Hawaii. No exceptions for anyone, no matter who they are related to in the state government. Mahalo.	Your comment has been forwarded to the decision makers.
Annette Kaohelaulii	See above comments (template format)	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Annette Kaohelauii	I was shocked to learn that commercial operations even think they can harvest fishes from our reefs for sale to people with aquariums. They should start their own businesses growing aquarium fish for sale. It does not make sense to harvest our natural resources in a for profit operation.	Your comment has been forwarded to the decision makers.
Etta Karth	See above comments (template format)	Your comment has been forwarded to the decision makers.
Etta Karth	Aloha, As a resident, marine scientist, and UHH Marine Science employee, the DEIS is flawed. I can speak for the Big Island of Hawaii - there is little enforcement of the collection rules that currently exist, rules and laws are being broken, and the species targeted for the aquarium trade will be further at risk of low population levels if the DEIS is approved. Unfortunately, Hawaii is an easy place to get away with a lot of terrible things - don't let this get piled on top.	Your comment has been forwarded to the decision makers.
Mark Koppel	See above comments (template format)	Your comment has been forwarded to the decision makers.
Mark Koppel	I live in Hawaii. Leave those reefs and species alone!!!!	Your comment has been forwarded to the decision makers.
Laszlo Kurucz	See above comments (template format)	Your comment has been forwarded to the decision makers.
Jerry Lear	See above comments (template format)	Your comment has been forwarded to the decision makers.
Rick Lewis	See above comments (template format)	Your comment has been forwarded to the decision makers.
Rick Lewis	We have been visiting Hawaii for over 20 years. Every year there are fewer and fewer fish on the reefs. If you leave for a while like we do and return, you can see the difference year to year. If we lose our reef fish our visitors who like to stay for extended periods of time will go other places. Because, who wants to make an extended visit to a place where the natural beauty has been destroyed. I like tropical fish and I have kept aquarium breed fish. Our Maui reef fish are beautiful. We need them here. Maybe in 10 or 20 years they will recover, but until then, I do not believe we should take any more. The new normal will be that only people who are here for a quick sun break and some beer will be the only people who want to come here.	Your comment has been forwarded to the decision makers.
Pat Lindquist	See above comments (template format)	Your comment has been forwarded to the decision makers.
Pat Lindquist	Hawaiian reefs need diverse reef fish to be healthy. Decimating the wild fish to provide a few to enjoy them in captivity is short sighted gain and long time loss.	Your comment has been forwarded to the decision makers.
Jackie Lott	See above comments (template format)	Your comment has been forwarded to the decision makers.
Jackie Lott	Here on Kauai, I see trucks full of buckets of aquarium fish being harvested. They take the young fish, so no next generation It is Not sustainable!	Your comment has been forwarded to the decision makers. The Preferred Alternative would limit collection to the island of O'ahu, and would not permit any collection on Kauai.
Heather MacKey	See above comments (template format)	Your comment has been forwarded to the decision makers.
Justin Makekau	See above comments (template format)	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Justin Makekau	Save the oceans is what's heard most but where does that start? Healthy ecosystems, coral reefs, teaming populations of various species. This is crucial, stop this absurd request to kill the oceans!	Your comment has been forwarded to the decision makers.
Helen Malnar	See above comments (template format)	Your comment has been forwarded to the decision makers.
Helen Malnar	The underwater beauty that the Hawaiian islands have should be protected from all and any aquarium collectors. Why would you jeopardize the beautiful reefs, and the fish that live there, by letting these collectors exploit any of the waters around any of the islands of Hawaii?	Your comment has been forwarded to the decision makers.
Richard Marks	See above comments (template format)	Your comment has been forwarded to the decision makers.
Richard Marks	"This DEIS is a terrible insult to our dwindling reef systems. I've lived in Hawai'i for 20 years, and was a visitor here for the 15 years prior to becoming a full time resident. In these decades, the loss of specific reef life is more than obvious to the naked eye. One does not need to be a marine biologist to see how fishing for the aquarium/pet trade has diminished and nearly obliterated some species. PLEASE, please, please do not allow this dangerous practice to continue. Please INCREASE RESTRICTIONS for aquarium collectors and ALL fishermen. Please save our reefs and the sea life that keeps them vital!!! Thank you."	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Gwendelyn Marshall	See above comments (template format)	Your comment has been forwarded to the decision makers.
Gwendelyn Marshall	Taking something that doesn't belong to you is stealing. Collectors are wiping out local fish populations. If you've been in the water lately you'll notice a lack of tropical reef fishes. These collectors can breed their own fish and sell them instead of stealing fish from the sea. Stop the collectors and save the fish.	Your comment has been forwarded to the decision makers. A captive breeding alternative was considered in Section 3.7 of the FEIS.
Willa Mathison	See above comments (template format)	Your comment has been forwarded to the decision makers.
Willa Mathison	Although I am 86 and somewhat disabled and not really able to snorkel, any more, I have been a frequent Hawaii visitor--two or three times a year for many years--I desperately want the fish to be there for future generations to observe. It is certainly a known fact that the collectors greatly reduce the breeding capacity and, therefore, the over all numbers of fish. Please don't let them ruin the population of fishes for profit and entertainment of others.	Your comment has been forwarded to the decision makers.
Pedo Mayned	See above comments (template format)	Your comment has been forwarded to the decision makers.
Pedo Mayned	We must stop the rape and pillaging of our once pristine reefs and shoreline, that was once full of abundant sealife. Now no longer due to man's greed, carelessness and on going pollution. Hewa! Fix this problem maky it Pono. Malama Aloha Aina!	Your comment has been forwarded to the decision makers.
Kelley Mchenry	See above comments (template format)	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Kelley Mchenry	I was born in Hawaii and have been going there to visit all my life. I have seen how the reefs are dying in many formerly healthy places and how many fewer fish there are. It is a travesty that aquarium providers can take wild fish when they are already under so many pressures. The reefs of Hawaii are the state's best assets. Please do everything you can to ensure their protection.	Your comment has been forwarded to the decision makers.
Charolette McLaughlin	See above comments (template format)	Your comment has been forwarded to the decision makers.
Charolette McLaughlin	Limits are inadequate. I snorkel regularly on Maui where I live and have snorkeled on Oahu. It is obvious the reefs have been stripped of most of their fish. Aquarium collecting needs to be banned and strong and mandatory penalties for poaching need to be put in place. I own a vacation rental and snorkeling is one of the primary activities of our visitors. They snorkel and they are upset by what they see happening as well. I visited the Galapagos and Equador is a poor country yet take better care of their marine resources. They have far more abundant sea life. There it is more like it used to be when I first moved to Hawaii 20 years ago. The snorkel and boat to snorkel industry is far more of an economic boon to the islands than aquarium collecting which represents a fraction. It makes no sense on any level to allow this predation to continue. I see turtles at cleaning stations but there are hardly any fish to clean them. The reefs themselves are not as clean and vibrant. Aquarium collecting creates an unhealthy situation for our residents, visitors, reefs, beaches and even the economy.	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Allison Melanson	See above comments (template format)	Your comment has been forwarded to the decision makers.
Allison Melanson	Keep Hawaii's fish safe.	Your comment has been forwarded to the decision makers.
Janet Mercer	See above comments (template format)	Your comment has been forwarded to the decision makers.
Janet Mercer	Aloha, I am writing to urge you to reject the DEIS prepared by the North American pet industry. For the past thirty three years I have swum almost daily in the ocean surrounding our islands. In that time I have witness a dramatic decline in the tropical fish population and the degradation of our near shore reef. It is ludicrous to believe that allowing the collection and sale of tropical fish does not significantly impact the fish population, the reef or those of us that enjoy a healthy ocean. Now is the time to put our marine and island population ahead of profit. If not now, when? Once again I urge you to fully reject the DEIS prepared by the North American pet industry. Mahalo, Janet Mercer	Your comment has been forwarded to the decision makers.
Linda Mertens	See above comments (template format)	Your comment has been forwarded to the decision makers.
Linda Mertens	At a time when so much is being taken away or destroyed, PLEASE let's keep what little we have left!	Your comment has been forwarded to the decision makers.
David Meyer	See above comments (template format)	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
David Meyer	<p>Finally, after protection from the Aquarium traders for over two years, and with the break from much human interaction due to the pandemic, fish populations have been allowed to return. There should be at least another year's protection in O'ahu for studies to determine what the fish population is in various O'ahu marine sites. The DEIS should have remembered that take limits are based on state-wide populations - therefore allowing too much take for a species in the O'ahu population because state-wide figures include abundance in that species on the Big Island.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The limits in the EIS are based on Oahu population estimates, not the state of Hawai'i, and all population estimates are specific to the island of Oahu.</p>
Terry Michaud	See above comments (template format)	Your comment has been forwarded to the decision makers.
Terry Michaud	<p>I am horrified. This deceptive, predatory, irresponsible DEIS must be rejected out of hand. According to this document, "it is unknown which, if any, species are experiencing population declines, as population trend data is not available for the fish species analyzed in this EIS for the island of O'ahu." As anyone who keeps an eye in the waters knows, this is a lie. But even if it were true, let our watchword be: FIRST, DO NO HARM. It is time to shut down, once and for all, the removal of our native fish from their habitat to stock aquariums on the mainland and elsewhere. The survival rate of the stolen fish is heartbreakingly low. And obviously, fish that do survive in distant aquariums do not reproduce in sufficient numbers to satisfy collectors' desires. We must protect these creatures. They are our kuleana. Fail them now and we will have failed them forever.</p>	Your comment has been forwarded to the decision makers.
Asta Miklius	See above comments (template format)	Your comment has been forwarded to the decision makers.
Asta Miklius	<p>This DEIS completely disregards multiple lines of evidence that would suggest that we need to severely limit the amount of reef wildlife that could be collected without severe impact to reef health (especially in recovery from ocean warming events that are becoming more and more intense.) Instead, this DEIS proposes expanding collection territories and increasing collection limits. I have seen first-hand the impact of aquarium collection on the reef ecosystem around the island of Hawai'i, and the potential for recovery once it is suspended. It is absurd to ask the people of Hawai'i to stop fishing for herbivores while allowing the aquarium trade to take these same fish for profit. It is also preposterous to recommend that it is fine to continue to destroy our natural resources for the personal financial gain of a handful of people and companies. This DEIS is deeply and irretrievably flawed and should be rejected.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.</p> <p>Additional details on herbivores have been added to the FEIS.</p>
David Monasevitch	See above comments (template format)	Your comment has been forwarded to the decision makers.
David Monasevitch	<p>I think that there are not enough limits put on aquarium reef fish collectors. I think there should be a 25 year moratorium put on all collecting of reef fish for aquarium purposes.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Nina Monasevitch	See above comments (template format)	Your comment has been forwarded to the decision makers.
Nina Monasevitch	I have been diving in Hawaii since 1978. The drastic decline in reef fish is shocking! I can tell you from first hand experience that ALL species are experiencing population declines. Our oceans are dying. Extraction of species is one of the top three reasons for the degradation of the marine ecosystem. STOP ALL aquarium collection now!	Your comment has been forwarded to the decision makers.
Mike Moran	See above comments (template format)	Your comment has been forwarded to the decision makers.
Mike Moran	TThe rape of the reefs continue in a nastygame of whack-a-mole. Stop 'em in one area they try another. Another fake DEIS Maybe if they were fned for fake info they would do better. Maybe we need to go to the precautionary principle? Please say no again to another ludicrous document & save our natural resources, Mahalo	Your comment has been forwarded to the decision makers.
MARY MORRIS	See above comments (template format)	Your comment has been forwarded to the decision makers.
MARY MORRIS	Stop aquarium trade on South Kohala coast! The yellow tang have just started coming back to Puako in the past 18 or 24 months. Collectors will wipe them out (again) if they are allowed to collect Tang or any other "decorative" aquarium species. Let the fish population increase! This is not the time to remove them from the waters.	Your comment has been forwarded to the decision makers.
William Morris	See above comments (template format)	Your comment has been forwarded to the decision makers.
William Morris	In my 60 years on this planet, I have been swimming with a mask and snorkel on Oahu for 50 of these years. There are no kole, manini, Kala, Uhu left to fish. I used to think I could survive a food shortage by my ability to spear reef fish. Today I would starve. The reefs surrounding Oahu are in dire need of a kapu. We have to act responsibly, the way our Hawaiian ancestors did, and start managing these important food bearing assets appropriately NOW.	Your comment has been forwarded to the decision makers.
Vulong Nguyen	See above comments (template format)	Your comment has been forwarded to the decision makers.
Laura Parks	See above comments (template format)	Your comment has been forwarded to the decision makers.
Scott Parrish	See above comments (template format)	Your comment has been forwarded to the decision makers.
Scott Parrish	I am appalled that any aquarium trade is being allowed on Hawaii reefs, the amount of fish has declined tremendously since the first time I started exploring the beautiful reefs in the 1990's. I'm an avid reef explorer and the only places that have a decent supply of fish life left is at the reserves. Locals and tourist both benefit from having abundant fish life's on our crumbling reefs, please stop or put heavy restrictions on the aquarium trade from destroying our reef life.	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would recieve permits under this alternative.
Susanne Paynovich	See above comments (template format)	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Susanne Paynovich	"This DEIS is a terrible insult to our dwindling reef systems. I've have lived in Hawai'i, been going to Hawai'i and have done business in Hawai'i for 44 years. In these decades, the loss of specific reef life is more than obvious to the naked eye. One does not need to be a marine biologist to see how fishing for the aquarium/pet trade has diminished and nearly obliterated some species. PLEASE, please, please do not allow this dangerous practice to continue. Please INCREASE RESTRICTIONS for aquarium collectors and ALL fishermen. Please save our reefs and the sea life that keeps them vital!!! Thank you."	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Pamela Polland	See above comments (template format)	Your comment has been forwarded to the decision makers.
Pamela Polland	This DEIS is a terrible insult to our dwindling reef systems. I've lived in Hawai'i for 44 years, and was a visitor here for the 15 years prior to becoming a full time resident. In these decades, the loss of specific reef life is more than obvious to the naked eye. One does not need to be a marine biologist to see how fishing for the aquarium/pet trade has diminished and nearly obliterated some species. PLEASE, please, please do not allow this dangerous practice to continue. Please INCREASE RESTRICTIONS of aquarium collectors and ALL fishermen. Please save our reefs that the sea life that keeps them vital!!! Thank you.	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Bryson Poloa-Lewis	See above comments (template format)	Your comment has been forwarded to the decision makers.
Bryson Poloa-Lewis	A'OLE!! Aloha Aina!!	Your comment has been forwarded to the decision makers.
Dawn Reed	See above comments (template format)	Your comment has been forwarded to the decision makers.
Dawn Reed	The amount of species being collected is already too high.	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Robin Rodgers	See above comments (template format)	Your comment has been forwarded to the decision makers.
Robin Rodgers	The DEIS is ignoring the facts presented from recognized research concerning the welfare of the fish in O'ahu. They continue to ignore the use of reasonable bag limits: theirs exceeds the island-wide population of some species by up to 1000%! OUTRAGEOUS! How can this be permitted in a any part of Hawaii? Please STEP UP and protect the reefs of West Hawaii from aquarium collecting. Thank you!	Your comment has been forwarded to the decision makers. This EIS does not include any collection in West Hawai'i, and is specific to the island of O'ahu. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Mark Schacht	See above comments (template format)	Your comment has been forwarded to the decision makers.
Mark Schacht	With more than 30+ years as a divemaster and videographer with hundreds of logged dives throughout the islands, including Oahu, it is shocking that the	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
	aquarium trade continues to push phony "science" to support extractive reef policies that benefit only the industry. Reject this bogus EIS, and ban the trade!	
Lisa Schattenburg-Raymond	See above comments (template format)	Your comment has been forwarded to the decision makers.
Lisa Schattenburg-Raymond	It's ridiculous to claim that taking any kind of fish from our reefs will not have any impact. Anyone with eyeballs can see our reefs are deteriorating. There are many reasons for this, but removing these species will further denigrate these already threatened resources.	Your comment has been forwarded to the decision makers.
Don Schwartz	See above comments (template format)	Your comment has been forwarded to the decision makers.
Don Schwartz	I passionately oppose the flawed Draft Environmental Impact Study (DEIS)	Your comment has been forwarded to the decision makers.
S D	See above comments (template format)	Your comment has been forwarded to the decision makers.
S D	With the coral bleaching that is already taking place throughout the island chain, the marine life is already struggling to adapt and survive. Removing unlimited numbers of animals opens the islands up to more disturbing trends. As the reefs die and marine life dwindles, the islands die. Those selfish enough to think that their aquarium is more important than the survival of a marine species, it's home, and the environment are the biggest problem and do not deserve the honor of keeping any species for their own personal enjoyment.	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Mary Sherman	See above comments (template format)	Your comment has been forwarded to the decision makers.
Mary Sherman	This is really not only about Hawaii, this is about the world oceans and our environment. We know that there is no separating one body of water from the whole.	Your comment has been forwarded to the decision makers.
Sandra Shimmon	See above comments (template format)	Your comment has been forwarded to the decision makers.
Sandra Shimmon	Loss of marine life evident all over. Even shark coming in to look for food. Stop taking fish out of the ocean for greed of money. Enough!!	Your comment has been forwarded to the decision makers.
Matt Slater	See above comments (template format)	Your comment has been forwarded to the decision makers.
Matt Slater	Reef fish are vital for the effective function of coral reefs. The aquarium trade is a significant threat and an immoral exploitation of a valuable resource that provide a vital ecosystem service and need to be left on the reefs at this crucial time.	Your comment has been forwarded to the decision makers.
Robert Smith	See above comments (template format)	Your comment has been forwarded to the decision makers.
Robert Smith	I can't believe I even have to submit a statement. To me this completely undercuts what DLNR stands for. Are they the steward for our natural world or are they just the middleman selling off bits of Hawaii. I can't understand why DLNR would even consider such a thing.	Your comment has been forwarded to the decision makers.
Jeff Soto	See above comments (template format)	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Dennis Stichman	See above comments (template format)	Your comment has been forwarded to the decision makers.
Dennis Stichman	Unacceptable limits.	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Robert Stricker	See above comments (template format)	Your comment has been forwarded to the decision makers.
Robert Stricker	PLEASE don't act like wE idiots in the lower / Eastern 48 and not pay attention to OUR ever deteriorating environment. Whether the air, the land or under the ocean, please, P L E A S E pay attention to the Hawaiian environment	Your comment has been forwarded to the decision makers.
Rick Switzar	See above comments (template format)	Your comment has been forwarded to the decision makers.
Rick Switzar	it's redicoulus!	Your comment has been forwarded to the decision makers.
Mark Tang	See above comments (template format)	Your comment has been forwarded to the decision makers.
Mark Tang	PIJAC consultants refer to a key 'study' over and over again (Ochavillo and Hodgson - 2006) which turns out to be nothing more than a field guide for aquarium collecting in the Philippines, certainly not a 'gold standard' peer reviewed study! The document referenced was funded by the Transforming the Marine Aquarium Trade (TMAT) Project and the International Finance Corporation- Global Environment Facility, Marine Aquarium Market Transformation Initiative in cooperation with the Marine Aquarium Council and the Community Conservation Investment Forum. The species described in the referenced document's "natural mortality models" used to estimate a general "rule of thumb" are not found in Hawaii. And yet, that is precisely what they would pass off as "the best available science". It becomes the linchpin for many of the dubious thresholds for 'sustainability' of individual species here in Hawaii. It's wide range of collection (5%-25%) precipitated DLNR's call for more definitive information and/or an explanation in the initial Environmental Assessment. They still have not complied with the agency's directive! The whole document is 'BS'!	Your comment has been forwarded to the decision makers. The new Preferred Alternative limits collection to 31 fish species on the proposed White List, and includes individual catch quotas limiting collection to at or below 4.5% of the estimated population. Of the 31 fish species on the proposed White List, 18 would be collected at <1% of the population, 5 would be collected at <2%, 3 would be collected at <4% and 2 would be collected at up to 4.5% of their population estimate.
Gabriela Taylor	See above comments (template format)	Your comment has been forwarded to the decision makers.
Gabriela Taylor	I oppose the DEIS re. the 20 collectors of aquarium fish. Our reefs are in danger due to climate change and human atrocities. There should be no takes of aquarium fish from the Big Island as well as all the other islands. That goes for all aquarium fish. "Zero Tolerance "with stiff monetary penalties! It's an atrocity that recently a court ruled against a collector who took huge numbers of aquarium fish without a permit and charged them a pitifully low fine. Gabriela Taylor, Kauai	Your comment has been forwarded to the decision makers.
test test test	See above comments (template format)	Your comment has been forwarded to the decision makers.
test test test	This is just lame	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Katherine Thunholm	See above comments (template format)	Your comment has been forwarded to the decision makers.
Katherine Thunholm	There should be no collection period! Many aquariums breed fish, that should be the source not our reefs	Your comment has been forwarded to the decision makers.
Linda Toki	See above comments (template format)	Your comment has been forwarded to the decision makers.
Linda Toki	I am horrified and upset to learn of this DEIS proposal that would harm Hawaii's unique marine life and reef ecology. I am firmly against this proposal as a native born and raised in Hawaii. Over the past 50 years I have witnessed great loss of marine life that used to be abundant in our Oahu reefs. We need to protect all our marine life from overfishing, coral damage from tourists stepping on the reefs carelessly, and commercial aquarium fish harvesting from our Hawaiian waters. Our government needs to do much more in policing and protecting our marine life. I often pick up loads of human trash, plastics, and other debris floating or sunk in the ocean while I dive and do my best to save marine life tangled in the nets and debris. We must help the ocean- not decimate it.	Your comment has been forwarded to the decision makers.
BARBARA TOMASINO	See above comments (template format)	Your comment has been forwarded to the decision makers.
BARBARA TOMASINO	The ocean and its contents need to be protected once its gone...it is gone our current government does not know the first thing about saving our precious invironment fish and sea life belong in the sea not a tank in a lobby	Your comment has been forwarded to the decision makers.
Mary True	See above comments (template format)	Your comment has been forwarded to the decision makers.
Mary True	I am outraged at the massacre proposed by the DEIS. We should err on the side of caution, not destruction. It is so short sighted to only look at the small picture... small unsustainable gains. We need to look at the big picture and shoot for long term sustainable gains.	Your comment has been forwarded to the decision makers.
Debra Van Zile	See above comments (template format)	Your comment has been forwarded to the decision makers.
Debra Van Zile	Please DO NOT allow this. Our marine life is precious as it is, and enabling this would decimate species!	Your comment has been forwarded to the decision makers.
Momi Vee	See above comments (template format)	Your comment has been forwarded to the decision makers.
Momi Vee	We Only Have One Hawai'i Nei In The World!! We've Lost Soo Much Ocean Life, Due To Sugarcane Runoffs And Tremendous Over Fishing By The Immigrants That Arrived Here From Other Countries!! Enough Is Enough!! As Kanaka Maoli We Plant Limu And Coral For Fishes To Have Food And Shelter. Only For Them To Be Stolen From Their Rightful Homes From Generations And Generations Of Growing Up In Hawai'i Waters.. Stop The Slaps On The Wrist And Punish The Divers Stealing Our Ocean Sealife!! Please..!!	Your comment has been forwarded to the decision makers.
Amy Venema	See above comments (template format)	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Amy Venema	I am a 26 year resident of Hawaii and a tour boat captain and environmentalist. Educating and protecting our oceans ecosystems is one of the the most important ways to ensure that the ecosystems will continue to be healthy and we will have them for our children, not to mention the economic impact of lost tourism when the reefs are dying and tourist no longer want to come here to enjoy them. The aquarium collecting trade has proven to have a very negative impact on the reefs. Please stop this trade and protect our reefs!	Your comment has been forwarded to the decision makers.
Suzanne Villeneuve	See above comments (template format)	Your comment has been forwarded to the decision makers.
Suzanne Villeneuve	I can't believe that fisherman would take fish out of the water, to sell for the aquariums .	Your comment has been forwarded to the decision makers.
Doreen Virtue	See above comments (template format)	Your comment has been forwarded to the decision makers.
Doreen Virtue	As a scuba dive master, I'm concerned that tourism and the dive industry will continue to be affected negatively if more fish are taken from the reefs. Already the tourists complain about the lack of fish during scuba dive trips in Hawaii, compared to Mexico, Tahiti, etc.	Your comment has been forwarded to the decision makers. As stated in the EIS, the Hawai'i tourism industry achieved new records in total visitor spending and visitor arrivals in 2017, marking the sixth consecutive year of record growth in both categories. Total spending by visitors to the Hawaiian Islands increased 5.6% to a new high of \$16.81 billion (HTA 2018). This occurred in the presence of commercial aquarium collection.
Deborah Wallace	See above comments (template format)	Your comment has been forwarded to the decision makers.
Deborah Wallace	My specific comment: It is absolutely unacceptable that a small amount of people would be allowed to profit at the expense of our ecology the health of our population and Our coral reefs. Our wreaths and our fish or already under stress is from pollution ocean warming plastics sunscreens and overfishing. The selfishness of aquarium fishers is unacceptable. Everyone in Hawaii deserves to enjoy the beauty Hawaiian ocean fish. Do not allow the taking of our fish. I swim in the ocean with the fish daily and the conditions of the reefs have deteriorated dramatically as have the number of our fish.	Your comment has been forwarded to the decision makers.
Colleen Wallis	See above comments (template format)	Your comment has been forwarded to the decision makers.
Colleen Wallis	I have stated my position about our precious reef fish many times and I will repeat myself again. No one should be allowed to take our reef fish to export or be sold in the Aquarium trade. We have seen what they do to capture the dish and how they discard the ones that end up dying in the process. No creature should be subjected to those cruel methods and taken from our island shores on any of our islands. I have been a Reef Teacher at Kahalu'u beach in Kona since 2010 and have tried to educate the locals as well as the public to protecting our reef and it's inhabitants so future generations can enjoy seeing them in their natural habitat.	Your comment has been forwarded to the decision makers.
james ward	See above comments (template format)	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
james ward	Aloha, As a scuba diver that has seen first hand what the fish collecting trade has done to the local reefs where I live, I want to add my voice to the residents of Hawaii that oppose aquarium fish collecting. Even if the damage to the fish populations is put aside, the colorful reef fish are a big attraction to visitors to the state. I worked as a concierge at a major resort, and the comment I kept hearing was " there's not as many fish as there used to be" Between the bleaching of the coral due to warming ocean temperatures and the harvesting of reef fish (most of which die on the way to the pet store) I strongly oppose the findings of the DEIS Mahalo James Ward 808-895-9656	Your comment has been forwarded to the decision makers. As stated in the EIS, the Hawai'i tourism industry achieved new records in total visitor spending and visitor arrivals in 2017, marking the sixth consecutive year of record growth in both categories. Total spending by visitors to the Hawaiian Islands increased 5.6% to a new high of \$16.81 billion (HTA 2018). This occurred in the presence of commercial aquarium collection.
Robert Ward	See above comments (template format)	Your comment has been forwarded to the decision makers.
Robert Ward	The government is way behind in protecting the ocean life. It's obvious to everyone who has been here for the over 20 years of decline which I've witnessed.	Your comment has been forwarded to the decision makers.
aerie waters	See above comments (template format)	Your comment has been forwarded to the decision makers.
aerie waters	NOOOOOO!! Our reefs are so seriously denuded already by private interest with the cost to our natural resource of healthy reefs and beautiful tourist snorkeling sites, and Posterity!! STOP IT!!	Your comment has been forwarded to the decision makers.
Madolin Wells	See above comments (template format)	Your comment has been forwarded to the decision makers.
Madolin Wells	The aquarium trade is wrong, wrong, WRONG!!! I finally got my wish to move to Hawai'i in 2018, 23 years after first visiting and not having been since. So much of what I witness now is absolutely heartbreaking. It is unbelievable that those who make decisions on behalf of Hawai'i's environment could so badly default on their sacred responsibility to to the ocean and every living species in it. Having insufficient data to make a determination means "do not allow any collection to proceed." In reality, there is no safe amount of harvesting. Allowing the harvesters to move on from Maui to O'ahu is unconscionable. I urge you to do the right thing. All eyes are on you - we are counting on you! Sincerely, Madolin Wells, Kihei	Your comment has been forwarded to the decision makers.
Laurel Whilock	See above comments (template format)	Your comment has been forwarded to the decision makers.
Laurel Whilock	I've been diving in Hawaii for 30 years and my observations over the past three decades lead me to conclude that the marine life, including coral and reef fish, have degraded and declined substantially. Without adequate protection from over-collection by aquarium fishers, our reefs will be lost. Please, at the very least, do a thorough and impartial EIS before our marine environment has gone beyond recovery.	Your comment has been forwarded to the decision makers.
Linda Willaby Willaby	See above comments (template format)	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Linda Willaby Willaby	To Whom it May Concern, I have been a Big Island resident for the past 12 years. I snorkel in the ocean almost every day and I have seen a huge decline in the number of reef fish in just the time that I have been here. I think it is time to stop all aquarium fish collecting. It is not sustainable and the health of our coral reefs depends on reef fish. Please REJECT the Environmental Impact Statement There is no verification of the numbers of fish caught or methods used. The practice of catching reef fish for aquariums is not healthy for the reefs and has dire environmental consequences There are other industries that rely on a healthy reef system and the fish life on the reef such as dive and snorkel boat operators. The entire tourism industry will suffer if there are no reef fish in Hawaiian waters. You will only have yourselves to blame when the last yellow tang disappears from Hawaiian waters. Caught and shipped away so some fat cat mainlander can have a pretty fish in his aquarium. Entire species of reef fish should not be sacrificed so a few people can get rich at the expense of all the rest of us who appreciate living sea creatures in our waters. I can't believe that I have to keep making these comments to keep our reef fish from being exploited to extinction. . Yours truly, Linda Willaby	Your comment has been forwarded to the decision makers. As stated in the EIS, the Hawai'i tourism industry achieved new records in total visitor spending and visitor arrivals in 2017, marking the sixth consecutive year of record growth in both categories. Total spending by visitors to the Hawaiian Islands increased 5.6% to a new high of \$16.81 billion (HTA 2018). This occurred in the presence of commercial aquarium collection.
Linda Wright	See above comments (template format)	Your comment has been forwarded to the decision makers.
Linda Wright	The limits proposed are not enough to preserve life on the islands. Continuing the decimation of the fish life in search of profits may well spell the end of many species in the Pacific. We must seriously examine our interference in the ecology of our islands and take action to preserve it.	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Carrie Younkin	See above comments (template format)	Your comment has been forwarded to the decision makers.
Carrie Younkin	There should be nothing and no one that allows the take of Hawaii's species, especially endangered and endemic ones for the aquarium trade. This is apparent especially after what we have seen on West Hawaii with the largest abundance of reef fish documented after 2.5 years of no fish take for aquariums!	Your comment has been forwarded to the decision makers.
Website Template; each commenter could select any or all of these items	I am concerned about the impacts of the aquarium trade on the following species: Yellow tangs Butterflyfishes Herbivores/Surgeonfishes Bandit Angelfish kole Achilles tang (paku ikui) Cleaner Wrasse Flame Wrasse Moorish Idol	NOTE: Info from the following rows labeled "Website Template" are the options from a template web form. Most commenters below selected all of these, but some selected only a few. We did not show which commenters selected which options from the web form but instead referred back to these rows each time. Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative. Additional information on the role of herbivores has been added to the FEIS.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Website Template; each commenter could choose whether to select this concern.	The natural beauty of coral reefs is diminished by aquarium collecting.	<p>Your comment has been forwarded to the decision makers.</p> <p>The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.</p>
Website Template; each commenter could choose whether to select this concern.	Species abundance is significantly reduced by aquarium collecting.	<p>Your comment has been forwarded to the decision makers.</p> <p>The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.</p>
Website Template; each commenter could choose whether to select this concern.	Communities of reef species are disrupted by aquarium collecting.	<p>Your comment has been forwarded to the decision makers.</p> <p>The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.</p>
Website Template; each commenter could choose whether to select this concern.	Marine life is threatened with local extinction	<p>Your comment has been forwarded to the decision makers.</p> <p>The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.</p>
Website Template; each commenter could choose whether to select this concern.	The real possibility that future generations may not encounter these species	<p>Your comment has been forwarded to the decision makers.</p> <p>The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
<p>Website Template; each commenter could choose whether to select this concern.</p>	<p>DLNR estimated the time to assess populations/set take limits for 40 species taken by the aquarium trade at 10-15 years. The DEIS is inadequate.</p>	<p>Your comment has been forwarded to the decision makers.</p>
<p>Website Template; each commenter could choose whether to select this concern.</p>	<p>Scientists and DLNR have urged Hawaii residents to stop taking herbivores. Making an exception for aquarium collectors is wrong.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>Additional details on the role of herbivores has been added to the FEIS. The Preferred Alternative includes a proposed White List of 31 fish species and an individual catch quota for each species, including all herbivores on the proposed White List, which provides a hard upper limit on the number which could be collected in a given year. Existing daily bag and size limits will also remain in effect.</p>
<p>Website Template; each commenter could choose whether to select this concern.</p>	<p>70% of Hawaii's reefs are projected to die within 20 years unless major changes are made.</p>	<p>Your comment has been forwarded to the decision makers.</p>
<p>Website Template; each commenter could choose whether to select this concern.</p>	<p>Hawaii will pay a terrible price for shipping out these fish as disposable "pets" for the luxury saltwater aquarium hobby.</p>	<p>Your comment has been forwarded to the decision makers.</p>
<p>Website Template; each commenter could choose whether to select this concern.</p>	<p>Hawaii needs these fish more than ever before. Taking them for personal aquariums outside Hawaii is wasteful.</p>	<p>Your comment has been forwarded to the decision makers.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Website Template; each commenter could select any or all of these items	I believe some of all of the species identified above have been impacted on reefs I am familiar with on Oahu: North Shore Leeward Oahu Windward Oahu Kaneohe Bay Kailua Waikiki Unfamiliar with these reefs, but still concerned	Your comment has been forwarded to the decision makers.
Website Template; each commenter could choose whether to select this statement.	It is impossible to propose limits that would allow entire species to be wiped out within months and then conclude that commercial aquarium collection has no significant impacts. This DEIS is completely flawed.	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Jo Alexander	See above comments (template format)	Your comment has been forwarded to the decision makers.
Lynn Allen	See above comments (template format)	Your comment has been forwarded to the decision makers.
Lynn Allen	These "limits" are irresponsible and will have extensive consequences. It is critical that the welfare of the marine life and reef ecosystem (which impacts many people and resources) be prioritized over a small group of collectors.	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Anne Allison	See above comments (template format)	Your comment has been forwarded to the decision makers.
Anne Allison	You have got to be kidding. Who and at what offices is getting paid off by the Aquarium rape trade?????	Your comment has been forwarded to the decision makers.
Geri Allison	See above comments (template format)	Your comment has been forwarded to the decision makers.
Geri Allison	Completely unacceptable	Your comment has been forwarded to the decision makers.
Linda Anderson	See above comments (template format)	Your comment has been forwarded to the decision makers.
Linda Anderson	Please lay off our reef fish. Close pet shops and disallow all sales. It is harmful and frivolous to use this as a job. Become ocean tour guides or find other work.. A photo op company ocean tour, but let the fish recover!!!!	Your comment has been forwarded to the decision makers.
Caroline Azelski	See above comments (template format)	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Caroline Azelski	The pandemic has proven that when left alone animals populations rebound.	Your comment has been forwarded to the decision makers.
Robert Babson	See above comments (template format)	Your comment has been forwarded to the decision makers.
Robert Babson	I moved to Maui in 1991 and live in Kihei. During the 1990's, I snorkeled all over Maui, but mostly in Kihei, Wailea, Makena and La Perouse. There used to be schools of fish up and down the Kihei coast, but not anymore. Please do not approve any collectors taking fish from the coral reefs. 50% of all collected fish that are shipped to the mainland for sale, die in transit. The rest don't last long in captivity. Please preserve these fish for our children and grand children to enjoy. The only place there are still fish in La Perouse is the Ahihi Kinau Natural Area Reserve which is a "no take" reserve. "no take" means no line fishing, no spear gunning, no lay nets and no collectors. What we need is more "no take" natural area reserves all over Hawaii, all islands. Many reef fish do not become sexually active until they are five years old. To remove these older fish from the reef is also removing all their future offspring.	Your comment has been forwarded to the decision makers. A discussion on post-collection mortality has been added to Section 5.4.2.
Bette Belanger	See above comments (template format)	Your comment has been forwarded to the decision makers.
Christopher Biltoft	See above comments (template format)	Your comment has been forwarded to the decision makers.
Christopher Biltoft	The proposed "limits" presented in the DEIS are actually no limits at all. The "Aquarium Trade" is a superfluous business that is ultimately destructive to native marine habitat. There is no reasonable justification for continuing it. Those engaged in this awful business need to find some socially responsible thing to do other than despoiling our marine reserves. The Big Island lost a significant marine sanctuary as a consequence of the June 2018 lava flow. There is no need or justification for further reducing fish stocks by "Aquarium Trade" poaching.	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Marjorie Bonar	See above comments (template format)	Your comment has been forwarded to the decision makers.
Marjorie Bonar	They have had a flagrant disregard for the data collected over many years. This is not science, it is marketing. With a very uncontrolled collection method, the industry has shown it cannot be trusted in any fashion. There should be no take of reef fish, except for those that are taken for personal human consumption.	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Heidi Bornhorst	See above comments (template format)	Your comment has been forwarded to the decision makers.
Heidi Bornhorst	Overfishing is detrimental to Hawaii. Salt water aquariums are fish killers. they belong on our reefs. NO fishing of reef fish for commercial trade. We would also like to see Waikiki to Maunaloa closed to Spear and net fishing. Permanently. these are keiki fish nurseries.	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Jane Bowman	See above comments (template format)	Your comment has been forwarded to the decision makers.
Jane Bowman	Please LIMIT aquarium collecting on Oahu. Without the abundant marine life of Hawaii's reefs I would seriously consider vacationing elsewhere. I was disappointed in my last trip to Oahu because of the barren nature of some reefs. Thanks you	<p>Your comment has been forwarded to the decision makers.</p> <p>The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.</p>
Bill Bugbee	See above comments (template format)	Your comment has been forwarded to the decision makers.
Bill Bugbee	<p>Aquarium reef fish extractors are NOT compatible with Hawaii's environmental, sustainability, and economic goals. It doesn't take a scientist to connect the dots between the health of Hawaii's reef system and the essential role that abundant and varied reef fish play in ensuring a healthy ecosystem, both are essential and interdependent in their role in maintaining a healthy marine ecosystem, and both are under attack from multiple manmade stressors: 1) global warming from rising levels and concurrent shifts in temperature, circulation, stratification, nutrient input, oxygen content, and ocean acidification, all with wide-ranging biological effects. 2) Hawaii's state-wide 2015-16 coral bleaching event is a case in point, which reef systems on every island, including suffered and five years later have not recovered, creating a two-fold impact on fish and coral. 3) Recent scientific findings have demonstrated the spread of coral diseases may be mitigated by reef fishes, further mitigating global heating impacts, and recognizing the value-added role of Hawaii's reef fish to Hawaii and the need to ensure their preservation. 4) There are strong mutual dependencies between the reef-building corals and reef-inhabiting fishes, with many Hawaiian reef fish species depending on corals for food and habitat, while corals depend on the grazing by certain fishes for reproductive success.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>Additional details on climate change have been added to the FEIS.</p>
Bill Bugbee	<p>Make no mistake: the health of Hawaii's marine reefs ecosystem, and the fish which inhabit them are fish prized by reef extractors are both major contributors to a healthy marine ecosystem and the state's largest economic segment: Tourism. The aquarium trade claims that the limitless collection of Hawaii's reef animals has a minimal impact on the state's coral reef ecosystem, even in the face of ongoing, unprecedented coral bleaching and climate change. The aquarium extractors take the majority of Achilles tangs and yellow tangs on the reefs where they operate, amounting to more than 80% in some years. DEIS skews this data by comparing catch numbers to estimates for fish populations on the entire island and concludes that the trade would be taking just 1%, which misleadingly minimizes impacts to localized reef ecosystems. Allowing the extraction of Hawaii's reef fish, which are at the present and for the foreseeable future facing unprecedented stressors – is a prescription for species extinction, and would be a wanton disregard for common sense policy designed to protect Hawaii's environmental assets and the public interest.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative. Collection of Achilles Tang would not be permitted under the Preferred Alternative.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Patricia Cadiz	See above comments (template format)	Your comment has been forwarded to the decision makers.
Patricia Cadiz	The health of our reefs is inextricably linked to the health of our beaches. Both beach and reef depend on a balanced and thriving reef ecosystem. Please do not allow the aquarium trade access to these proposed permits.	Your comment has been forwarded to the decision makers.
Francesca Carey	See above comments (template format)	Your comment has been forwarded to the decision makers.
Francesca Carey	Already there are NO yellow tangs in Maui!! The reef fish need our protection - it should be ILLEGAL to take them at all! Find a way to raise them in captivity if you can - but do NOT ALLOW collecting in ANY of our islands!	Your comment has been forwarded to the decision makers. The permits issued under the Preferred Alternative would be limited to the island of O'ahu and would not permit collection on Maui. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species, including Yellow Tang, has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Heather Carollo	See above comments (template format)	Your comment has been forwarded to the decision makers.
Heather Carollo	Fish populations are declining all over the world, now is not the time to allow anyone the ability to catch unlimited amounts of any animal. We need to protect our environment and that includes the animals that are essential for it's survival. Our reefs will only die faster without these species. Please do not allow this to pass.	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative. Collection of Achilles Tang would not be permitted under the Preferred Alternative.
Mia Charleston	See above comments (template format)	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Mia Charleston	<p>Aloha and thank you for considering comments to the DEIS. I feel the DEIS is not accurate, overlooks a lot of data and does not provide enough information to support or prove there won't be negative affects on the populations of fish they are proposing to take off the reef. This statement alone "it is unknown which, if any, species are experiencing population declines, as population trend data is not available for the fish species analyzed in this EIS for the island of O'ahu" does not provide an acceptable conclusion that the proposed reef ecosystem will not be affected. I have lived in Hawai'i for 14 years. My degree is in Oceanography with a background in Marine Science. Having worked on snorkel boats for about 8 years on Maui, I have seen the decline in so much marine life from corals to fish. It would be a shame to basically allow additional impacts to the reef ecosystem. Weren't some of the collectors who are behind the proposal to take off the reef, have been caught illegally taking marine life. I understand this is a difficult time for so many people but it doesn't mean that we need to sacrifice some of our resources that bring in monies in different ways to the State such as the tourism industry and diving industry. I remember going to an interview for a job in Florida that was associated with the marine trade industry. I walked in for the interview and saw hundreds of tanks with living (for sale)and so many dead fish- that I turned around and walked right out- it was terrible to see the amount of loss first hand. I am lucky to be able to get out snorkeling and diving at least once a week still even though I am not on the boats anymore. Based on what I have seen on Maui, Hawaii and Oahu, it would not be in the best interest of the community to to take these fish species without have something to replace them with. These fish species create a type of balance and in these times, that balance is under threat having so many detrimental obstacles to deal with, it needs all the help it can get. Also there are other means such as certain types of fish being raised in captivity that should be supported instead (win-win). I hope you will take these comments into consideration and thank you for your time. Mahalo</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>A captive breeding alternative was considered in Section 3.7 of the FEIS.</p>
Debbie Collins	See above comments (template format)	Your comment has been forwarded to the decision makers.
Alissa Collins	See above comments (template format)	Your comment has been forwarded to the decision makers.
Alissa Collins	STOP PILFERING OUR LOCAL OCEANS.	Your comment has been forwarded to the decision makers.
Keoki Cortez	See above comments (template format)	Your comment has been forwarded to the decision makers.
Keoki Cortez	<p>I believe that we should not allow the aquarium fishing industry remove any of our tropical fih from our waters. There is a reason why West Hawaii was called the Gold Coast. There was such an abundance of Yellow Tang that when they fed on the reefs, it would look like "gold" in the waters. You can't find this any longer. It needs to stop. When you harvest, you are destroying the balance of nature.</p>	Your comment has been forwarded to the decision makers.
Antoinette Davis Davis	See above comments (template format)	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Antoinette Davis Davis	Please reject this proposal - let the north American Pet trade address North America - this is Hawaii and these unique and fragile fishes need protection not harvesting from our Ocean. In Hawaii our economic engine is Tourism - these fish need to stay here - all of them. In their natural habit for all to enjoy and treasure.	Your comment has been forwarded to the decision makers.
Tom Davis	See above comments (template format)	Your comment has been forwarded to the decision makers.
Tom Davis	This is a rhetorical question. When do we just stop this bullshit and cease pushing any species to extinction for the pleasure of selfish hobbyists. I want my Grand Children to have the same opportunities that I have had to enjoy the reefs around the world.	Your comment has been forwarded to the decision makers.
Jill Dietmeyer	See above comments (template format)	Your comment has been forwarded to the decision makers.
Jill Dietmeyer	No one should be allowed unlimited access to Hawaii's natural resources to profit from mainland sales. Once the fish are gone, they are gone. If you don't know how many of these species are still surviving on Oahu's beleaguered reefs how on earth can you vote on how many mainlanders or "residents" can come in and take for free? I'm a long distance ocean swimmer and have seen the dead, fish-less beaches and reefs on ALL shores of our island. How many of you have swam from Sunset beach to Ehukai, or Kaimana to the Hilton and really looked at the condition of our reef ecosystems. Well, I have and I must tell you that it's mostly dead. Maybe things have improved slightly due to the massive decrease in tourists and their sunscreen, perfumes, deodorants, wastes and garbage in our waters. But now is not the time to allow the mainland pet trade to destroy something so incredibly beautiful and valuable that can never be replaced. I support a ban on all reef fish collection for the aquarium trade as it benefits a tiny group at the expense of all Hawaii Kamaaina.	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Karen Dorrance	See above comments (template format)	Your comment has been forwarded to the decision makers.
Karen Dorrance	This is a criminal act against our fragile marine fishes and should never be allowed.	Your comment has been forwarded to the decision makers.
Kimberley Emmons	See above comments (template format)	Your comment has been forwarded to the decision makers.
Kimberley Emmons	INCREASE RESTRICTIONS for aquarium collectors and ALL fishermen. Please save our reefs and the sea life that keeps them vital!!!	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Scott Fallon	See above comments (template format)	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Scott Fallon	<p>As a former and enthusiastic marine aquarist, my perspective is broader than just this DEIS. I oppose all taking of marine fish from natural environments for these reasons: 1. By encouraging this sort of trade in a tragedy of the commons manner, we enable and encourage takings in other regions that will not use environmentally sound collection methods. We should, therefore, not encourage a market for trading in wild animals. Trading in wild animals beyond marine fish is rarely allowed. 2. The death rates of wild-capture marine fish are unacceptably and shockingly high. A tragedy by itself, this also encourages increased takings to replace deaths in the to-market pipeline. Some of the fishes taken such as Achilles Tangs and Moorish Idols have very little chance of surviving for even the most advanced aquarist and should never be taken. 3. Climate change is impacting reef health, and we just don't understand enough about these ecosystems to risk altering them through marine fish takings. 4. There are now acceptable private property solutions to supplying the marine trade. Captive breeding of a high number of species--and growing--makes taking from the wild for the aquarium trade unnecessary. The aquarist has tremendous options and choices among captive-bred fish now. This solves the tragedy of the commons problem through solid application of the principles of private property and capitalism. Look at the trade in dart frogs--literally no frogs offered are wild-caught anymore. The entire hobby is successfully supplied by a capitalism approach: private captive breeding which places no burden on wild populations or ecosystems. The same is now possible for marine aquaria. I intend to someday again be a marine aquarist and will at that time buy only captive-bred fish.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>A discussion on post-collection mortality has been added to Section 5.4.2. No collection of Achilles Tang would be permitted under the Preferred Alternative. Additional details on climate change have been added to the FEIS.</p> <p>A captive breeding alternative was considered in Section 3.7 of the FEIS.</p>
Karen Foster	See above comments (template format)	Your comment has been forwarded to the decision makers.
Karen Foster	Our fish belong in our ocean! They are not "ambassadors" for anyone. Ban reef rapers! Please!	Your comment has been forwarded to the decision makers.
Brooke Friswold	See above comments (template format)	Your comment has been forwarded to the decision makers.
Brooke Friswold	<p>My specific comment: I am a wildlife biologist and avid free diver here. I have personally witnessed a decline in biomass in reefs I have dived in and understand the impacts of removing important grazers like parrotfish and how opening up the trade would devastate not only fish populations but can collapse reef ecosystems all to support the corrupt aquarium trade. Please respect the delicate biodiversity of our reefs and do not allow it to be squandered for private interests.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>No parrotfish would be permitted to be collected under the Preferred Alternative.</p>
JoAnn Garrigan	See above comments (template format)	Your comment has been forwarded to the decision makers.
JoAnn Garrigan	<p>The number of fish and other species of ocean wildlife seen while swimming and snorkeling in Hawaii is scant. Why would any oven lover who enjoys seeing wildlife bother to visit our islands? We must conserve reef fish and wildlife in all forms for those of us who live here and for visitors to our islands. Promotion of ecotourism in Hawaii depends on the presence of wildlife in our ocean reefs. Tourism remains highly desirable and dependent on offering a colorful ocean for viewing.</p>	Your comment has been forwarded to the decision makers.
Robert Gibson	See above comments (template format)	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Cat Gould	See above comments (template format)	Your comment has been forwarded to the decision makers.
Cat Gould	My dad was a fish collector when I was a kid, they all had terrible survival rates. It is damaging to the reef diversity to allow collection. Leave them there for their own sake and the sake of those wanting to swim and see them.	Your comment has been forwarded to the decision makers. A discussion on post-collection mortality has been added to Section 5.4.2 of the FEIS.
Gail Grabowsky	See above comments (template format)	Your comment has been forwarded to the decision makers.
Gail Grabowsky	<p>The original limits were not based on any kind of ecological data and as such were a matter of huge contention and fiction. They were determined by fish collectors and not scientists or scientific reasoning. I did calculations years ago when the "limits" were first proposed that showed that they would be completely unsustainable and if carried out would lead to higher numbers of take than the entire population size estimated on Oahu in the DEIS. The then Chair of DAR resigned on the day of testimony saying that the limits were like a 400-mile-an-hour speed "limit." I am sharing the table with Mr. Sakoda in a separate letter because it cannot be downloaded into this text box. Pulling numbers out of the sky is not science. The fish collectors simply chose a number so high that they could collect business-as-usual without any justification for the number. The "limits" are not scientific or management or sustainable. Also, I have conducted research counting aquarium fish using the methods of Tissot and Hallanher (2003 "Effects of Aquarium Collectors on Coral Reef Fishes in Kona, Hawaii" Cons Bio 17(6)) who found that: "Aquarium collectors had significant effects on 7 of the 10 species of reef fish we examined." We reported on the abundance of aquarium-collected fish around Oahu by comparing fish abundances in open collection areas to two protected locations within Hanauma Bay. Six species of reef fish – Acanthurus triostegus, Chaetodon lunula, Ctenochaetus strigosus, Naso lituratus, Zanclus cornutus, and Zebrasoma flavescens – exhibited significantly lower populations in collection areas. The greatest decreases were observed in the four most heavily-collected species, three of which are not taken as food fish suggesting that ornamental collection is primarily responsible for the differences in abundance. This paper has not been published because we are told that we need more control counting areas. This cannot be achieved since less than 1% of Oahu is protected and only Hanauma Bay is free from poaching (personal observation). Lastly, the climate crisis threatens coral reefs and all reef species and requires that we model any sustainable collection at all using forward thinking prudent paradigms that include cautionary buffers for the confounding effects of climate change on reef health. Herbivorous reef fish are absolutely essential to reef health. Using past business-as-usual models and false limits will be detrimental to the health of the reef. Collection has already impacted fish populations negatively on Oahu and is therefore not sustainable. There is nothing in the DEIS to rectify that fact and so it should be rejected. Thank you for your consideration, Dr. Gail L. Grabowsky Director, Environmental Programs Interim Dean of Natural Sciences & Mathematics Chaminade University</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative</p> <p>Of the 31 fish species on the proposed White List, 18 would be collected at <1% of the population, 5 would be collected at <2%, 3 would be collected at <4% and 2 would be collected at up to 4.5% of their population estimate.</p> <p>Of the six specific species mentioned by the commenter, only three are on the proposed White List (kole, orangespine unicornfish and yellow tang). Yellow Tang would be collected at up to 3.23% of their estimated population size, kole would be collected at up to 0.71% of their estimated population size, and Orangespine Unicornfish would be collected at up to 0.29% of their estimated population size. In addition, all three of these species also have size and/or bag limits that would remain in place, as outlined in Section 1.2.4 of the FEIS.</p> <p>Additional details on climate change have been added to the FEIS.</p>
Mary Groode	See above comments (template format)	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Mary Groode	<p>PLEASE STOP THE AQUARIUM TRADE IN HAWAII. There are so few fish left on our reefs. Even on Maui where we voted to stop the trade the reefs have not recovered. We have many fewer fish than ever before. Not only from the few people making money from selling these valuable creatures, but from spear fishermen and women, people throwing nets, poachers taking fish even from protected areas, Roi eating local fish. We DESPERATELY need laws and enforcement of those laws. The ancient Hawaiian had periods of time where fishing was kapu. We need a sustainable way to protect our environment, the fish and the coral reefs on which they depend. We must have serious consequences for those breaking the law. To fine \$260 for taking \$37,000 worth of tropical fish is ridiculous ! PLEASE STOP THE AQUARIUM TRADE IN HAWAII FOR FIVE YEARS. Then, we can see if the fish and reefs have rebounded.</p>	Your comment has been forwarded to the decision makers.
Gregg Gruwell	See above comments (template format)	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Gregg Gruwell	<p>My first trip to Hawaii was in 1980. I had just received my commission as an Ensign in the US Navy and a group of us were on our way to deployment in the Indian Ocean. We found time to make a snorkel trip to Hanauma Bay. Fish were super abundant and this magical experience stuck in my heart! Fast forward to 2000's and I am at DLNR to testify for the fish. During a break, fish collectors seated behind me are bragging about how easy getting fish is. They wait outside Hanauma Bay and when the fish school out the bay entrance, they scoop them up. Anyone who snorkels Oahu regularly knows the reef fish population has been decimated. From Maunalua Bay to Waikiki and the North Shore for example. Yellow Tang are seemingly gone. Collection reports show the yellow tang were once abundant in Waikiki and other areas. Collectors continue to push a false narrative that there are plenty of fish. The fact is DLNR have never counted fish populations and has no real idea what % of fish have been taken. My estimate is that 70% of the fish population are gone. For years, DLNR has aided and abetted the fish collection industry at every turn. A fish collector was even appointed as Director of DLNR. A DLNR scientist, Alton Miyasaka, (for years the lead scientist in charge of this fishery for DLNR) even published a guide, "Hawaii's Aquarium Fish Industry: A Business Profile", to assist Aquarium Collectors in catching and exporting fish.. Here is a review of the book, "A helpful guide for aquarium collectors in the 1990's. Miyasaka's small book is a business guide on how to run a fish collection operation. Licensing, shipping, etc. Written in a time when reef fish were in abundant supply and aquarium fish collection was a budding industry in Hawaii. Miyasaka himself is an aquarium enthusiast and an collector for personal use." (source https://books.google.com/books/about/Hawaii_s_Aquarium_Fish_Industry.html?id=61BGGwAACAAJ) DLNR's role is to protect Hawaii's natural resources! Instead, their partnership with the collection industry has gone from a glaring conflict of interest to outright corruption. It is finally time for the State/DLNR to do the right thing and stop all aquarium collection! At the present rate, aquarium collection along with climate change and pollution will wipe out the vast majority of these beautiful creatures. They are a huge draw of tourist revenue and there will be no turning back the clock if we wait too long! This Draft Environmental Impact Statement (DEIS) is deeply flawed! Please take action for future generations and reject this fictional document. Hawaii reef fish need to stay in Hawaii! Mahalo for hearing my testimony! Gregg Gruwell Honolulu, HI</p>	Your comment has been forwarded to the decision makers.
Jodi Gunderman	See above comments (template format)	Your comment has been forwarded to the decision makers.
Matthew Gurwitsch	See above comments (template format)	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Matthew Gurwitsch	I am horrified. This deceptive, predatory, irresponsible DEIS must be rejected out of hand. According to this document, "It is unknown which, if any, species are experiencing population declines, as population trend data is not available for the fish species analyzed in this EIS for the island of O'ahu." As anyone who keeps an eye in the waters knows, this is a lie. But even if it were true, let our watchword be: FIRST, DO NO HARM. It is time to shut down, once and for all, the removal of our native fish from their habitat to stock aquariums on the mainland and elsewhere. The survival rate of the stolen fish is heartbreakingly low. And obviously, fish that do survive in distant aquariums do not reproduce in sufficient numbers to satisfy collectors' desires. We must protect these creatures. They are our kuleana. Fail them now and we will have failed them forever.	Your comment has been forwarded to the decision makers. A discussion on post-collection mortality has been added to Section 5.4.2 of the FEIS.
Robert Guzman	See above comments (template format)	Your comment has been forwarded to the decision makers.
Robert Guzman	The Draft Environmental Impact Statement proposed will help accelerate destruction of our coral reef ecosystems.	Your comment has been forwarded to the decision makers. The Preferred Alternative has been revised to include a proposed White List of species that can be collected, and individual catch quotas to provide a hard upper limit on the number of fish that can be collected.
Taylor Hall	See above comments (template format)	Your comment has been forwarded to the decision makers.
Cory Harden	See above comments (template format)	Your comment has been forwarded to the decision makers.
Cory Harden	Our public trust resources should not be wiped out to enrich a few people.	Your comment has been forwarded to the decision makers.
Yuk Heath	See above comments (template format)	Your comment has been forwarded to the decision makers.
Yuk Heath	Continuously take marine animals will establish an unbalanced ecosystem.	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Teresa Hill	See above comments (template format)	Your comment has been forwarded to the decision makers.
Teresa Hill	Over the years I have seen a big decline in our beautiful Hawaiian tropical fish We need to protect our beautiful resources and aquatic Life life here	Your comment has been forwarded to the decision makers.
Elizabeth Hird	See above comments (template format)	Your comment has been forwarded to the decision makers.
Elizabeth Hird	I am very concerned that there are not enough protections for reef fish.	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Patricia Hoskin	See above comments (template format)	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Patricia Hoskin	I have lived on Maui for 11 years. I purchased my condo before that move. I have always enjoyed snorkling. My sons enjoy snorkling as do my three grandsons. I do not appreciate your organization having the right to give away or sell this precious resource. All citizens have the right to see these fish in their native habitat. That is why tourists go into the ocean. I do not think you should have the right to allow these individuals or companies to come and steal our fish. I wish we could vote your power out of existence.	Your comment has been forwarded to the decision makers. The Preferred Alternative would limit collection to the island of O'ahu, and would not permit any collection on Maui.
Phillip Hoyle	See above comments (template format)	Your comment has been forwarded to the decision makers.
Phillip Hoyle	Not responsible stewardship of our valuable wildlife.	Your comment has been forwarded to the decision makers.
Alice Hughes	See above comments (template format)	Your comment has been forwarded to the decision makers.
Alice Hughes	We need our fish to thrive so our reefs can be heAlthy for future generation and or visitor industry . I can not go to parks and harvest plants to sell . why should Aquarium collectors be allowed to pillage are reefs of rare and endangered fish for profit.	Your comment has been forwarded to the decision makers.
Shauna Ikaiahifo	See above comments (template format)	Your comment has been forwarded to the decision makers.
Shauna Ikaiahifo	I am a diasporic Kanaka Maoli living on the continent. When I return to my ancestral homeland, it is always heartbreaking to see how much of our islands natural beauty & resources have been commercialized with nothing to show for the Hawaiian people. You cannot continue to take what doesn't belong to you in the first place and the come back for more and more. When will you be satisfied? When the i'a who have called these waters their home for centuries are driven to extinction? Enough is enough. PAU ALREADY!	Your comment has been forwarded to the decision makers.
Ara Johnson	See above comments (template format)	Your comment has been forwarded to the decision makers.
Ara Johnson	I am a former Hawai'i resident who returns every year. The reefs need to be saved.	Your comment has been forwarded to the decision makers.
Bradley Jones	See above comments (template format)	Your comment has been forwarded to the decision makers.
Bradley Jones	The capture of fish and animal's on Hawaii's reefs has gone on for far too long. Corruption at the highest levels of state government has allowed this to continue for decades and it must stop now. There is no real economic benefit to Hawaii for the plunder of its natural resources including the coral reefs, except for a few selfish individuals who profit from the abduction and destruction of marine life and ecosystems in Hawaii. Enough is enough. The aquarium trade must be completely banned in Hawaii forever starting now. End of story. End this now, or the political careers of those who are supporting this travesty will be over. It's that simple. Public sentiment has turned completely against this barbaric practice and it's long past time to stand on the right side of history. Please do the right thing and abolish the aquarium trade in Hawaii. No exceptions for anyone, no matter who they are related to in the state government. Mahalo.	Your comment has been forwarded to the decision makers.
Annette Kaohelauii	See above comments (template format)	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Annette Kaohelauii	I was shocked to learn that commercial operations even think they can harvest fishes from our reefs for sale to people with aquariums. They should start their own businesses growing aquarium fish for sale. It does not make sense to harvest our natural resources in a for profit operation.	Your comment has been forwarded to the decision makers.
Etta Karth	See above comments (template format)	Your comment has been forwarded to the decision makers.
Etta Karth	Aloha, As a resident, marine scientist, and UHH Marine Science employee, the DEIS is flawed. I can speak for the Big Island of Hawaii - there is little enforcement of the collection rules that currently exist, rules and laws are being broken, and the species targeted for the aquarium trade will be further at risk of low population levels if the DEIS is approved. Unfortunately, Hawaii is an easy place to get away with a lot of terrible things - don't let this get piled on top.	Your comment has been forwarded to the decision makers.
Mark Koppel	See above comments (template format)	Your comment has been forwarded to the decision makers.
Mark Koppel	I live in Hawaii. Leave those reefs and species alone!!!!	Your comment has been forwarded to the decision makers.
Laszlo Kurucz	See above comments (template format)	Your comment has been forwarded to the decision makers.
Jerry Lear	See above comments (template format)	Your comment has been forwarded to the decision makers.
Rick Lewis	See above comments (template format)	Your comment has been forwarded to the decision makers.
Rick Lewis	We have been visiting Hawaii for over 20 years. Every year there are fewer and fewer fish on the reefs. If you leave for a while like we do and return, you can see the difference year to year. If we lose our reef fish our visitors who like to stay for extended periods of time will go other places. Because, who wants to make an extended visit to a place where the natural beauty has been destroyed. I like tropical fish and I have kept aquarium breed fish. Our Maui reef fish are beautiful. We need them here. Maybe in 10 or 20 years they will recover, but until then, I do not believe we should take any more. The new normal will be that only people who are here for a quick sun break and some beer will be the only people who want to come here.	Your comment has been forwarded to the decision makers.
Pat Lindquist	See above comments (template format)	Your comment has been forwarded to the decision makers.
Pat Lindquist	Hawaiian reefs need diverse reef fish to be healthy. Decimating the wild fish to provide a few to enjoy them in captivity is short sighted gain and long time loss.	Your comment has been forwarded to the decision makers.
Jackie Lott	See above comments (template format)	Your comment has been forwarded to the decision makers.
Jackie Lott	Here on Kauai, I see trucks full of buckets of aquarium fish being harvested. They take the young fish, so no next generation It is Not sustainable!	Your comment has been forwarded to the decision makers. The Preferred Alternative would limit collection to the island of O'ahu, and would not permit any collection on Kauai.
Heather MacKey	See above comments (template format)	Your comment has been forwarded to the decision makers.
Justin Makekau	See above comments (template format)	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Justin Makekau	Save the oceans is what's heard most but where does that start? Healthy ecosystems, coral reefs, teaming populations of various species. This is crucial, stop this absurd request to kill the oceans!	Your comment has been forwarded to the decision makers.
Helen Malnar	See above comments (template format)	Your comment has been forwarded to the decision makers.
Helen Malnar	The underwater beauty that the Hawaiian islands have should be protected from all and any aquarium collectors. Why would you jeopardize the beautiful reefs, and the fish that live there, by letting these collectors exploit any of the waters around any of the islands of Hawaii?	Your comment has been forwarded to the decision makers.
Richard Marks	See above comments (template format)	Your comment has been forwarded to the decision makers.
Richard Marks	"This DEIS is a terrible insult to our dwindling reef systems. I've lived in Hawai'i for 20 years, and was a visitor here for the 15 years prior to becoming a full time resident. In these decades, the loss of specific reef life is more than obvious to the naked eye. One does not need to be a marine biologist to see how fishing for the aquarium/pet trade has diminished and nearly obliterated some species. PLEASE, please, please do not allow this dangerous practice to continue. Please INCREASE RESTRICTIONS for aquarium collectors and ALL fishermen. Please save our reefs and the sea life that keeps them vital!!! Thank you."	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Gwendelyn Marshall	See above comments (template format)	Your comment has been forwarded to the decision makers.
Gwendelyn Marshall	Taking something that doesn't belong to you is stealing. Collectors are wiping out local fish populations. If you've been in the water lately you'll notice a lack of tropical reef fishes. These collectors can breed their own fish and sell them instead of stealing fish from the sea. Stop the collectors and save the fish.	Your comment has been forwarded to the decision makers. A captive breeding alternative was considered in Section 3.7 of the FEIS.
Willa Mathison	See above comments (template format)	Your comment has been forwarded to the decision makers.
Willa Mathison	Although I am 86 and somewhat disabled and not really able to snorkel, any more, I have been a frequent Hawaii visitor--two or three times a year for many years--I desperately want the fish to be there for future generations to observe. It is certainly a known fact that the collectors greatly reduce the breeding capacity and, therefore, the over all numbers of fish. Please don't let them ruin the population of fishes for profit and entertainment of others.	Your comment has been forwarded to the decision makers.
Pedo Mayned	See above comments (template format)	Your comment has been forwarded to the decision makers.
Pedo Mayned	We must stop the rape and pillaging of our once pristine reefs and shoreline, that was once full of abundant sealife. Now no longer due to man's greed, carelessness and on going pollution. Hewa! Fix this problem maky it Pono. Malama Aloha Aina!	Your comment has been forwarded to the decision makers.
Kelley Mchenry	See above comments (template format)	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Kelley Mchenry	I was born in Hawaii and have been going there to visit all my life. I have seen how the reefs are dying in many formerly healthy places and how many fewer fish there are. It is a travesty that aquarium providers can take wild fish when they are already under so many pressures. The reefs of Hawaii are the state's best assets. Please do everything you can to ensure their protection.	Your comment has been forwarded to the decision makers.
Charolette McLaughlin	See above comments (template format)	Your comment has been forwarded to the decision makers.
Charolette McLaughlin	Limits are inadequate. I snorkel regularly on Maui where I live and have snorkeled on Oahu. It is obvious the reefs have been stripped of most of their fish. Aquarium collecting needs to be banned and strong and mandatory penalties for poaching need to be put in place. I own a vacation rental and snorkeling is one of the primary activities of our visitors. They snorkel and they are upset by what they see happening as well. I visited the Galapagos and Equador is a poor country yet take better care of their marine resources. They have far more abundant sea life. There it is more like it used to be when I first moved to Hawaii 20 years ago. The snorkel and boat to snorkel industry is far more of an economic boon to the islands than aquarium collecting which represents a fraction. It makes no sense on any level to allow this predation to continue. I see turtles at cleaning stations but there are hardly any fish to clean them. The reefs themselves are not as clean and vibrant. Aquarium collecting creates an unhealthy situation for our residents, visitors, reefs, beaches and even the economy.	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Allison Melanson	See above comments (template format)	Your comment has been forwarded to the decision makers.
Allison Melanson	Keep Hawaii's fish safe.	Your comment has been forwarded to the decision makers.
Janet Mercer	See above comments (template format)	Your comment has been forwarded to the decision makers.
Janet Mercer	Aloha, I am writing to urge you to reject the DEIS prepared by the North American pet industry. For the past thirty three years I have swum almost daily in the ocean surrounding our islands. In that time I have witness a dramatic decline in the tropical fish population and the degradation of our near shore reef. It is ludicrous to believe that allowing the collection and sale of tropical fish does not significantly impact the fish population, the reef or those of us that enjoy a healthy ocean. Now is the time to put our marine and island population ahead of profit. If not now, when? Once again I urge you to fully reject the DEIS prepared by the North American pet industry. Mahalo, Janet Mercer	Your comment has been forwarded to the decision makers.
Linda Mertens	See above comments (template format)	Your comment has been forwarded to the decision makers.
Linda Mertens	At a time when so much is being taken away or destroyed, PLEASE let's keep what little we have left!	Your comment has been forwarded to the decision makers.
David Meyer	See above comments (template format)	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
David Meyer	<p>Finally, after protection from the Aquarium traders for over two years, and with the break from much human interaction due to the pandemic, fish populations have been allowed to return. There should be at least another year's protection in O'ahu for studies to determine what the fish population is in various O'ahu marine sites. The DEIS should have remembered that take limits are based on state-wide populations - therefore allowing too much take for a species in the O'ahu population because state-wide figures include abundance in that species on the Big Island.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The limits in the EIS are based on Oahu population estimates, not the state of Hawai'i, and all population estimates are specific to the island of Oahu.</p>
Terry Michaud	See above comments (template format)	Your comment has been forwarded to the decision makers.
Terry Michaud	<p>I am horrified. This deceptive, predatory, irresponsible DEIS must be rejected out of hand. According to this document, "it is unknown which, if any, species are experiencing population declines, as population trend data is not available for the fish species analyzed in this EIS for the island of O'ahu." As anyone who keeps an eye in the waters knows, this is a lie. But even if it were true, let our watchword be: FIRST, DO NO HARM. It is time to shut down, once and for all, the removal of our native fish from their habitat to stock aquariums on the mainland and elsewhere. The survival rate of the stolen fish is heartbreakingly low. And obviously, fish that do survive in distant aquariums do not reproduce in sufficient numbers to satisfy collectors' desires. We must protect these creatures. They are our kuleana. Fail them now and we will have failed them forever.</p>	Your comment has been forwarded to the decision makers.
Asta Miklius	See above comments (template format)	Your comment has been forwarded to the decision makers.
Asta Miklius	<p>This DEIS completely disregards multiple lines of evidence that would suggest that we need to severely limit the amount of reef wildlife that could be collected without severe impact to reef health (especially in recovery from ocean warming events that are becoming more and more intense.) Instead, this DEIS proposes expanding collection territories and increasing collection limits. I have seen first-hand the impact of aquarium collection on the reef ecosystem around the island of Hawai'i, and the potential for recovery once it is suspended. It is absurd to ask the people of Hawai'i to stop fishing for herbivores while allowing the aquarium trade to take these same fish for profit. It is also preposterous to recommend that it is fine to continue to destroy our natural resources for the personal financial gain of a handful of people and companies. This DEIS is deeply and irretrievably flawed and should be rejected.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.</p> <p>Additional details on herbivores have been added to the FEIS.</p>
David Monasevitch	See above comments (template format)	Your comment has been forwarded to the decision makers.
David Monasevitch	<p>I think that there are not enough limits put on aquarium reef fish collectors. I think there should be a 25 year moratorium put on all collecting of reef fish for aquarium purposes.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Nina Monasevitch	See above comments (template format)	Your comment has been forwarded to the decision makers.
Nina Monasevitch	I have been diving in Hawaii since 1978. The drastic decline in reef fish is shocking! I can tell you from first hand experience that ALL species are experiencing population declines. Our oceans are dying. Extraction of species is one of the top three reasons for the degradation of the marine ecosystem. STOP ALL aquarium collection now!	Your comment has been forwarded to the decision makers.
Mike Moran	See above comments (template format)	Your comment has been forwarded to the decision makers.
Mike Moran	TThe rape of the reefs continue in a nastygame of whack-a-mole. Stop 'em in one area they try another. Another fake DEIS Maybe if they were fned for fake info they would do better. Maybe we need to go to the precautionary principle? Please say no again to another ludicrous document & save our natural resources, Mahalo	Your comment has been forwarded to the decision makers.
MARY MORRIS	See above comments (template format)	Your comment has been forwarded to the decision makers.
MARY MORRIS	Stop aquarium trade on South Kohala coast! The yellow tang have just started coming back to Puako in the past 18 or 24 months. Collectors will wipe them out (again) if they are allowed to collect Tang or any other "decorative" aquarium species. Let the fish population increase! This is not the time to remove them from the waters.	Your comment has been forwarded to the decision makers.
William Morris	See above comments (template format)	Your comment has been forwarded to the decision makers.
William Morris	In my 60 years on this planet, I have been swimming with a mask and snorkel on Oahu for 50 of these years. There are no kole, manini, Kala, Uhu left to fish. I used to think I could survive a food shortage by my ability to spear reef fish. Today I would starve. The reefs surrounding Oahu are in dire need of a kapu. We have to act responsibly, the way our Hawaiian ancestors did, and start managing these important food bearing assets appropriately NOW.	Your comment has been forwarded to the decision makers.
Vulong Nguyen	See above comments (template format)	Your comment has been forwarded to the decision makers.
Laura Parks	See above comments (template format)	Your comment has been forwarded to the decision makers.
Scott Parrish	See above comments (template format)	Your comment has been forwarded to the decision makers.
Scott Parrish	I am appalled that any aquarium trade is being allowed on Hawaii reefs, the amount of fish has declined tremendously since the first time I started exploring the beautiful reefs in the 1990's. I'm an avid reef explorer and the only places that have a decent supply of fish life left is at the reserves. Locals and tourist both benefit from having abundant fish life's on our crumbling reefs, please stop or put heavy restrictions on the aquarium trade from destroying our reef life.	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would recieve permits under this alternative.
Susanne Paynovich	See above comments (template format)	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Susanne Paynovich	"This DEIS is a terrible insult to our dwindling reef systems. I've have lived in Hawai'i, been going to Hawai'i and have done business in Hawai'i for 44 years. In these decades, the loss of specific reef life is more than obvious to the naked eye. One does not need to be a marine biologist to see how fishing for the aquarium/pet trade has diminished and nearly obliterated some species. PLEASE, please, please do not allow this dangerous practice to continue. Please INCREASE RESTRICTIONS for aquarium collectors and ALL fishermen. Please save our reefs and the sea life that keeps them vital!!! Thank you."	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Pamela Polland	See above comments (template format)	Your comment has been forwarded to the decision makers.
Pamela Polland	This DEIS is a terrible insult to our dwindling reef systems. I've lived in Hawai'i for 44 years, and was a visitor here for the 15 years prior to becoming a full time resident. In these decades, the loss of specific reef life is more than obvious to the naked eye. One does not need to be a marine biologist to see how fishing for the aquarium/pet trade has diminished and nearly obliterated some species. PLEASE, please, please do not allow this dangerous practice to continue. Please INCREASE RESTRICTIONS of aquarium collectors and ALL fishermen. Please save our reefs that the sea life that keeps them vital!!! Thank you.	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Bryson Poloa-Lewis	See above comments (template format)	Your comment has been forwarded to the decision makers.
Bryson Poloa-Lewis	A'OLE!! Aloha Aina!!	Your comment has been forwarded to the decision makers.
Dawn Reed	See above comments (template format)	Your comment has been forwarded to the decision makers.
Dawn Reed	The amount of species being collected is already too high.	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Robin Rodgers	See above comments (template format)	Your comment has been forwarded to the decision makers.
Robin Rodgers	The DEIS is ignoring the facts presented from recognized research concerning the welfare of the fish in O'ahu. They continue to ignore the use of reasonable bag limits: theirs exceeds the island-wide population of some species by up to 1000%! OUTRAGEOUS! How can this be permitted in a any part of Hawaii? Please STEP UP and protect the reefs of West Hawaii from aquarium collecting. Thank you!	Your comment has been forwarded to the decision makers. This EIS does not include any collection in West Hawai'i, and is specific to the island of O'ahu. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Mark Schacht	See above comments (template format)	Your comment has been forwarded to the decision makers.
Mark Schacht	With more than 30+ years as a divemaster and videographer with hundreds of logged dives throughout the islands, including Oahu, it is shocking that the	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
	aquarium trade continues to push phony "science" to support extractive reef policies that benefit only the industry. Reject this bogus EIS, and ban the trade!	
Lisa Schattenburg-Raymond	See above comments (template format)	Your comment has been forwarded to the decision makers.
Lisa Schattenburg-Raymond	It's ridiculous to claim that taking any kind of fish from our reefs will not have any impact. Anyone with eyeballs can see our reefs are deteriorating. There are many reasons for this, but removing these species will further denigrate these already threatened resources.	Your comment has been forwarded to the decision makers.
Don Schwartz	See above comments (template format)	Your comment has been forwarded to the decision makers.
Don Schwartz	I passionately oppose the flawed Draft Environmental Impact Study (DEIS)	Your comment has been forwarded to the decision makers.
S D	See above comments (template format)	Your comment has been forwarded to the decision makers.
S D	With the coral bleaching that is already taking place throughout the island chain, the marine life is already struggling to adapt and survive. Removing unlimited numbers of animals opens the islands up to more disturbing trends. As the reefs die and marine life dwindles, the islands die. Those selfish enough to think that their aquarium is more important than the survival of a marine species, it's home, and the environment are the biggest problem and do not deserve the honor of keeping any species for their own personal enjoyment.	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Mary Sherman	See above comments (template format)	Your comment has been forwarded to the decision makers.
Mary Sherman	This is really not only about Hawaii, this is about the world oceans and our environment. We know that there is no separating one body of water from the whole.	Your comment has been forwarded to the decision makers.
Sandra Shimmon	See above comments (template format)	Your comment has been forwarded to the decision makers.
Sandra Shimmon	Loss of marine life evident all over. Even shark coming in to look for food. Stop taking fish out of the ocean for greed of money. Enough!!	Your comment has been forwarded to the decision makers.
Matt Slater	See above comments (template format)	Your comment has been forwarded to the decision makers.
Matt Slater	Reef fish are vital for the effective function of coral reefs. The aquarium trade is a significant threat and an immoral exploitation of a valuable resource that provide a vital ecosystem service and need to be left on the reefs at this crucial time.	Your comment has been forwarded to the decision makers.
Robert Smith	See above comments (template format)	Your comment has been forwarded to the decision makers.
Robert Smith	I can't believe I even have to submit a statement. To me this completely undercuts what DLNR stands for. Are they the steward for our natural world or are they just the middleman selling off bits of Hawaii. I can't understand why DLNR would even consider such a thing.	Your comment has been forwarded to the decision makers.
Jeff Soto	See above comments (template format)	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Dennis Stichman	See above comments (template format)	Your comment has been forwarded to the decision makers.
Dennis Stichman	Unacceptable limits.	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Robert Stricker	See above comments (template format)	Your comment has been forwarded to the decision makers.
Robert Stricker	PLEASE don't act like wE idiots in the lower / Eastern 48 and not pay attention to OUR ever deteriorating environment. Whether the air, the land or under the ocean, please, P L E A S E pay attention to the Hawaiian environment	Your comment has been forwarded to the decision makers.
Rick Switzar	See above comments (template format)	Your comment has been forwarded to the decision makers.
Rick Switzar	it's redicoulus!	Your comment has been forwarded to the decision makers.
Mark Tang	See above comments (template format)	Your comment has been forwarded to the decision makers.
Mark Tang	PIJAC consultants refer to a key 'study' over and over again (Ochavillo and Hodgson - 2006) which turns out to be nothing more than a field guide for aquarium collecting in the Philippines, certainly not a 'gold standard' peer reviewed study! The document referenced was funded by the Transforming the Marine Aquarium Trade (TMAT) Project and the International Finance Corporation- Global Environment Facility, Marine Aquarium Market Transformation Initiative in cooperation with the Marine Aquarium Council and the Community Conservation Investment Forum. The species described in the referenced document's "natural mortality models" used to estimate a general "rule of thumb" are not found in Hawaii. And yet, that is precisely what they would pass off as "the best available science". It becomes the linchpin for many of the dubious thresholds for 'sustainability' of individual species here in Hawaii. It's wide range of collection (5%-25%) precipitated DLNR's call for more definitive information and/or an explanation in the initial Environmental Assessment. They still have not complied with the agency's directive! The whole document is 'BS'!	Your comment has been forwarded to the decision makers. The new Preferred Alternative limits collection to 31 fish species on the proposed White List, and includes individual catch quotas limiting collection to at or below 4.5% of the estimated population. Of the 31 fish species on the proposed White List, 18 would be collected at <1% of the population, 5 would be collected at <2%, 3 would be collected at <4% and 2 would be collected at up to 4.5% of their population estimate.
Gabriela Taylor	See above comments (template format)	Your comment has been forwarded to the decision makers.
Gabriela Taylor	I oppose the DEIS re. the 20 collectors of aquarium fish. Our reefs are in danger due to climate change and human atrocities. There should be no takes of aquarium fish from the Big Island as well as all the other islands. That goes for all aquarium fish. "Zero Tolerance "with stiff monetary penalties! It's an atrocity that recently a court ruled against a collector who took huge numbers of aquarium fish without a permit and charged them a pitifully low fine. Gabriela Taylor, Kauai	Your comment has been forwarded to the decision makers.
test test test	See above comments (template format)	Your comment has been forwarded to the decision makers.
test test test	This is just lame	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Katherine Thunholm	See above comments (template format)	Your comment has been forwarded to the decision makers.
Katherine Thunholm	There should be no collection period! Many aquariums breed fish, that should be the source not our reefs	Your comment has been forwarded to the decision makers.
Linda Toki	See above comments (template format)	Your comment has been forwarded to the decision makers.
Linda Toki	I am horrified and upset to learn of this DEIS proposal that would harm Hawaii's unique marine life and reef ecology. I am firmly against this proposal as a native born and raised in Hawaii. Over the past 50 years I have witnessed great loss of marine life that used to be abundant in our Oahu reefs. We need to protect all our marine life from overfishing, coral damage from tourists stepping on the reefs carelessly, and commercial aquarium fish harvesting from our Hawaiian waters. Our government needs to do much more in policing and protecting our marine life. I often pick up loads of human trash, plastics, and other debris floating or sunk in the ocean while I dive and do my best to save marine life tangled in the nets and debris. We must help the ocean- not decimate it.	Your comment has been forwarded to the decision makers.
BARBARA TOMASINO	See above comments (template format)	Your comment has been forwarded to the decision makers.
BARBARA TOMASINO	The ocean and its contents need to be protected once its gone...it is gone our current government does not know the first thing about saving our precious invironment fish and sea life belong in the sea not a tank in a lobby	Your comment has been forwarded to the decision makers.
Mary True	See above comments (template format)	Your comment has been forwarded to the decision makers.
Mary True	I am outraged at the massacre proposed by the DEIS. We should err on the side of caution, not destruction. It is so short sighted to only look at the small picture... small unsustainable gains. We need to look at the big picture and shoot for long term sustainable gains.	Your comment has been forwarded to the decision makers.
Debra Van Zile	See above comments (template format)	Your comment has been forwarded to the decision makers.
Debra Van Zile	Please DO NOT allow this. Our marine life is precious as it is, and enabling this would decimate species!	Your comment has been forwarded to the decision makers.
Momi Vee	See above comments (template format)	Your comment has been forwarded to the decision makers.
Momi Vee	We Only Have One Hawai'i Nei In The World.!! We've Lost Soo Much Ocean Life, Due To Sugarcane Runoffs And Tremendous Over Fishing By The Immigrants That Arrived Here From Other Countries.!! Enough Is Enough.!! As Kanaka Maoli We Plant Limu And Coral For Fishes To Have Food And Shelter. Only For Them To Be Stolen From Their Rightful Homes From Generations And Generations Of Growing Up In Hawai'i Waters.. Stop The Slaps On The Wrist And Punish The Divers Stealing Our Ocean Sealife.!! Please..!!	Your comment has been forwarded to the decision makers.
Amy Venema	See above comments (template format)	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Amy Venema	I am a 26 year resident of Hawaii and a tour boat captain and environmentalist. Educating and protecting our oceans ecosystems is one of the the most important ways to ensure that the ecosystems will continue to be healthy and we will have them for our children, not to mention the economic impact of lost tourism when the reefs are dying and tourist no longer want to come here to enjoy them. The aquarium collecting trade has proven to have a very negative impact on the reefs. Please stop this trade and protect our reefs!	Your comment has been forwarded to the decision makers.
Suzanne Villeneuve	See above comments (template format)	Your comment has been forwarded to the decision makers.
Suzanne Villeneuve	I can't believe that fisherman would take fish out of the water, to sell for the aquariums .	Your comment has been forwarded to the decision makers.
Doreen Virtue	See above comments (template format)	Your comment has been forwarded to the decision makers.
Doreen Virtue	As a scuba dive master, I'm concerned that tourism and the dive industry will continue to be affected negatively if more fish are taken from the reefs. Already the tourists complain about the lack of fish during scuba dive trips in Hawaii, compared to Mexico, Tahiti, etc.	Your comment has been forwarded to the decision makers. As stated in the EIS, the Hawai'i tourism industry achieved new records in total visitor spending and visitor arrivals in 2017, marking the sixth consecutive year of record growth in both categories. Total spending by visitors to the Hawaiian Islands increased 5.6% to a new high of \$16.81 billion (HTA 2018). This occurred in the presence of commercial aquarium collection.
Deborah Wallace	See above comments (template format)	Your comment has been forwarded to the decision makers.
Deborah Wallace	My specific comment: It is absolutely unacceptable that a small amount of people would be allowed to profit at the expense of our ecology the health of our population and Our coral reefs. Our wreaths and our fish or already under stress is from pollution ocean warming plastics sunscreens and overfishing. The selfishness of aquarium fishers is unacceptable. Everyone in Hawaii deserves to enjoy the beauty Hawaiian ocean fish. Do not allow the taking of our fish. I swim in the ocean with the fish daily and the conditions of the reefs have deteriorated dramatically as have the number of our fish.	Your comment has been forwarded to the decision makers.
Colleen Wallis	See above comments (template format)	Your comment has been forwarded to the decision makers.
Colleen Wallis	I have stated my position about our precious reef fish many times and I will repeat myself again. No one should be allowed to take our reef fish to export or be sold in the Aquarium trade. We have seen what they do to capture the dish and how they discard the ones that end up dying in the process. No creature should be subjected to those cruel methods and taken from our island shores on any of our islands. I have been a Reef Teacher at Kahalu'u beach in Kona since 2010 and have tried to educate the locals as well as the public to protecting our reef and it's inhabitants so future generations can enjoy seeing them in their natural habitat.	Your comment has been forwarded to the decision makers.
james ward	See above comments (template format)	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
james ward	Aloha, As a scuba diver that has seen first hand what the fish collecting trade has done to the local reefs where I live, I want to add my voice to the residents of Hawaii that oppose aquarium fish collecting. Even if the damage to the fish populations is put aside, the colorful reef fish are a big attraction to visitors to the state. I worked as a concierge at a major resort, and the comment I kept hearing was " there's not as many fish as there used to be" Between the bleaching of the coral due to warming ocean temperatures and the harvesting of reef fish (most of which die on the way to the pet store) I strongly oppose the findings of the DEIS Mahalo James Ward 808-895-9656	Your comment has been forwarded to the decision makers. As stated in the EIS, the Hawai'i tourism industry achieved new records in total visitor spending and visitor arrivals in 2017, marking the sixth consecutive year of record growth in both categories. Total spending by visitors to the Hawaiian Islands increased 5.6% to a new high of \$16.81 billion (HTA 2018). This occurred in the presence of commercial aquarium collection.
Robert Ward	See above comments (template format)	Your comment has been forwarded to the decision makers.
Robert Ward	The government is way behind in protecting the ocean life. It's obvious to everyone who has been here for the over 20 years of decline which I've witnessed.	Your comment has been forwarded to the decision makers.
aerie waters	See above comments (template format)	Your comment has been forwarded to the decision makers.
aerie waters	NOOOOOO!! Our reefs are so seriously denuded already by private interest with the cost to our natural resource of healthy reefs and beautiful tourist snorkeling sites, and Posterity!! STOP IT!!	Your comment has been forwarded to the decision makers.
Madolin Wells	See above comments (template format)	Your comment has been forwarded to the decision makers.
Madolin Wells	The aquarium trade is wrong, wrong, WRONG!!! I finally got my wish to move to Hawai'i in 2018, 23 years after first visiting and not having been since. So much of what I witness now is absolutely heartbreaking. It is unbelievable that those who make decisions on behalf of Hawai'i's environment could so badly default on their sacred responsibility to to the ocean and every living species in it. Having insufficient data to make a determination means "do not allow any collection to proceed." In reality, there is no safe amount of harvesting. Allowing the harvesters to move on from Maui to O'ahu is unconscionable. I urge you to do the right thing. All eyes are on you - we are counting on you! Sincerely, Madolin Wells, Kihei	Your comment has been forwarded to the decision makers.
Laurel Whilock	See above comments (template format)	Your comment has been forwarded to the decision makers.
Laurel Whilock	I've been diving in Hawaii for 30 years and my observations over the past three decades lead me to conclude that the marine life, including coral and reef fish, have degraded and declined substantially. Without adequate protection from over-collection by aquarium fishers, our reefs will be lost. Please, at the very least, do a thorough and impartial EIS before our marine environment has gone beyond recovery.	Your comment has been forwarded to the decision makers.
Linda Willaby Willaby	See above comments (template format)	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Linda Willaby Willaby	To Whom it May Concern, I have been a Big Island resident for the past 12 years. I snorkel in the ocean almost every day and I have seen a huge decline in the number of reef fish in just the time that I have been here. I think it is time to stop all aquarium fish collecting. It is not sustainable and the health of our coral reefs depends on reef fish. Please REJECT the Environmental Impact Statement There is no verification of the numbers of fish caught or methods used. The practice of catching reef fish for aquariums is not healthy for the reefs and has dire environmental consequences There are other industries that rely on a healthy reef system and the fish life on the reef such as dive and snorkel boat operators. The entire tourism industry will suffer if there are no reef fish in Hawaiian waters. You will only have yourselves to blame when the last yellow tang disappears from Hawaiian waters. Caught and shipped away so some fat cat mainlander can have a pretty fish in his aquarium. Entire species of reef fish should not be sacrificed so a few people can get rich at the expense of all the rest of us who appreciate living sea creatures in our waters. I can't believe that I have to keep making these comments to keep our reef fish from being exploited to extinction. . Yours truly, Linda Willaby	Your comment has been forwarded to the decision makers. As stated in the EIS, the Hawai'i tourism industry achieved new records in total visitor spending and visitor arrivals in 2017, marking the sixth consecutive year of record growth in both categories. Total spending by visitors to the Hawaiian Islands increased 5.6% to a new high of \$16.81 billion (HTA 2018). This occurred in the presence of commercial aquarium collection.
Linda Wright	See above comments (template format)	Your comment has been forwarded to the decision makers.
Linda Wright	The limits proposed are not enough to preserve life on the islands. Continuing the decimation of the fish life in search of profits may well spell the end of many species in the Pacific. We must seriously examine our interference in the ecology of our islands and take action to preserve it.	Your comment has been forwarded to the decision makers. The Preferred Alternative includes a proposed White List of 31 fish species which can be collected. Each of those 31 species has an individual catch quota, which provides a hard upper limit on the number which can be collected annually by commercial aquarium collectors who would receive permits under this alternative.
Carrie Younkin	See above comments (template format)	Your comment has been forwarded to the decision makers.
Carrie Younkin	There should be nothing and no one that allows the take of Hawaii's species, especially endangered and endemic ones for the aquarium trade. This is apparent especially after what we have seen on West Hawaii with the largest abundance of reef fish documented after 2.5 years of no fish take for aquariums!	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Mary Tubbs	<p>Comment on the Oahu Aquarium Fishery Environmental Study: I am writing as an elementary school teacher in a Hawaii public school. Over the years my classroom aquariums, the tropical fish in them, and the schoolwide family STEM Night aquarium displays, demonstrations and activities- worth thousands of dollars and serving over 1200 people- have all been donated to my school by our Oahu aquarium divers. For there is no better way to immediately engage students and their families who may not swim or snorkel, in learning to scientifically observe, respect, and take responsible stewardship of our oceans' sea life, resources, and our "Blue Planet" Earth. We need the sustainable aquarium fishery on Oahu to continue to supply teacher's like me across the U.S who teach the national New Generation Science Standards (NGSS), and to supply public aquariums so that our valuable ecological lessons can be taught.</p> <p>Sincerely, Mary S. Tubbs, M.Ed., N.C.S.P. Highly Qualified Teacher Windward Oahu District</p>	<p>Your comment has been forwarded to the decision makers.</p>
Dr. Gail L. Grabowsky	<p>The original limits were not based on any kind of ecological data and as such were a matter of huge contention and fiction. They were determined by fish collectors and not scientists or scientific reasoning. I did calculations years ago when the "limits" were first proposed that showed that they would be completely unsustainable and if carried out would lead to higher numbers of take than the entire population size estimated on Oahu in the DEIS. The then Chair of DAR resigned on the day of testimony saying that the limits were like a 400-mile-an-hour speed "limit." Here is the original Table I created: Calculations for testimony based on State of Hawaii abundance data.... [see pdf page 1 for referenced Table] Pulling numbers out of the sky is not science. The fish collectors simply chose a number so high that they could collect business-as-usual without any justification for the number. The "limits" are not scientific or management or sustainable.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative in the FEIS addresses these concerns by imposing annual catch quotas, rather than daily bag limits (though existing daily bag limits will also be in effect in addition to the annual quotas).</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Dr. Gail L. Grabowsky	<p>Also, I have conducted research counting aquarium fish using the methods of Tissot and Hallancher (2003 "Effects of Aquarium Collectors on Coral Reef Fishes in Kona, Hawaii" Cons Bio 17(6)) who found that: "Aquarium collectors had significant effects on 7 of the 10 species of reef fish we examined." We reported on the abundance of aquarium-collected fish around Oahu by comparing fish abundances in open collection areas to two protected locations within Hanauma Bay. Six species of reef fish – <i>Acanthurus triostegus</i>, <i>Chaetodon lunula</i>, <i>Ctenochaetus strigosus</i>, <i>Naso lituratus</i>, <i>Zanclus cornutus</i>, and <i>Zebrasoma flavescens</i> – exhibited significantly lower populations in collection areas. The greatest decreases were observed in the four most heavily-collected species, three of which are not taken as food fish suggesting that ornamental collection is primarily responsible for the differences in abundance. This paper has not been published because we are told that we need more control counting areas. This cannot be achieved since less than 1% of Oahu is protected and only Hanauma Bay is free from poaching (personal observation).</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The data referenced by the commenter is not publicly available, however, of the six species of reef fish mentioned, only four are on the proposed White List under the new Preferred Alternative. One species, the Raccoon Butterflyfish (<i>Chaetodon lunula</i>), cannot be collected on O'ahu, as stated in Section 1.2.4 of the EIS. Therefore, the commenter's conclusion that ornamental collection is responsible for the differences in abundance may not be accurate. The Convict Tang (<i>Acanthurus triostegus</i>) is not in the top 20 fish species collected on O'ahu, and is also not on the proposed White List.</p> <p>The four other species that the commenter mentioned are included on the proposed White List, and also have existing bag limits in place. Collection of these species (Kole, Orangespine Unicornfish, Moorish Idol and Yellow Tang) would be at 0.71% or less of the island-wide population estimates for three of the species (and 3.23% for the Yellow Tang), and in addition to existing daily bag limits, the Preferred Alternative includes annual individual catch quotas which would put a hard upper limit on the number which could be collected annually on O'ahu.</p>
Dr. Gail L. Grabowsky	<p>Lastly, the climate crisis threatens coral reefs and all reef species and requires that we model any sustainable collection at all using forward thinking prudent paradigms that include cautionary buffers for the confounding effects of climate change on reef health. Herbivorous reef fish are absolutely essential to reef health. Using past business-as-usual models and false limits will be detrimental to the health of the reef. Collection has already impacted fish populations negatively on Oahu and is therefore not sustainable. There is nothing in the DEIS to rectify that fact and so it should be rejected.</p> <p>Thank you for your consideration,</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>Additional information on climate change and herbivores has been added to the FEIS. The new preferred Alternative includes individual catch quotas for 31 species which would allowed to be collected, ending commercial aquarium collection of any other species, and creating a limit on annual collection for the 31 White List species.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
William Graham	<p>I will focus on 3 issues that I believe are most important and which are in need of attention and amplification when preparing the final EIS.</p> <ol style="list-style-type: none"> 1. Lack of appropriate alternatives 2. A need for clarity about the nature of this application 3. Absence of forward looking analysis <p>LACK OF ALTERNATIVES</p> <p>The current request is for the issuance of 20 collection permits for use by 20 individuals. Three additional alternatives are considered, one of which is the No Action alternative, meaning that the permits are not issued.</p> <p>The other two are not alternatives related to this application for the 20 individuals. Rather they are suggested alternatives for how the Division of Aquatic Resources (DAR) might perform its future duties. They both consider whether the DAR should issue unlimited permits to other, future applicants. They are not alternatives that this applicant controls or is considering. Summarizing, the true alternatives are only the preferred alternative and the no action alternative which is simply a rejection of the preferred alternative. Thus the alternatives do not fulfill the requirements of HRS343. The final EIS must evaluate additional alternatives of substance. Given the relatively large expected take of yellow tang relative to the population, stricter limits on yellow tang collection would certainly be a reasonable alternative.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The FEIS includes two additional alternatives for analysis - a new "No Action" Alternative which accounts for the changes in CML issuance that have occurred since publication of the DEIS, and a new Preferred Alternative which further limits permit issuance, establishes a White List of 31 species which could be collected (and ends commercial collection of any other species), and creates individual catch quotas for each of the 31 White List Species. This includes a strict upper limit on Yellow Tang collection.</p>
William Graham	<p>UNUSUAL NATURE OF THIS APPLICATION</p> <p>I call your attention to the "Applicant Publication Form" which is found at the very beginning of the draft EIS (DEIS). The applicant is the Pet Industry Joint Advisory Council (PIJAC).</p> <p>The "Permit(s)/Approval(s)" represent the discretionary action that the applicant is seeking from the DLNR. Both Commercial Aquarium Fishing Permits and Commercial Marine Licenses are sought.</p> <p>I attach a PDF file which is the Commercial Permit application form recently used for these permits/licenses. Hawaii Administrative Rules 13-74-20 and HRS189-2 govern the issuance of Marine Licenses, HRS188-31 applies to aquarium fishing permits. Reading the governing law and rules makes it clear that these licenses/permits are intended for Hawaii residents. Furthermore the licenses/permits are nontransferrable. But the applicant in this proceeding (PIJAC) is not a fisherman nor a Hawaii resident. Hence the nature of this application is unusual and does not appear to conform to Hawaii rules and law.</p> <p>A final EIS must clarify and explain the specifics and the legality of the requested action upon which this DEIS is based. A copy of the written application should be included. Merely stating purposes and objectives is not sufficient.</p> <p>Since the activities of 20 fishermen are an important component of the DEIS, and they are not applicants for licenses/permits, their names should be disclosed.</p> <p>Failure to disclose the names inhibits the public's ability to evaluate the DEIS.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The following language has been added to the FEIS: The 15 permittees covered by this FEIS may file individual permit applications with Department of Land and Natural Resources (DLNR) after the submission of this FEIS to Office of Environmental Quality Control (OEQC) and DLNR. DLNR will review such applications and take action upon them if this FEIS is accepted.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
William Graham	<p>NO FORWARD LOOKING ANALYSIS</p> <p>A. The DEIS analysis is based on estimated historical population levels of various species of fishes in conjunction with the take from those populations by the 20 individual fishers. The DEIS claims that reported past counts are within 3.5% of their actual take (p.111), citing DAR(2014a). That citation is a report to the legislature on the West Hawaii Fishery Management Area, not Oahu. Since past underreporting could be a major issue affecting reliability throughout this DEIS, please make available all documents related to this area of concern.</p> <p>No constraints on annual future collection are proposed. HAR 13-77 imposes limits on a daily basis only. The only way to justify reliance on the historical approach is to propose strict limits on the annual collection of fish in the future. The final EIS must include such proposed limits if its prognosis is to be trustworthy. We also must recognize that future collection activity will depend on market demand at the time. It can readily shift from one species to another. Annual limits are a must. At a minimum, annual limits observed by the 20 fishers could be included as an alternative action.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The FEIS includes a new Preferred Alternative which includes individual catch quotas for the species which would be collected, creating a strict upper limit on annual collection, and addressing concerns related to using historic collection data to project future collection.</p>
William Graham	<p>B. The final EIS must closely evaluate the future impact of collection on our coral reefs. We know that corals are also under ever increasing stress for reasons unrelated to this application. Much existing research on future coral viability is available and pertinent research should be incorporated into a final EIS. The research provided should indicate the degree of likely degradation of the reefs (for whatever reason) and the likely effect of that degradation on the future population levels of the target species being collected. As well as the likely effect of reef fish collection on the ability of algae to compromise the viability of the coral population. Clearly the corals and the algae grazing fish are in a symbiotic relationship.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The FEIS includes additional data on climate change and herbivores, particularly as they relate to coral reef health.</p>
William Graham	<p>C. The draft EIS relies on the ability of the DAR to renew or not renew permits annually as one justification for its failure to be more forward looking (page 13). It assumes that the basis for informed yearly renewal or non-renewal will be available to the DAR. Does the DAR have the staff and resources to support well informed future decisions? I believe the final EIS must itself look many years into the future for its investigation of likely environmental effects. The purpose of this EIS should be to make such information available to the DAR.</p>	<p>Your comment has been forwarded to the decision makers.</p>
William Graham	<p>D. I take specific note that the Division of Aquatic Resources prominently displays a "Saving Coral and The Coral Pledge" page within its current website. Link to https://dlnr.hawaii.gov/dar/coral-bleaching/</p> <p>The first bullet point on that page tells us to "avoid taking herbivorous fish like uhu and surgeonfish; they help control algal growth." (Yellow tang and kole are both surgeonfish). The applicant appears to be seeking permission for activities that are frowned upon by the permitting body. The final EIS should certainly address this conflict.</p> <p>Speaking broadly, the final EIS must examine the likely state of our coral reefs and the impact of the proposed collection activities on the reefs. And do this examination over a forward looking, multi-year time span.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The FEIS includes additional data on climate change and herbivores.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
William Graham	<p>ISSUES OF FORMAT</p> <p>I would like to request that the Index in the final EIS include where to find individual public comments. This is customary in many Hawaii EIS documents. Also, when comments are substantial and refer to information within the body of the EIS, please make appropriate revisions within the body of the EIS. Don't respond solely within the comments and responses section.</p> <p>(commenter also included the COMMERCIAL MARINE FISHERIES INDIVIDUAL LICENSE/PERMIT RENEWAL APPLICATION FORM which includes the Commercial Fisheries License & Permit General Terms and Conditions and Aquarium Fish Permit Specific Terms and Conditions from the Department of Land and Natural Resources (DLNR) Division of Aquatic Resources State of Hawaii)</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>Edits were made in the body of the EIS where appropriate in response to public comments.</p>
R. A. Culbertson (Environmental Caucus of the Democratic Party of Hawaii)	<p>Aloha!</p> <p>As a member of the Environmental Caucus of the Democratic Party of Hawaii, I submit the following comments on the Draft Environmental Impact Statement for Oahu Aquarium Fishery.</p> <p>Having just gone through the same extensive process for the West Hawaii Island component, it seems redundant to recite the same flaws and deficiencies in this draft EIS as in the final EIS that was soundly rejected by the Board of Land and Natural Resources on May 22, 2020.</p> <p>Nevertheless, it must be said again here that the basis for proposed limitless takings on even more wide ranging and critically depleted species listed is shocking for its abuse of logic, and utterly fails again the same legal tests set forth by the receiving agency; the Department of Land and Natural Resources. As Board Chair Suzanne Case stated then, "without meaningful limits on future catch, without enough attention to our highly depleted stocks like Paku-ikui (Achilles tang) and other low-number species, and without adequate analysis of the near-future effects of climate change, ocean warming and coral bleaching on our reefs, [the FEIS] did not adequately disclose the potential environmental impacts of the proposed ten permits."</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The FEIS includes a new Preferred Alternative which includes individual catch quotas for the species which would be collected, creating a strict upper limit on annual collection, and addressing concerns related to a lack of meaningful limits. Additional information on climate change has also been added to the FEIS.</p>
R. A. Culbertson (Environmental Caucus of the Democratic Party of Hawaii)	<p>Now we have 20 applicants for the much smaller island of Oahu amid more competitive demands of recreational and regular commercial fishers as well as expectations for the tourism industry to conserve these precious resources, and yet the industry wants to press on with a carve out of special privileges for 20 anonymous collectors to insure that their profits in markets abroad can be satisfied in perpetuity.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative is limited to 15 fishers. The 15 permittees covered by this FEIS may file individual permit applications with Department of Land and Natural Resources (DLNR) after the submission of this FEIS to Office of Environmental Quality Control (OEQC) and DLNR. DLNR will review such applications and take action upon them if this FEIS is accepted.</p> <p>Other fishers would be allowed to apply for Aquarium Permits and CMLs, but would need to undergo their own HEPA review.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
<p>R. A. Culbertson (Environmental Caucus of the Democratic Party of Hawaii)</p>	<p>No regard is being paid to the values of the larger public interest or indeed of the values of the host culture as identified in the mandated Culture Impact Statement. In fact, of the 42 persons sought out for the cultural survey, only 6 agreed to collaborate, and of those few, only two including one former DLNR administrator were willing to defend the practices carried out by this destructive industry. Yet this socio-economic impact was deemed too insignificant to matter by the consultant. Likewise, the concerns about poaching, under reporting of catches, and inability to verify data within the current system, are all corners routinely cut and which have given rise to decades of public disgust exhibited through majorities in polling data and within many reputable conservation institutions. However, none of this discontent and systematic failures is factored into the socio-economic analysis of the EIS.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The cultural resource discussion in the FEIS has been updated to disclose potential impacts due to the belief of some Hawaiian's that any collection, regardless of impact on populations, may be a cultural impact.</p>
<p>R. A. Culbertson (Environmental Caucus of the Democratic Party of Hawaii)</p>	<p>Perhaps the document's most monumental failure may be in assessing the 'cumulative' impact that the proposed preferred alternative would have on top of the various threats now looming larger than ever. As begun above by Chair Case, these threats include global warming, ocean acidification, increased frequency of coral bleaching, landward run-off and pollution, other legal forms of fishing tending to overfishing, and the general disruption of under appreciated ecological services by and within living marine communities. The burdens on our marine life are already too high! To allow effectively programmatic unregulated takings, in addition to all the other burdens, is the very definition of a 'cumulative' (and unwarranted!) impact. But the document obstinately declares the industry to have no significant 'cumulative' impact.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>Cumulative impacts are addressed in Section 5.4.3. The Preferred Alternative in the FEIS has been updated to limit the number of permits, limits collection to specific species on a proposed White List, and provides a hard upper limit on collection of those species.</p>
<p>R. A. Culbertson (Environmental Caucus of the Democratic Party of Hawaii)</p>	<p>In a glaring admission on page 19 of the 444 page document the consultant writes, <i>"it is unknown which, if any, species are experiencing population declines, as population trend data is not available for the fish species analyzed in this EIS for the island of O'ahu."</i> With no mitigations and no practical limits proposed in the EIS, decision makers are really at sea. And this dilemma was noted previously when Chair Case complained, "The fact that there are really no limits on the number of fish that can be taken I think is very, very challenging. I don't know how you analyze impacts when you don't know how many fish will be taken out. We don't have the data available for statistical analysis of the impact of removing a certain amount of fish from the reef of species that are very low numbers already."</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The FEIS includes a new Preferred Alternative which includes individual catch quotas for the species which would be collected, creating a strict upper limit on annual collection, and addressing concerns related to a lack of meaningful limits.</p>
<p>R. A. Culbertson (Environmental Caucus of the Democratic Party of Hawaii)</p>	<p>Beyond mere complaints, it would seem most appropriate to now apply the precautionary principle and shut down this trade throughout the entire state. Indeed, the Hawaii Democratic Party officially created a resolution in 2018 calling for just that very action. Now is the time to see it through!</p>	<p>Your comment has been forwarded to the decision makers.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Diane Ware	<p>Aloha, This DEIS fails to be transparent and identify affected parties, omits fundamental critical analyses, contains multiple inaccuracies, misrepresentations, and fails to address constitutionally protected rights of our resident citizens. If the Draft were to be accepted, the NO Action Alternative is the only acceptable proposal.</p> <p>After attending the zoom meeting of the BLNR on the West Hawai'i FEIS I feel the O'ahu draft EIS also did not adequately disclose the potential environmental impacts from the issuance of twenty aquarium fishing permits for the island due to lack of meaningful limits on future catch. It does not provide enough attention to our highly depleted stocks like pāku'iku'i (Achilles tang) and other low-number species, and the document lacks adequate analysis of the near-future effects of climate change, ocean warming and coral bleaching on our reefs.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The FEIS includes a new Preferred Alternative which includes individual catch quotas for the species which would be collected, creating a strict upper limit on annual collection, and addressing concerns related to a lack of meaningful limits. Additional information on climate change has also been added to the FEIS.</p>
Diane Ware	<p>1) The DEIS fails to provide adequate baseline data making it difficult to analyze risks from cumulative factors such as unregulated collecting, underreporting of catch, changes to habitat and impact on traditional subsistence fishing. I feel baseline data should be based on the numbers and variety of reef fishes before the trade. In the discussion of cultural impacts, we owe the indigenous cultural that relies on subsistence fishing, the abundance their ancestors enjoyed and managed in a pono manner rather than permitting unlimited take from which our reefs now suffer.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The Proposed Action is issuance of 15 Aquarium Permits and CMLs, establishment of a White List of 31 species, and implementation of individual catch quotas for each of the White List species. Therefore, the proper baseline that reflects pre-project environmental conditions (i.e., conditions prior to issuance of the 15 permits) and is spatially relevant is the most recent population data available from PIFSC.</p>
Diane Ware	<p>2) The Hawaiian culture and people have suffered from colonial racial disenfranchisement and profiteering from the resources of these islands for over 200 years. Now with racial injustice reckoning taking place today the State should turn to giving back and protecting resources supposedly guaranteed in Public Trust Doctrines. Repairing relationships and possibly offering reparations are more appropriate than giving fragile, irreplaceable resources to a \$200 million dollar multinational pet industry trade which is the applicant in this case. They purport to represent 20 local collectors never identified in the document.</p>	<p>Your comment has been forwarded to the decision makers.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Diane Ware	<p>3) Regarding the sustainability of unlimited take purported by the applicant: There are no proposed reductions in bag limits beyond the existing O’ahu bag limits, plus one new bag limit for the flame wrasse. However, if the bag limits were to be applied as described in the DEIS ‘preferred alternative’, the populations of O’ahu’s remaining reef fish could plummet to extinction over the first year of collecting. In fact, the bag limits would allow the total island-wide population of yellow tangs to be wiped out in 4 months, and Achilles Tang and Flame wrasse to be wiped out in less than one month. The applicant admits that data to defend the proposed “take” of our public trust resource is non-existent. (See page 19 of the document): “it is unknown which, if any, species are experiencing population declines, as population trend data is not available for the fish species analyzed in this EIS for the island of O’ahu.”</p> <p>A key ‘study’ that is referred to over and over again (Ochavillo and Hodgson - 2006) turns out to be nothing more than a guide for aquarium collecting in the Philippines, certainly not a peer reviewed study and not current. The document referenced was funded by the Transforming the Marine Aquarium Trade (TMAT) Project and the International Finance Corporation- Global Environment Facility, Marine Aquarium Market Transformation Initiative in cooperation with the Marine Aquarium Council and the Community Conservation Investment Forum. The species described in the referenced document’s “natural mortality models” used to estimate a general “rule of thumb” are not found in Hawaii. And yet, that is precisely what they would pass off as “the best available science”. It becomes the linchpin for many of the dubious thresholds for ‘sustainability’ of individual species. In it, a wide range of 5%-25% was cause for alarm by the receiving agency (DLNR/DAR) scientists. The proposing consultant has not complied with the agency’s directive to clarify how its interpretation and latitude can be justified to the species level. This data should be deleted and replaced with relevant data on the subject.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The FEIS includes a new Preferred Alternative which includes individual catch quotas for the species which would be collected (limited to species on the proposed White List), creating a strict upper limit on annual collection, and addressing concerns related to a lack of meaningful limits.</p> <p>The EIS uses the best available science related to sustainable harvest. Additional citations and data have been added where relevant.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Diane Ware	<p>4) The document lacks adequate analysis of cumulative near-future effects of climate change, ocean warming and coral bleaching on our reefs. Future serious impacts to the coastal near-shore habitat due to climate change are ignored in this document, and the proposed action alternatives do not address mitigation for the anticipated loss of coastal habitat. The FEIS preferred alternative proposes to exploit a public resource for the economic benefit of an unidentified few, at the expense of the subsistence communities, the resident public, the visitors, and the health of the state as a whole. A recent DAR announcement appealed to subsistence and recreational reef fishers to refrain from taking herbivorous fish off the reefs. This tacit recognition of the vital symbiotic service they perform in this delicate coral reef ecosystem is overdue and yet completely absent in the DEIS. The 'preferred alternative' in the document would allow (with one exception) for unlimited takes by unidentified permittees of many of these same important organisms. Any declines whether driven by, or contributed to, by the trade are simply not justified by the logic and necessity of sustainability.</p> <p>Likewise, the consultant fails to address the reef ecosystem as a whole. A recent video documenting the reef ecosystem of Palmyra by The Nature Conservancy has determined that the protected system without human disturbances such as pollution, developments and overfishing is more resilient after recent bleaching incidents in 2015-2016 that were so devastating in the main Hawaiian islands. The degree of bleaching was less and the reefs recovered quickly. We must do everything possible to keep our reefs as resilient as possible and aquarium collection is not needed to sustain our island residents.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>Additional information on climate change and herbivores has been added to the FEIS.</p>
Diane Ware	<p>Furthermore the trade has proven to be an inhumane practice as outlined by one of the plaintiffs (The Humane Society of the US) in the West Hawai'i DEIS. Please reject the applicants Preferred Alternative proposed. Thank you for the opportunity to comment,</p>	<p>Your comment has been forwarded to the decision makers.</p>
Hawaii Department of Transportation (HDOT)	<p>The Hawaii Department of Transportation (HDOT) understands the Pet Industry Joint Advisory Council (PIJAC) has prepared the subject DEIS to evaluate the impacts of issuing 20 Commercial Aquarium Permits on the island of Oahu. In general, HDOT has no comments on the proposed permitting for commercial aquarium fishing; however due to United States Department of Homeland Security requirements and HOOT safety requirements for our commercial harbors, the HDOT is opposed to any permitting for the commercial collection of aquarium fish within any HDOT commercial harbor.</p>	<p>Your comment has been forwarded to the decision makers.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
<p>Diane M. Kanealii (Kailapa Community Association)</p>	<p>Aloha , This written testimony is regarding the Moratorium on aquarium fishing and the need of an Environmental Impact Statement (EIS) <u>AND</u> a Cultural Impact Assessment (CIA) prior to issuance of Aquarium fishing permits. I was appalled to learn that Governor Ige, vetoed Senate Bill 1240 introduced by Sen. Karl Rhoads (D-Oahu) in 2017, which would have halted the issuance of new aquarium permits, limited the ability to transfer valid permits and essentially phased the industry out of existence. The bill introduced would have required an EIS prior to approval of all aquarium fishing permits. How can the government stand behind so called "scientific evidence " to determine that the practice is sustainable without studying those impacts? Where is the evidence? How can the industry be self monitored and have no bag limit or] assessment of what our ocean resources are and what impacts this industry has on Native peoples ability to feed their families? I can testify that I have personally witnessed aquarium fish collector who had approxi- mately 800 (his estimate) fish in his fish box and bragged about his catch. When questioned why so many, he replied, they have to collect as much as they can, because 80% of the fish will die before or during transport to the buyers. To me that is travesty as those that died could have been someones dinner or were part of the oceans healthy ecosystem feeding other fish or other carnivores in the natural balance of nature. There are not enough DOCAR officers to monitor all sites where these practices are happening. This is evidenced by the recent aquarium fisher caught in Kawaihae with illegal numbers and types of fish . Without the call from a private citizen reporting the fisher to DLNR, that aquarium fisher would have not been caught and there would be no consequences. He got away to do it again and again. That incident is just a sample of what happens in this industry which is impossible to monitor. The amount of money they make with little to no oversight outweighs the risk of getting caught.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>An EIS and CIA have been prepared. A discussion on post-collection mortality was included in the DEIS and FEIS. Issuance of new Aquarium Permits was halted by court order in October 2017, and collection of aquarium fish under CMLs was halted in January 2021. The FEIS reflects these moratoriums, and both Aquarium Permits and CMLs require HEPA review prior to issuance.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Diane M. Kanealii (Kailapa Community Association)	I believe that an EIS and CIA needs to be done and to be objective, with no inherent conflict of interest or bias and therefore should not be done under DLNR. I am concerned about the State spending of tax dollars up to \$500,000 for the EIS and CIA conducted by the University of Hawaii in support of the Office of Hawaiian Affairs, the Aha Moku Advisory Council and the Hunting, Farming and Fishing Association. Why are our tax dollars paying for the EIS and CIA at 100% when it should be the Aquarium Fishing industry playing for it themselves?? Asking a state department to spend a half a million dollars on a private industry with so many other more important issues that can be supported such as supporting land based food production, water development, fire prevention activities, infrastructure for families, community self-sufficiency efforts. I believe the aquarium fisheries should pay for at least 50% of the funds and use of public money to insure there is no conflict of interest. DLNR needs to create a Marine Aquarium Fishing Advisory Group “to monitor activities addressed by this act” as well as to assist in the development of the aforementioned EIS and CIA partially paid for by the Aquarium fishery association.	Your comment has been forwarded to the decision makers. An EIS and CIA have been prepared. Neither were funded with tax dollars, rather, the Applicant paid 100% of the costs of the development of these documents.
Diane M. Kanealii (Kailapa Community Association)	It is my understanding that recreational permits allow for the capture of nearly 2,000 fish annually using fine mesh nets or traps. Considering the number of active permits in 2018, upward of 250,000 fish could potentially be caught and sold every year since the Aquarium fishing permits were not capped.	Your comment has been forwarded to the decision makers. Recreational aquarium collection is addressed in the Cumulative Effects analysis of the EIS.
Diane M. Kanealii (Kailapa Community Association)	The State Supreme Court suspended aquarium fishing in September 2017. The decision served as resolution to a five-year legal battle after plaintiffs sued the DLNR for failing to comply with the Hawaii Environmental Policy Act by not adequately documenting environmental impacts of aquarium fishing before issuing permits. Subsequent rulings by Hawaii’s First Circuit Court, as the Environmental Court, upheld the Supreme Court’s decision and took further steps to halt the practice until the DLNR came into compliance. Is the DLNR now in compliance?	Your comment has been forwarded to the decision makers.
Diane M. Kanealii (Kailapa Community Association)	Is the Hawaii Environmental Policy Act in compliance documenting the environmental impacts of aquarium fishing before issuing permits? If so, how are the impacts being measured? The Industry representatives have said they take only about 20 percent of relevant tropical fish species. 20% is huge when you look at how many ocean users, gathers and harvesters there are on this island alone. I may not have scientific evidence regarding the decrease of fish but we can no longer fish to feed our families due to the obvious reduction of food fish, which is also documented by DLNR statistics indicating aquarium fish populations are on the decline.	Your comment has been forwarded to the decision makers.
Diane M. Kanealii (Kailapa)	Popular opinion has proven heavily skewed to one side of the issue. The Humane Society of the United States and for the Fishers conducted a survey in 2017, which found that 83 percent of residents polled said they were in favor of a permanent ban on aquarium fishing in Hawaii. I totally agree this IS the ultimate solution.	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Community Association)		
Diane M. Kanealii (Kailapa Community Association)	<p>Hawaii's native communities depend on our ocean for connections, food, recreation and education. Whereas; Hawaiians fed over a million people without outside imports for thousands of years prior to Statehood. If cared for, and harvested for subsistence, we can sustain our- selves on our island and it's natural; resources. The ocean is our refrigerator and through rule making, compliance and enforcement following the Native Hawaiian practices, it would pro- vide us the opportunity to fish and feed our families, and not for the enjoyment of people watching them in an aquarium. This is where the CIA comes into play and must be taken into consideration of the impacts these aquarium harvesting practices have on the host culture off Hawaii.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The cultural resource discussion in the FEIS has been updated to disclose potential impacts due to the belief of some Hawaiian's that any collection, regardless of impact on populations, may be a cultural impact.</p>
Diane M. Kanealii (Kailapa Community Association)	<p>This industry needs to stop exploiting our natural resources or at least have much im- proved oversight by DLNR officers by increasing the number of officers available to monitor every catch. Permits updated annually and approved based on their compliance to the rules as well as accurate reporting of their catch. The reporting should include : the numbers, site, species and sizes every time they go out. If they are found to be non-compliant, their license be revoked and banned from commercial harvesting of aquarium fish forever. I truly believe that if the penalties for violating the rules set forth are significant, there would be less violations and more self-regulating fishers. We ALL must be held ac- countable to the same standards to insure the fish populations can sustain the needs for food for our people, in particular our Native people who were dependent upon the ocean as it was the main source of protein. We see fish as our food source and need to keep the natural ecosystems balanced.</p>	<p>Your comment has been forwarded to the decision makers.</p>
Diane M. Kanealii (Kailapa Community Association)	<p>Mahalo for allowing me the opportunity express my thoughts and respectfully ask that a full EIS and CIA be completed prior to issuing any permits for Moku O Hawai'i.</p>	<p>Your comment has been forwarded to the decision makers.</p>
Eric Moennich	<p>To whom it may concern: My name is Eric Moennich, and I want to thank you for allowing me the opportunity to submit my comments and thoughts regarding the aquarium fishery in Hawaii and the DEIS that is currently being considered. I am a firefighter and resident of Oahu. I have lived in Hawaii for almost 20 years and have every intention of living here for the rest of my life and finishing my career here with the fire department.</p>	<p>Your comment has been forwarded to the decision makers.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Eric Moennich	<p>I would also like to have the right to continue to catch aquarium fish now and in the future. In the time I have lived here I have seen many changes. One thing that has remained constant though is a relentless attack on the aquarium fishery. It seems I find myself wondering every year if the fishery will be allowed to continue or not. I have testified at many hearings regarding bills that were being considered to regulate or shut down the aquarium fishery. This uncertainty has been tiring and I feel unfair. Be that as it may, we are now at a crossroads for the fishery. If the state decides not to pass the eventual FEIS and grant aquarium fishermen a legal way to continue their livelihoods then the state is sending a message that they intend to end the fishery.</p>	<p>Your comment has been forwarded to the decision makers.</p>
Eric Moennich	<p>The applicants for this DEIS are trying to meet every requirement the state has put on them to continue to be aquarium fishermen legally in Hawaii. The process has been long, difficult, financially staggering, and yet the applicants have prevailed and done their best to bring forward a DEIS that would meet the burdens brought onto them to be allowed to legally continue their industry. I feel strongly that this DEIS has put forward a complete package that meets all requirements and should be passed. If however the state feels that there are changes that need to be made, I know the applicants are open to hearing what needs to be done in order to have an acceptable FEIS that could be passed. If this is the case please provide the applicants a specific list of what needs to be changed in order to comply with the states needs.</p>	<p>Your comment has been forwarded to the decision makers.</p>
Eric Moennich	<p>I myself feel that having a fishery, even a greatly restricted fishery is better than no fishery at all. I feel that not allowing the fishery to continue would be too drastic a step for the state to take. Although there has been a recent rejection of a FEIS for the aquarium fishermen on Hawaii Island I hope the state will consider this DEIS and eventual FEIS for Oahu separately. Oahu has long had less user conflict than the Big Island and aquarium fishermen on Oahu tend to catch a wide variety of fish in small numbers rather than concentrating their efforts on only a few targeted species. Aquarium fishermen on Oahu also recognize the benefits of working together with related industries and local government agencies. Examples of this include an unwritten rule among the majority of aquarium fishermen on Oahu to not dive at known dive company dive sites, or snorkeling sites. The aquarium fishermen know that the dive shop that fills their dive tanks also relies on the tourism industry and we work together so that we all can enjoy the ocean peacefully in a cooperative effort. Another example is when aquarium fishermen self imposed further regulation of the industry to place gear restrictions and bag limits on fish we catch in order to continue to keep the fishery sustainable. Aquarium fishermen care greatly about the sustainability of the fishery as their livelihoods depend on it.</p>	<p>Your comment has been forwarded to the decision makers.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Eric Moennich	<p>I would also like to bring up another concern I have regarding this EIS process that is being mandated on the aquarium fishing industry. I think it would set a dangerous precedent for the state if we not only require an EIS for fishermen but even after doing all they can to comply with an EIS not pass it. If this happens I can't see how all the other ocean related industries that we love not also be mandated to be held to the same standards. Commercial food fishermen would have to do an EIS, dive shops and snorkeling shops would have to do an EIS. The list goes on an on. All those industries could be shut down from this too and they may have even less available data to support their actions than aquarium fishermen do. This is an opportunity for the state to pass an EIS and send the message that our current ocean businesses can be confident that they will be able to continue if they were to come under fire and be required to do an EIS as well.</p>	<p>Your comment has been forwarded to the decision makers.</p>
Eric Moennich	<p>If we are ok with commercial food fishermen taking fish from the ocean how can we also not be ok with allowing aquarium fishermen to do the same? I see no difference between the fishermen who catches an Ahi and takes that Ahi to the auction block to receive payment and the aquarium fishermen who catches a yellow tang and sells it to a wholesaler or retail customer to receive payment. In both cases, both fishermen have caught a fish from the ocean, that they then sold for payment. Then the fishermen takes their pay to buy groceries for their families, pay rent, and other bills. In fact, in my opinion the yellow tang gets the better end of the deal because it has the opportunity to continue to live for years while the fate of the Ahi was to be killed immediately after being caught. Let's not forget why we are even here today and considering this DEIS. One user group wants to stop another user group. The basis on this action is biased, emotionally driven, and has ulterior motives.</p>	<p>Your comment has been forwarded to the decision makers.</p>
Eric Moennich	<p>In closing I would like to say that I strongly support this DEIS and the aquarium fishery. It is one of the best studied fisheries in the world. It is sustainable and should be allowed to continue. While concerns may arise from time to time regarding the fishery, those concerns can be addressed now just as they have been in the past and will be in the future. Industry standards, regulations, licenses, gear and take restrictions, among others are all tools in the states belt for controlling this fishery to allow it to adapt to the sentiments of the times rather than be extinct from existence. Aquarium fishing is a part of Hawaiian history and not a new untested activity. It has existed for a long time for good reason. Please do not allow this fishery to perish as so much of our other important Hawaiian history has. Please pass the FEIS when the time comes. Thank you for your time and consideration regarding this important matter. Sincerely, Eric Moennich</p>	<p>Your comment has been forwarded to the decision makers.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
For the Fishes	<p>Dear Mr. Sakoda:</p> <p>For the Fishes, Center for Biological Diversity, Moana Ohana, Kai Palaoa, Haereticus Environmental Laboratory, The Humane Society of the United States, Kaimi Kaupiko, and Wilfred Kaupiko (collectively, “Commenters”), are conservation and animal protection organizations and individuals with strong interests in preserving the State of Hawai‘i’s natural resources and protecting its delicate coral reefs. Commenters submit these comments on the Pet Industry Joint Advisory Council’s (PIJAC’s, or “Applicant’s”) Draft Environmental Impact Statement (DEIS) purporting to analyze the environmental impacts of commercial aquarium fish collection by 20 permittees on the island of O‘ahu.¹</p> <p>The DEIS was required to fully analyze the environmental impacts of commercial aquarium collection on the Island of O‘ahu and specifically address the significance criteria in HAR § 11-200-12, including, but not limited to:</p> <ul style="list-style-type: none"> • Involving an irrevocable commitment to loss or destruction of any natural or cultural resource; • Curtailing the range of beneficial uses of the environment; • Conflicting with the state’s long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders; • Substantially affecting the economic or social welfare of the community or State; • Involving a substantial degradation of environmental quality; • Cumulatively has considerable effect upon the environment or involves a commitment for larger actions; • Substantially affects a rare, threatened, or endangered species, or its habitat; • Affects or is likely to suffer damage by the activity/activities being located in an environmentally sensitive area such as a beach, erosion-prone area or coastal waters. <p>To this end, we expected the Applicant to comply with the requirement “to develop a fully acceptable EIS prior to the time the EIS is filed with the office, through a full and complete consultation process, and . . . not rely solely upon the public review process to expose environmental concerns.”² However, the Applicant failed to conduct the required early consultations prior to submitting its Draft and Final Environmental Assessments, despite the HEPA requirement that the applicant must “at the earliest practicable time, . . . consult with . . . those citizen groups and individuals which the approving agency reasonably believes to be affected.”³ In this case, it is clear from the long history of litigation that Commenters, at the very least, should have been consulted. The Applicant should also have consulted Native Hawaiian groups (outside of those contacted as part of the CIA).</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>See Section 6.1 of the EIS. All parties who had requested to be consulted were contacted on September 16, 2019 via email and/or mail, seeking advice and input for DEIS development. The Applicant requested any information or advice concerning the fishery and other potentially impacted environmental, cultural, or other resources. Consulted Parties were asked to respond within 30 days. Comments received and responses to those comments were provided in an appendix to the DEIS. The consultation process for cultural resources is described in depth in Section 4 of Appendix A.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
For the Fishes	<p>Further, we expected our substantive comments on the FEAs to be incorporated and consultation to be responded to in writing and incorporated into the DEIS by the Applicant prior to the filing of the DEIS with the Hawai'i Department of Land and Natural Resources (DLNR) and Office of Environmental Quality Control (OEQC). We also expected that the responses would not be merely self-serving recitations of benefits and/or rationalizations of the proposed actions. However, these expectations were not met. See Appendix 1 for a detailed description of how the Applicant's responses to the questions we raised during consultation process were inadequate. As a result of this failure to abide by HEPA's mandate of early consultation, the DEIS fails to adequately analyze all impacts, and is skewed toward a favorable result for the trade.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>All comments received on the FEA-EISPN and from consulted parties were responded to in Appendix B of the DEIS, and incorporated in the EIS where appropriate.</p> <p>Responses to specific issues raised in Appendix 1 of this comment letter are included below.</p>
For the Fishes	<p>Most importantly, we expected the DEIS to accurately and adequately evaluate the HEPA significance criteria, to disclose any and all effects (beneficial and adverse) to biological, socioeconomic, and cultural resources and traditional cultural practices, stemming from the proposed alternatives, and, to propose mitigation measures to reduce impacts, as set forth in HAR § 11-200-17.</p> <p>However, serious, fundamental errors in various factors used to determine impacts render the DEIS fatally flawed. They include, but are not limited to: the use of an incorrect baseline, an expanded and exaggerated spatial scale, minimization of catch levels, overestimations of fish populations and other omissions in determining impacts. These missteps have contributed to erroneous conclusions and improper evaluations of HEPA significance criteria.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The DEIS uses the best available science to evaluate impacts. Responses to specific issues raised in this comment are addressed below (where the Commenters raised each issue in depth).</p>
For the Fishes	<p>Finally, we also expected the DEIS to factor climate change into the analyses, as envisioned by HAR § 11-200.1-13 Significance Criteria, Criterion 11 (based on the December 2017 Climate Change Mitigation and Adaptation Commission report) to address concerns related to climate change adaptation, such as impacts from increased hurricane frequency and/or intensity, potential endangered species migration, impacts on areas likely to experience wave inundation, increased exposure to hurricanes, or flooding, and further impacts discussed below.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The cumulative impacts of climate change are addressed in Section 5.4.3.5 of the EIS. The referenced December 2017 Climate Change Mitigation and Adaptation Commission report has been reviewed and relevant information from the report has been added where appropriate.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
For the Fishes	<p>I. Introduction DLNR has the authority to issue permits for the taking of fish and other aquatic life for aquarium purposes.⁴ While these permits are limited in duration to one year, neither the aquarium collection statute nor DLNR places any limits on the number of animals that can be captured per commercial permit, nor on the number of permits the Agency issues.⁵ In fact, prior to court mandated compliance with HEPA, DLNR automatically granted every commercial aquarium permit application, and allows the collection of <i>unlimited</i> numbers of animals under those permits.⁶ DLNR also automatically granted every recreational permit application, which effectively allowed for unlimited recreational collection of nearly 2,000 fish per year per collector.⁷ In addition, DLNR also automatically grants commercial marine licenses for aquarium collecting issued pursuant to HRS § 189-2, but does so without HEPA review as required by law. Furthermore, while commercial collectors are required to report their collections (but in practice, do so inaccurately), there is no similar requirement for recreational permits.⁸ Therefore, there are no definitive data on how many of each type of fish or other aquatic animal is taken from the State's delicate coral reef ecosystem each year, nor on what level of take would be sustainable.</p>	Your comment has been forwarded to the decision makers.
For the Fishes	<p>The DEIS is entirely inadequate under the Hawai'i Environmental Policy Act (HEPA, Haw. Rev. Chapter 343) and its implementing regulations. The DEIS fails to address these and other notable flaws that we outlined in our prior comments on the Environmental Assessments:</p> <ul style="list-style-type: none"> • The DEIS fails to analyze the impacts of collection over time (i.e. the expanded 5-year scope of the analysis, beyond one year, is still inadequate); 	<p>Your comment has been forwarded to the decision makers.</p> <p>The EIS does analyze impacts of collection over time, using a five-year analysis period. Because Aquarium Permits have a 1-year duration, the DLNR can decide each year whether or not to issue permits based on new data.</p>
For the Fishes	<ul style="list-style-type: none"> • The DEIS fails to accurately analyze the environmental consequences (i.e. direct, indirect, and cumulative impacts) of unlimited collection of aquatic life to biological, cultural, and socioeconomic resources on O'ahu; • The DEIS fails to accurately analyze the environmental consequences (i.e. direct, indirect, and cumulative impacts) of unlimited collection of aquatic life to biological, cultural, and socioeconomic resources on other parts of the State that may be connected via larval dispersal patterns; 	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative includes a proposed White List and individual catch quotas for the 31 species which would limit the total allowable catch.</p>
For the Fishes	<ul style="list-style-type: none"> • The DEIS fails to accurately analyze the cumulative impacts of commercial collection along with recreational collection; 	<p>The cumulative impacts of recreational aquarium fish collection are analyzed in Section 5.4.3.1. Because, as noted by the Commenters, data are not available on the number of fish collected by recreational aquarium permit holders, the EIS evaluates a reasonable worst-case scenario (i.e., all permit holders collect 50% of their allowable catch). These estimates are likely high based on results from Harding (2017), which found that 57% of recreational aquarium permit holders surveyed had not utilized their permit in the previous 12-month period. Of the 43% who had used their permits, their average yearly catch was 45 fish per permit (Harding 2017), which is below the maximum allowable number of 1,825 fish or the 50% used to estimate impacts above.</p>
For the Fishes	<ul style="list-style-type: none"> • The DEIS fails to accurately analyze impacts on cultural resources; 	Your comment has been forwarded to the decision makers. Responses to these issues are addressed below.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
For the Fishes	<ul style="list-style-type: none"> The DEIS fails to accurately analyze the alternatives presented; 	Your comment has been forwarded to the decision makers. Responses to these issues are addressed below.
For the Fishes	<ul style="list-style-type: none"> The DEIS fails to accurately analyze the impacts of collection practices harmful to corals; 	Your comment has been forwarded to the decision makers. Responses to these issues are addressed below.
For the Fishes	<ul style="list-style-type: none"> The DEIS relies on inaccurate, misleading, and incomplete data; 	Your comment has been forwarded to the decision makers. Responses to these issues are addressed below.
For the Fishes	<ul style="list-style-type: none"> The DEIS fails to propose and analyze mitigation measures; and 	Your comment has been forwarded to the decision makers. Responses to these issues are addressed below.
For the Fishes	<ul style="list-style-type: none"> The DEIS fails to adequately incorporate input of Native Hawaiian groups, experts, affected citizens and consulted parties. 	Your comment has been forwarded to the decision makers. Responses to these issues are addressed below.
For the Fishes	<p>The Applicant's Preferred Alternative does not ensure that commercial aquarium fish collection is lawful, responsible, and sustainable for any of the more than 300 fish and invertebrate species taken from nearshore habitats on O'ahu nor for any species taken elsewhere in the state where collection is allowed under the current geographic scope of the aquarium permits. The DEIS's continued conclusion that the aquarium fishery on O'ahu has "no significant impact" on targeted reef fish species, coral reefs, and the human communities that rely on them is unsupportable. The DEIS fails to accurately evaluate the true primary, secondary, cumulative, short-term and long-term effects of the Preferred Alternative and fails to propose any proper mitigation.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative includes a proposed White List and individual catch quotas for the 31 species which would limit the total allowable catch, and limit collection to species on the White List. In addition, the Preferred Alternative includes an assumption that a permit condition would be added to each permit limiting the geographic scope to the island of Oahu, preventing collectors from collecting elsewhere.</p>
For the Fishes	<p>II. Reliance on Flawed and Inadequate Science and Data</p> <p>As previously mentioned, fundamental errors in the DEIS's impact analysis resulted in patently false findings of no significant impacts and improper evaluations of HEPA significance criteria. Those errors include, but are not limited to, the use of an improper baseline, the minimization of potential collection rates under the proposed alternatives, and an expanded area to which the impacts would apply. A properly conducted DEIS would focus on impacts in the areas where the subject activity is to take place. This DEIS is fundamentally flawed in that it fails to do so. In addition, the DEIS fails to disclose the impacts that would occur under the full extent of the existing and proposed bag limits and ignores the evidence of impacts, including the magnitude of depletion to targeted species in the areas from which they are taken as determined by a comparison to the baseline.</p>	Your comment has been forwarded to the decision makers. Responses to these issues are addressed below.

Commentor	Comment	Response
For the Fishes	<p><u>A. The use of an improper baseline.</u> A critical component in any DEIS is the establishment of a proper baseline against which to compare the impacts of the proposed action. Any analysis stemming from an improper baseline cannot be considered accurate or relevant. A proper baseline reflects pre-project environmental conditions and is spatially relevant. In this case, a proper baseline is found in the O’ahu conservation districts and managed areas, collectively referred to as Marine Protected Areas (MPAs), such as Hanauma Bay where aquarium collecting has been prohibited since 1967. Rather than using a proper baseline, free from the impacts of aquarium collecting, the DEIS incorrectly incorporates the effects of prior aquarium collecting into the baseline, and states in sections on the scope and affected environment, “the evaluation includes past use and potential impacts by the commercial aquarium fishery because it has been a part of the baseline condition of these resources since the late 1940s,” and “permitted commercial aquarium fishing has been a part of the socioeconomic, cultural, physical, and biological resources for decades and is considered a part of the baseline condition of the affected environment.”⁹ The important role MPAs serve as a baseline for fish populations in Hawai’i is underscored by their use as such in reports and papers that seek to document the effects of aquarium collecting on targeted fish populations. These studies use MPAs because they have been closed to aquarium collecting for decades and are presumed to have close to “natural” levels of aquarium fish abundances. This makes them ideal as reference or “control” sites to compare with the areas where aquarium collecting occurs.¹⁰</p>	<p>Your comment has been forwarded to the decision makers.</p>
For the Fishes	<p><u>B. Flawed Impact Analysis</u> In determining the level of impact to the more than 300 fish and invertebrate species that would occur under the preferred alternative, the DEIS compares reported catch from “the 20 fishers” (presumably the 20 unidentified collectors who are seeking aquarium permits) to the estimated <i>island-wide</i> populations of just 22 fish species and provides no analyses for the remaining 216 fish and 66 invertebrate species taken by commercial aquarium collectors since 2000. When used properly, the basic analysis – catch as % of population – is useful in describing past impacts and has been employed since at least 2010 as one method for doing so elsewhere in the state, such as in the West Hawai’i Regional Fishery Management Area (WHRFMA) on the Island of Hawai’i.¹¹ It is also useful for determining future allowable impacts. A proper analysis would include all species that can be taken under the permits and then compare the estimated population of a given species, in the area where it would be taken, to the average reported catch of that species during the same time frame. Unfortunately, the analysis is easily manipulated, and in the DEIS, the impacts are minimized as described below:</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative includes a proposed White List and individual catch quotas for the 31 species which would limit the total allowable catch, and limit collection to species on the White List. Therefore, all species impacted by commercial aquarium collection under the Preferred Alternative are analyzed in the FEIS. All fish collected under the Preferred Alternative would be from the waters of O’ahu, and therefore collection is analyzed using island-wide population estimates.</p>

Commentor	Comment	Response
For the Fishes	<p>1. Affected Species At least 282 species that have been reportedly taken by commercial aquarium collectors since 2000 have been omitted from the analysis. The DEIS claims to analyze 23 species, but includes population data for just 22 of them, because for one species, the endemic Bandit Angelfish, there is no population data.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative includes a proposed White List and individual catch quotas for the 31 species which would limit the total allowable catch, and limit collection to species on the White List. Therefore, all species impacted by commercial aquarium collection under the Preferred Alternative are analyzed in the FEIS.</p>
For the Fishes	<p>2. Affected Environment/Directly Affected area The DEIS improperly uses island-wide fish populations to determine the impacts of the proposed action to 22 species which would occur within 15 distinct aquarium fishing trip report zones, and which together, encompass O’ahu’s entire coastline (see Appendix 2). This dilutes the impacts by distributing them equally around the island, although fish populations, as well as levels of take, are highly varied and vary around the island.</p> <p>The DEIS uses the Coral Reef Ecosystem Program (CREP) data from O’ahu surveys conducted over five years (2010, 2012, 2013, 2015, 2016) to estimate island-wide fish populations. The CREP collected fish data from 228 stationary point count locations (i.e. reefs) around O’ahu between depths of 0-98 feet, with numerous sites within each of the 15 trip report zones.12 CREP survey count data was converted to abundance per unit area and then multiplied by the estimated area of hard-bottom habitat in <30 meters of water for the entire island.13 However, nothing prevents the estimated area of hard-bottom habitat within the trip report zones (or even smaller areas) from being used in this calculation, instead of the island-wide estimated area.</p> <p>Using report zone populations rather than island-wide populations would facilitate a much more accurate analysis. Not only because it’s highly unlikely that O’ahu’s fish populations are equally distributed among the 15 report zones, but also because aquarium catch reports document fairly consistent patterns of heavy annual collection in some zones and little to no collection in others. For example, zones 401, 403, 407, 412, 413 are consistently among the most heavily collected areas, especially zone 407 (Kaneohe Bay) with aquarium fish take ranging from 9,300 to over 28,000 in recent years. Meanwhile, zones 406, 408, 409, 414, 418, are among the least collected, especially zone 418 (Waimanalo) with zero fish reportedly taken from this area in recent years.14</p> <p>Those areas experiencing the heaviest pressure are where the greatest direct and cumulative impacts likely occur. Significant indirect impacts likely occur in other areas that may be connected via currents and therefore possible sink areas for larval dispersal, but those impacts should be analyzed separately from the areas where the activity would take place.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The CREP (now PIFSC-ESD) population estimates included in the EIS were provided by NOAA, and were not calculated by the Applicant.</p> <p>The DAR will receive the collection data by zone, and can review any necessary changes when they issue the permits on an annual basis. In the unlikely event that all collection occurred within a single AQ reporting zone, the DAR would be able to evaluate this information; however, this would effectively leave the rest of the coast completely free of collecting, and essentially create an FRA everywhere else. Given that on the island of Hawaii there is connectivity between adjacent reefs (up to 184 kilometers), with fish from protected FRAs being documented to seed unprotected areas (Christie et al. 2010), it is similarly assumed that the population growth occurring in non-fished areas on O’ahu would seed the collection zones where fishing occurred, and therefore the total allowable catch limits should be based upon the entire population, not subpopulations along the O’ahu coast.</p> <p>This text has been added to Section 3.6.1 of the FEIS.</p>

Commentor	Comment	Response
For the Fishes	<p>In addition, while the CREP data may be the best available science for estimating fish abundance, it skews the data in a way that possibly minimizes the impacts of commercial aquarium collection in at least two ways. Documentation of the impacts of commercial aquarium collecting in West Hawai'i have calculated fish populations within the 30'-60' depth range, because as the main operating depth for aquarium collectors, it is the area directly affected by the activity.¹⁵ However, the CREP surveys expand that range by 68 feet. Although the DEIS claims that CREP data likely underestimates total populations by excluding fish that dwell even deeper, it is equally likely that the CREP data overestimates total populations. This is because the O'ahu CREP surveys used by the DEIS were conducted in 2010, 2012, 2013, 2015, 2016 which includes a significant, anomalous fish recruitment pulse that occurred in 2015 and lasted into 2016 for certain species. The pulse coincided with the 2014/2015 ocean heat wave which, while killing many corals, also boosted fish abundance substantially throughout the state.¹⁶ In West Hawai'i, long term studies show that typical recruitment pulses resulting from El Nino conditions, such as those that occurred in 2002 and 2009, have resulted in short-lived increases in fish populations that were followed by prolonged or short and steep population declines on the reefs and in the areas where commercial aquarium collectors operate.¹⁷</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The FEIS has been updated to include the most recent population estimates (2018).</p>
For the Fishes	<p>3. Inaccurate Projected Levels of Catch</p> <p>The DEIS determines the level of impact by comparing the projected annual average catch of the White List Species by "20 aquarium fishers" to the island-wide populations of those species, per Tables 5-4 and 5-7.¹⁸ In those tables, and elsewhere throughout the DEIS "the 20 fishers" is used to describe past and potential future aquarium catch and values that would occur under the alternatives. However, per the DEIS, "the 20 commercial fishers who are part of this proposed action made up 3 to 16 of the fishers in any given year from 2000 – 2017."¹⁹ Therefore, both past and future average and maximum rates of collection and impacts are grossly underestimated.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative includes a proposed White List and individual catch quotas for the 31 species which would limit the total allowable catch, and limit collection to species on the White List. Therefore, all species have a hard upper limit on collection or would not be collected at all.</p>

Commentor	Comment	Response
For the Fishes	<p><u>C. Flawed Threshold for “Sustainable” Collection</u></p> <p>The applicant bases the DEIS on the premise that fish collection is considered sustainable if it removes less than 5% to 25% of the entire island-wide population (annually), but the reasoning behind this threshold is entirely flawed. The DEIS states that “Ochavillo and Hodgson (2006) suggest collection of between 5% and 25% is sustainable for various reef species in the Philippines that are similar to those found on O’ahu (e.g., tang, wrasse, butterflyfish, angelfish, triggerfish). Similar data for the species collected on O’ahu are not available to determine species-specific sustainable thresholds; therefore, this research represents the best available science.”²⁰ However, the DEIS should not use these thresholds because:</p> <ul style="list-style-type: none"> • These thresholds for sustainable ornamental fish collection are species-specific based on estimated natural mortality rates (M) and fishing mortality at maximum sustainable yield (FMSY) or year-per-recruit analysis. Natural mortality rates for reef fishes are based on growth rates and length and thus are also area-specific. Mortality is based on catch data. Yield-per-recruit analysis should be derived from several annual surveys. Thus, these parameters should be specifically calculated for Hawaiian reef fish targeted by the aquarium industry as highlighted in Ochavillo and Hodgson (2006). • These thresholds were developed to calculate total allowable catch (TAC) in comparatively small “collection areas” that are orders of magnitude smaller than O’ahu. Specific collection areas used by Ochavillo and Hodgson (2006) to develop the methodology are adjacent to Bohol island in the Philippines, which is close in size, though smaller, than Hawai’i Island, which, itself, is nearly seven times larger than O’ahu. One collection area, Clarin, is part of a coastal town of the same name that has a coastline of approximately 6 linear km. Another, Batasan Island, lies approximately 6.4 km off the coast of Clarin. Applying the 5%-25% threshold to the entire island of O’ahu far exceeds the parameters it was developed for. • The 5%-25% threshold indicates “a good rule-of-thumb of collection limit” for coral reef fishes in the Philippines.²¹ This does not mean it is a good rule of thumb for collecting reef fishes in Hawai’i. • Most ornamental fish species in Ochavillo and Hodgson (2006) are species different from those on the White list. Only a few species share the same genus or species (butterflyfish, a couple of wrasses, one angelfish, a couple of damselfish, one tang and one triggerfish). Thus, it is questionable whether this fairly wide threshold (5%-25%) is representative and applicable to Hawaiian species. • Finally, this report is not peer-reviewed research, it is a field manual: Marine Aquarium Trade for Coral Reef Monitoring Protocol with a Data Analysis and Interpretation Manual. This field manual was designed in part to: “provide a scientific basis for recommending sustainable levels of collection.”²² 	<p>Your comment has been forwarded to the decision makers.</p> <p>The sustainable thresholds provided by Ochavillo and Hodgson (2006) represent the best available science regarding sustainable harvest of species with similar life histories to those harvested on O’ahu, as specific thresholds for the White List Species (or for Hawai’i) are not available. Nevertheless, as concluded in the EIS, collection under the Preferred Alternative is below the lower limit of 5% for all of the White List Species for which population estimates are available.</p>

Commentor	Comment	Response
For the Fishes	<p>The DEIS continues to assert that current fish abundance for target species is the baseline, and thus 2.5% to 25% of individuals removed from the population would be considered sustainable. But this is wrong. The DEIS fails to acknowledge that current population abundance of most of these fish species is already depleted due to in part to heavy exploitation by the aquarium trade since at least the 1970's and habitat degradation. The total allowable catch for each species must be calculated based on information on natural mortality rates and the available and limited information on catch records, specific to the geographic areas and locations where they are taken on the Island of O'ahu.²³ Additionally, an analysis of larval dispersal and connectivity patterns for the species that would be taken on O'ahu is key to preventing local extirpation of heavily targeted and/or rare species.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>Current population estimates are used to evaluate impacts, as those are the populations that would be impacted. The EIS also addresses cumulative impacts, including other fisheries (i.e., non-commercial aquarium collection).</p>
For the Fishes	<p>D. <u>Unrepresentative Data Used</u> The CREP data used in the DEIS for the entire Island of O'ahu (based on 2010-2016 surveys) are not representative of regional population abundance such as in the leeward and windward parts of the island and within each the fifteen aquarium catch reporting zones, and should not be used to estimate regional proportions of fish catch.</p> <p>It is well established that population abundances of reef fish species in Hawai'i, especially relatively small-size species that are targeted by the aquarium industry, are highly variable in space depending on reef complexity, depth and wave exposure, and in time (within and among years) depending on the season, mortality, recruitment to the population, and environmental factors.²⁴ This helps explain why population abundance estimates for fish species for the entire Island of O'ahu are not representative of regional fish abundances and do not adequately portray the impacts of the activity in the areas where it occurs.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The CREP (now PIFSC-ESD) population estimates included in the EIS were provided by NOAA, and were not calculated by the Applicant. The population estimates provided were for the entire island.</p> <p>The DAR will receive the collection data by zone, and can review any necessary changes when they issue the permits on an annual basis. In the unlikely event that all collection occurred within a single AQ reporting zone, the DAR would be able to evaluate this information; however, this would effectively leave the rest of the coast completely free of collecting, and essentially create an FRA everywhere else. Given that on the island of Hawaii there is connectivity between adjacent reefs (up to 184 kilometers), with fish from protected FRAs being documented to seed unprotected areas (Christie et al. 2010), it is similarly assumed that the population growth occurring in non-fished areas on O'ahu would seed the collection zones where fishing occurred, and therefore the total allowable catch limits should be based upon the entire population, not subpopulations along the O'ahu coast.</p> <p>This text has been added to Section 3.6.1 of the FEIS.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
For the Fishes	<p>The CREP collected fish data from 228 stationary point count locations (i.e. reefs) around O’ahu between depths of 0-98 feet, with numerous sites within each of 15 aquarium fish catch report zones.²⁵ An individual zone should be the largest area assessed for impact. Aquarium collectors must report catch by zone, and zones cannot be combined for reporting purposes (i.e. a separate report is required for each zone, even for catch taken on the same day).²⁶ Likewise, these zones should not be combined for environmental impact analysis. Both catch and population data for calculating the O’ahu aquarium catch as a percentage of population at the zone level is publicly available and should be used for this analysis.</p> <p>The relative proportion of fish species taken annually by the aquarium trade should be based on regional total abundances and regional catch records (e.g., aligned with the aquarium fish trip report zones). Allowable levels of take should be determined in conjunction with the wishes of Hawai’i residents who strongly desire that fish populations are restored to their naturally occurring (i.e. unfished) levels of abundance on the majority of Hawai’i reefs .</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The DAR will receive the collection data by zone, and can review any necessary changes when they issue the permits on an annual basis. In the unlikely event that all collection occurred within a single AQ reporting zone, the DAR would be able to evaluate this information; however, this would effectively leave the rest of the coast completely free of collecting, and essentially create an FRA everywhere else. Given that on the island of Hawaii there is connectivity between adjacent reefs (up to 184 kilometers), with fish from protected FRAs being documented to seed unprotected areas (Christie et al. 2010), it is similarly assumed that the population growth occurring in non-fished areas on O’ahu would seed the collection zones where fishing occurred, and therefore the total allowable catch limits should be based upon the entire population, not subpopulations along the O’ahu coast.</p> <p>This text has been added to Section 3.6.1 of the FEIS.</p>
For the Fishes	<p>The allowable number of individuals that could be collected from aquarium fish populations must be substantially less than those proposed in the DEIS Preferred Alternative. Scientific evidence shows that collecting activities substantially affect targeted species in Hawai’i and fishing intensity remains high even when stocks are depleted or recruitment is weak.²⁷ As described below, many targeted species on O’ahu are already depleted from over 40 years of unchecked extraction by commercial aquarium collection. The DEIS Preferred Alternative could lead to the total decimation of entire species, also described below.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative includes a proposed White List and individual catch quotas for the 31 species which would limit the total allowable catch, and limit collection to species on the White List. Therefore, all species have a hard upper limit on collection or would not be collected at all.</p>
For the Fishes	<p>Therefore, the current estimates of population abundance of fish species for the entire Island of O’ahu (from 2010 to 2016) should not be used as regional/local reference abundances to estimate minimum and maximum percentage of fish taken per year.²⁸ This is because these calculations underestimate the proportion of fish collected by region and collection zone and assumes fish populations of the entire island are evenly distributed. An accurate calculation of allowable catch would be based on regional population abundance, using the aquarium trip report zones, or smaller, and by using data estimates obtained from the depth ranges where the fishes are captured, where available.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>Population estimates have been updated to reflect the newest data (2018).</p>
For the Fishes	<p>Finally, sustainable fishable abundance for target species must take into consideration the fact that most target species are depleted in comparison with historical levels. The EIS fails to analyze the impact of collection/fishing on current population abundance and fails to consider that these populations are far below the historical baselines as represented in the MPAs, or otherwise.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>Current population estimates are used to evaluate impacts, as those are the populations that would be impacted.</p>

Commentor	Comment	Response
<p>For the Fishes</p>	<p>E. <u>Catch Is Grossly Underreported</u> As mentioned above, there is no requirement for recreational aquarium collectors to report catch. For commercial collectors, while reports are required, catch report compliance is substantially low. As such, the impact of the aquarium fishing industry is likely larger than is reported, which has been discussed in the scientific literature.²⁹ As a former DLNR employee succinctly wrote regarding aquarium catch reports: “The reliability of the data depends upon the sincerity of the permittees.”³⁰ There is no verification system, such as that provided by independent observers, to ensure the accuracy of self-reported data. One additional major impediment to accurate data stems from the lack of a license requirement for marine dealers and/or exporters. Currently there is a requirement for dealers (i.e. those who buy directly from aquarium collectors) to report their purchases. According to DLNR, the effect is that “dealer reporting is essentially on a voluntary basis and a few dealers are not reporting in whole or in part.³¹ DLNR cannot know whether a “few” or a dozen dealers are not reporting, without a requirement for these businesses to have licenses, thus, these businesses operate beneath the radar and serve as a conduit for moving unreported catch out of the state. Establishing a marine dealer/exporter license has long been a priority for those within DLNR concerned about Hawai‘i’s marine resources, because it would enable the department to verify catch reports, identify unlicensed collectors (and all commercial fishers), identify dealers and helped with generating economic data about the fisheries. Without this information, DLNR/DAR has no accurate data on health of fish populations. According to a former DAR Commercial Fisheries manager, Karl Brookins, the process of establishing the license was abandoned due to lack of funding.³²</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>As stated in the EIS, analysis by the DAR (2019a) has shown that actual underreporting of catch is small, with a 3.5% difference between the number of animals reported caught and sold in 2010 and a 0.4% difference in 2014 , which likely represent live releases and mortality. This impact has been added as a Cumulative Effect in Section 5.4.3.6 of the FEIS.</p>

Commentor	Comment	Response
For the Fishes	<p>F. <u>Further Necessary Data Excluded is Needed for an EIS</u> As discussed above, there is no reliable data on how many fish and other species are actually taken pursuant to aquarium permits in any given year. The DEIS repeatedly refers to a lack of data for numerous species. For example:</p> <ul style="list-style-type: none"> • For the 238 fish species and 66 invertebrate species taken by the O’ahu aquarium trade from 2000 – 2017, population estimates for just 22 fish species were used in the DEIS analysis.³³ • “...it is unknown which, if any, species are experiencing population declines, as population trend data is not available for the fish species analyzed in this EIS for the island of O’ahu.”³⁴ • “Because specific species of hermit crabs are not reported on aquarium permits reporting forms, it is not possible to know which species are collected, with the exception of zebra hermit crabs.”³⁵ • Though the endemic Bandit Angelfish is among the 23 fish species purportedly analyzed in the DEIS, “a population estimate for Bandit Angelfish is not available from the CREP data due to the species’ deep-water habits.”³⁶ <p>This data is necessary in order for the EIS to properly assess impacts. Furthermore, the Agency must conduct stock assessments of species before it is able to determine a sustainable rate of take. Clearly the Agency has not done so, as DLNR personnel have stated that to do so would take over a decade for just 40 fish species, out of the more than 287 fish and invertebrate species the Agency identifies as targeted by the trade (found at Appendix 3).³⁷ Without such data, the Agency cannot meaningfully assess the environmental impacts of commercial aquarium collection. Such assessments must be completed prior to the issuance of the EIS, and in the face of any uncertainty, the EIS’s analyses must err on the side of caution to protect these vulnerable species.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The EIS used the best available data, including population estimates for those species which were available.</p> <p>The new Preferred Alternative includes a proposed White List and individual catch quotas for the 31 species which would limit the total allowable catch, and limit collection to species on the White List. Therefore, all species impacted by commercial aquarium collection under the Preferred Alternative are analyzed in the FEIS.</p>
For the Fishes	<p>G. <u>Examples of Proper Impact Analyses</u> Comparisons of reported catch to estimated populations in the WHRFMA have revealed that upwards of 80% of Achilles tangs and 60% of yellow tangs in the open areas have been taken by commercial aquarium collectors in some years and have concluded that “aquarium collecting is having a major impact on Achilles and yellow tang.”³⁸ Although these estimates are imperfect, because they do not factor under-reporting, they are still more accurate than presented in the DEIS because they are spatially relevant. Still, the extremely high levels of take are reflected in the difference between populations in the areas where they are taken and baseline areas where they have not been taken for decades (e.g., Hanauma Bay). For heavily targeted species, it has resulted in a 90% reduction in natural abundance in those areas, on average, compared to the MPA baseline.³⁹</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>Poaching and underreporting are addressed in Section 5.4.3.6.</p>

Commentor	Comment	Response
For the Fishes	<p><u>H. Other omissions, and misleading and incorrect data sets used</u> The DEIS omits an analysis of the current and proposed daily bag limits and fails to disclose the impacts that would occur under the full extent of those limits when applied to the 20 aquarium permittees in the Preferred Alternative. A simple analysis, as shown below, indicates the bag limits would allow take ranging from 23% to 1,284% of the total island-wide populations (see Fig. 1) [see pdf page 12].</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative includes a proposed White List and individual catch quotas for the 31 species which would limit the total allowable catch, and limit collection to species on the White List. Therefore, all species have a hard upper limit on collection or would not be collected at all.</p>
For the Fishes	<p>Lastly, At the foundation of every determination made in the DEIS is the flawed conclusion that aquarium collection rates are at or below the “sustainable” level of 5% - 25% of the populations of targeted species on O’ahu. The DEIS fails to consider cumulative impacts, both short- and long-term. HEPA requires that “agencies shall consider the sum of effects on the quality of the environment and shall evaluate the overall and cumulative effects of an action.”⁴⁰ Furthermore, the Agency must consider “both primary and secondary” consequences, “and the cumulative as well as short-term and long-term effects of an action.”⁴¹ Notably, “cumulative impact” is defined as the impact resulting from “the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions,” and “[c]umulative impacts can result from individually minor but collectively significant actions taking place over a period of time.”⁴²</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>Cumulative effects are analyzed in Section 5.4.3 of the EIS.</p>
For the Fishes	<p>III. All Impacts Improperly/Inadequately Analyzed A. Failure to Adequately Analyze Long-Term Impacts The Applicant unlawfully limited its analyses to the time period of five years.⁴³ PIJAC provides no reasoning for this 5-year period, while noting that each permit lasts only one year, and therefore a new HEPA analysis would need to be completed on an annual basis.⁴⁴ However, while Commenters agree that it is critical for the Agency to continue to monitor the impacts that aquarium collection is having over time, the relatively short time period of the activity itself does not nullify HEPA’s clear requirement for considering the long-term effects of that activity.⁴⁵ For example, a large excavation project could destroy habitat in an area of an island that takes decades to regrow—and even if the excavation itself was only for a year, HEPA would clearly require consideration of the impacts to the environment during the decades of regrowth. Similarly, the use of a pesticide could have known impacts on a species where serious or lethal effects are felt far beyond the time frame of the actual application of the pesticides—yet HEPA would clearly require consideration of those expected impacts. Thus, PIJAC’s logic simply does not hold up. Additionally, stating that the Agency can simply reevaluate the consequences of a year-long permit after that year is up entirely contradicts HEPA’s mandate to evaluate the potential consequences of an action before the Agency authorizes the action.</p>	<p>Your comment has been forwarded to the decision makers.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
For the Fishes	<p>Additionally, a 5-year timeframe that analyzes impacts is inadequate because the impact of fish removal will accumulate over time, and as explained below, is best understood in a timeframe spanning decades. There were no reef fish population surveys for O’ahu prior to 2018 when the CREP survey data was published.</p> <p>However, where baseline population data are absent, and where consumer demand exists for a particular species or family group, it is highly likely that substantial declines of reported catch reflect reduced abundance of the target sizes—juveniles in most cases—of those species or families on Hawai’i’s reefs.⁴⁶</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>As stated in the FEIS, it is not anticipated that losses would accumulate over time due to the low percentage collected each year and the high fecundity of reef fishes.</p>
For the Fishes	<p>Annual reported catch for O’ahu has been documented since 1976, and those data show significant declines in catch over the course of the last four decades. For example, from 1976 to 1999, annual reported aquarium fish catch exceeded 90,000 fish at least thirteen times, or in 57% of those years, while over the last 20 years (i.e. since 2000), annual reported aquarium fish catch for O’ahu has exceeded 90,000 fish just three times – in 2006, 2012, 2015 – or 15% of the time. ⁴⁷ Importantly, this reduced level of catch has occurred despite a significant increase in the number of commercial aquarium permits since the 1980’s, and especially between 2000 and 2017 when that number grew by 85% on O’ahu, and reached a record of 126 permit holders in 2017.⁴⁸ It is likely that the number of commercial aquarium permits issued will remain high or continue to increase in the coming years due to the high demand for aquarium reef fish and their increasing market value.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative limits collection to 15 permit holders, limits collection to 31 fish species and 4 invertebrates, and includes individual catch quotas for each of those species, providing a hard upper limit on collection that can occur within a single year.</p>
For the Fishes	<p>Historically commercial aquarium collectors have reported catching fish just two to three days per week.⁴⁹ There is nothing preventing them from increasing that effort, via increasing the number of hours and/or days they collect, in response to perceived scarcity from, for example, impacts to habitat from storms and climate change, or from additional collectors seeking permits through the HEPA process (i.e. the “get it while you can” mentality); or, in order to meet the high demand for aquarium reef fish and their increasing market value.⁵⁰</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative limits collection to 15 permit holders, limits collection to 31 fish species and 4 invertebrates, and includes individual catch quotas for each of those species, providing a hard upper limit on collection that can occur within a single year.</p>
For the Fishes	<p>Furthermore, the Hawai’i Supreme Court has made clear that the proper inquiry under HEPA is “the outer limits of what the permits allow . . .”⁵¹ The outer limits allowed by the permits are the take of every fish and every invertebrate from every reef in the state of Hawai’i that isn’t in a protected area. Permits issued under this DEIS would allow just that without a new law, rule, or permit condition, defining geographic and take limits. Further, as there are no limits on the number of commercial marine licenses (CML) issued for aquarium collecting, in the rest of the state, the issue of aquarium trade impacts to Hawai’i’s coral reefs remains unresolved.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative limits collection to 15 permit holders, limits collection to 31 fish species and 4 invertebrates, and includes individual catch quotas for each of those species, providing a hard upper limit on collection that can occur within a single year.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
For the Fishes	<p>The DEIS analyzes the effects of issuing aquarium permits to 20 people on O’ahu, however permits are issued statewide, with no geographic limits, other than those pertaining to managed areas, which are regulated by other statutes. The DEIS identifies this unresolved issue with a statement that, “It is assumed that, upon issuance of an Aquarium Permit, a permit condition would be included in each permit limiting the geographic area covered by the permit to the island of O’ahu.”⁵² However, beyond the stated assumption, there is no further discussion of how it will be resolved, though it is legally required.⁵³ Currently the use of fine mesh nets for aquarium purposes is prohibited everywhere, and with the issuance of any geographically limited permits, DLNR would likely be unable to enforce those geographic limits given their extremely limited resources.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The Applicant is proposing that the permits be limited to the island of O’ahu. Although the Applicant is not able to propose rule changes, the DLNR is able to add permit conditions limiting the use of the permit to the island of O’ahu.</p>
For the Fishes	<p>Furthermore, the DEIS is for 20 fishers, however nothing prevents more fishers from seeking permits through additional HEPA reviews. In addition, pursuant to HRS § 189-2, DLNR is currently issuing an unlimited number of commercial marine licenses for aquarium collecting. The relationship between the number of participants in a fishery and impacts to fish populations is well-established in the literature. The importance of restricting access to fisheries has been acknowledged and used for thousands of years to conserve and help sustain fish populations.⁵⁴</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>While it is true that additional persons may seek permits, issuance of additional permits beyond the 15 analyzed in this EIS would require a separate HEPA review and analysis by the DLNR before permits could be issued.</p>
For the Fishes	<p>The DEIS failed to take into account how increasing demand and increasing market value will affect already depleted targeted reef fish species in the coming years, thus resulting in significant environmental impacts. For example, the market value of tropical reef fish (e.g., Yellow Tang) has increased and thus collection/fishing pressure is also likely to increase in the near future. The DEIS fails to properly analyze this relationship, and, fails to propose any mitigation measures to reduce/prevent population declines.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative limits collection to 15 permit holders, limits collection to 31 fish species and 4 invertebrates, and includes individual catch quotas for each of those species, providing a hard upper limit on collection that can occur within a single year.</p>
For the Fishes	<p>For very long-lived species such as the yellow tang and other surgeonfishes heavily targeted by aquarium collection, which have lifespans measuring decades, and which may not reproduce until they are at least 5 years old, a 5-year analysis period is far too short. The DEIS claims that the high fecundity and long lifespans of reef fishes combined with the limited targeting of adult brood-stock by the trade removes the certainty that the losses will accumulate over time, is demonstrably false.</p>	<p>Your comment has been forwarded to the decision makers.</p>
For the Fishes	<p>The DEIS claims that “it is unknown which, if any, species are experiencing population declines, as population trend data is not available for the fish species analyzed in this EIS for the island of O’ahu.”⁵⁵ The DEIS takes this position despite evidence provided by Commenters on the Applicant’s Draft Environmental Assessment (and expanded upon in this document), and it fails to acknowledge the evidence of depletion caused by collection activities that is apparent when using the proper baseline. DLNR has noted that “the precautionary principle calls for applying the lowest estimated percentage of sustainable take in the absence of scientific certainty.”⁵⁶</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The Applicant is not aware of any scientific-based data on population trends on Oahu for the species analyzed in the EIS. The document discloses the data that are and are not available. The Preferred Alternative caps collection at 4.5% of estimated population sizes or less.</p> <p>The new Preferred Alternative limits collection to 31 fish species on the proposed White List, and includes individual catch quotas limiting collection to at or below 4.5% of the estimated population. Of the 31 fish species on the proposed White List, 18 would be</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
		collected at <1% of the population, 5 would be collected at <2%, 3 would be collected at <4% and 2 would be collected at up to 4.5% of their population estimate.
For the Fishes	The failure of the DEIS to conduct a proper analysis, as described above, is not only a legal flaw but also the main reason that the DEIS does not find a significant impact of the aquarium fishing industry on targeted species and their habitat. In addition, by limiting the timeframe of their analysis to five years, the DEIS fails to accurately consider the impacts of one-year collection permits cumulatively with other “past, present, and reasonably foreseeable actions” “over a period of time.” 57 A failure to apply the precautionary principle in the absence of essential data leads the DEIS to propose reckless alternatives and zero proper mitigation, leading to potentially catastrophic impacts.	Your comment has been forwarded to the decision makers.

Commentor	Comment	Response
For the Fishes	<p>B. Failure to Analyze Indirect and Cumulative Impacts</p> <p>Coral reefs are connected by currents which carry and disperse fish larvae to other areas, both near and far. Most fishes on Hawai'i's reefs are the result of other fishes upstream of that reef.⁵⁸ The currents and conditions that control larval connectivity and dispersal processes are complex. The larvae of some species are able to travel between islands, while others do so to a lesser extent. For example, in one study, some yellow tang larvae on Hawai'i Island travelled on ocean currents for 15 km before settling on a reef while others traveled 184 km.⁵⁹</p> <p>Recent research into two species of small bodied surgeonfishes, including kole, which is heavily targeted by the aquarium trade, has determined that populations of these fishes are genetically distinct on each of the main Hawaiian Islands. This means that, for at least these two species, there is little genetic mixing between islands, and once species are depleted on any given island, there is no other source for population replenishment. Further, connectivity and dispersal studies on the island scale for certain species have identified important spawning source areas that are essential for maintaining populations on other reefs across the island. Importantly, larval connectivity between coral reefs serves to highlight areas where indirect and cumulative impacts of the Applicant's actions may manifest, because the effects occur "later in time [and] farther removed in distance."⁶⁰ Larval sources on reef areas depleted by aquarium collecting will disperse reduced fish larvae which eventually settle downstream on sink reefs, which may be miles away from source areas. ⁶¹ For yellow tangs, most of which are taken when they are less than 2 years old, these effects won't manifest until years after take has occurred, because yellow tangs don't mature until they are 4 to 7 years old.</p> <p>The DEIS fails to account for this critically important reproductive strategy used by Hawai'i's reef fishes. Instead it uses larval connectivity to justify the use of island-wide populations to measure direct impacts from the proposed activity in the specific areas where it takes place, and provides no information on the larval dispersal patterns and connectivity for the targeted fish populations on the reefs where they are taken.⁶²</p> <p>Here, the precautionary approach requires the determination of source areas for all species that are taken on O'ahu by the aquarium trade and the establishment of protections for those populations to ensure local species survival. This has not been addressed in the DEIS.</p>	<p>Your comment has been forwarded to the decision makers.</p>

Commentor	Comment	Response
For the Fishes	<p>Additionally, the DEIS fails to properly address the true nature of what the Applicant is requesting in its Preferred Alternative whereby: “DLNR would issue Aquarium Permits to 20 aquarium fishers in O’ahu, thereby allowing these 20 individuals to resume commercial aquarium fish collection on O’ahu. It is assumed that, upon issuance of an Aquarium Permit, a permit condition would be included in each permit limiting the geographic area covered by the permit to the island of O’ahu. Permittees would abide by all rules and regulations set forth in HRS-188-31 (Section 1.2.1), governing Commercial Aquarium Permit use. For the island of O’ahu, these rules and regulations include restrictions on equipment, restrictions on access to various areas, bag limits on various collected fish species, and reporting requirements.</p> <p>In addition to the existing rules, under this Alternative, the daily bag limit for commercial aquarium collection of Flame Wrasse would be limited to 10 individuals per day, and the Waikiki MLCD would be expanded northward to the southern tip of DAR’s Honolulu Harbor Kapalama Canal Fish Management Area...” 63</p> <p>In other words, the Applicant’s Preferred Alternative is the collection of an unlimited number of over 300 fish and invertebrate species, plus a new bag limit on Flame Wrasse, in addition to the existing bag limits on seven species, which would allow take in numbers ranging from 23% to 1,284% of the entire estimated island-wide populations for these eight species—the limits of what regulation allows. Yet, the DEIS considers only very limited collection. HEPA requires that an EIS assess the potential cumulative impacts of what State regulations allow, not what some permittees may claim they intend to do, or have historically done, with their permits, and certainly not for only 7 percent—22 fish and zero invertebrates—of the 304 marine animals historically taken under those permits. As the Hawai’i Supreme Court clearly stated, “the properly defined activity for the purposes of the HEPA analysis must encompass the outer limits of what the permits allow and not only the most restrictive hypothetical manner in which the permits may be used.”64 The DEIS fails to address this.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative limits collection to 15 permit holders, limits collection to 31 fish species and 4 invertebrates, and includes individual catch quotas for each of those species, providing a hard upper limit on collection that can occur within a single year.</p>
For the Fishes	<p>“Relatedly, the DEIS assumes that aquarium collection without the use of fine-mesh gear will continue “legally” on Oahu; however, as indicated in a complaint dated January 27, 2020, <i>Kaupiko et al. v. DLNR</i>, such collection also requires HEPA review, which currently is not being conducted.65 If this purportedly “legal” collection were halted pending environmental review, then the 20 collectors would have even greater incentive to increase collection levels on Oahu in the meantime. The DEIS fails to consider this effect.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The FEIS has been revised to reflect the change in CML issuance that occurred in January 2021, restricting commercial aquarium collection.</p> <p>The new Preferred Alternative limits collection to 15 permit holders, limits collection to 31 fish species and 4 invertebrates, and includes individual catch quotas for each of those species, providing a hard upper limit on collection that can occur within a single year.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
For the Fishes	<p>Relatedly, although the DEIS purports to analyze impacts cumulatively with those of other commercial aquarium collection under CMLs, without the use of fine-mesh nets, the DEIS still does not account for the fact that the Agency issues a CML for every application that is submitted, and therefore the take under CMLs is potentially unlimited as well.⁶⁶ In addition, the DEIS states that “the impacts of non-aquarium commercial and non-commercial fishing on biological resources cannot be fully quantified,” further noting that “some species are declining in West Hawai‘i. . . and this may be the case on O‘ahu, as well.”⁶⁷ This lack of data is not properly addressed in the EIS.</p> <p>Likewise, although the DEIS purports to analyze impacts cumulatively with those of recreational collection permits, should they be reinstated, the DEIS still does not account for the fact that, when they were valid, the Agency issued a permit for every application that was submitted, and therefore the take under recreational permits is potentially unlimited as well.⁶⁸ And the DEIS admits that, as there is no required reporting for recreational permits, it is currently impossible to know how many of each species are taken under those permits, and therefore, the impact of collection under these permits on species collected under these permits cannot be quantified.⁶⁹ This lack of data is not properly addressed in the EIS.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The FEIS has been revised to reflect the change in CML issuance that occurred in January 2021, restricting commercial aquarium collection.</p> <p>The new Preferred Alternative limits collection to 15 permit holders, limits collection to 31 fish species and 4 invertebrates, and includes individual catch quotas for each of those species, providing a hard upper limit on collection that can occur within a single year.</p> <p>Recreational collection is discussed in Section 5.4.3.1 of the EIS.</p>
For the Fishes	<p>The analysis of cumulative impacts included the impact of the commercial aquarium fishery, regardless of the gear used to capture the marine life, combined with non-aquarium commercial and recreational fisheries and other activities that impact population abundance, but reached a conclusion that is erroneous. Commercial and recreational fishing combined with the aquarium fishery have a substantial impact on targeted species. The DEIS fails to determine cumulative impact of all fishing on target species. In addition, the DEIS fails to analyze indirect impacts from collection such as vessel traffic and accumulated coral reef damage due to vessel anchoring and collection practices.</p>	<p>Your comment has been forwarded to the decision makers.</p>
For the Fishes	<p>The DEIS fails to adequately evaluate the potential of cumulative impacts of climate change (warming, coral bleaching, and ocean acidification) on targeted fish species such as decline of coral coverage which have been demonstrated to influence reef fish species diversity and abundance.⁷⁰ The DEIS recognizes that climate change poses serious threats to Hawai‘i’s coral reefs and the species targeted by the Applicant, yet ironically claims that climate change impacts coupled with the impacts of implementing the Preferred Alternative is expected to be less than significant. These statements completely dismiss the research and data that demonstrate what is stated, that climate change impacts, specifically ocean warming, acidification and coral bleaching events will continue, thus further analysis of impacts and exacerbation of impacts due to climate change is required.⁷¹</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The EIS does not claim that climate change impacts, when combined with other cumulative impacts and the Preferred Alternative, will be less than significant, and states that additional conservation measures designed to address the other stressors will need to be implemented in order to sustain the populations.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
For the Fishes	<p>It is clear from an analysis of cumulative impacts that many of HEPA's "significance criteria" apply.⁷² Had proper analyses been conducted, the Preferred Alternative most certainly would have shown significant effects on the environment due to at the least, the following: the loss or destruction of natural and cultural resources; curtailing the range of beneficial uses of the environment; substantial degradation of environmental quality; cumulative effects on the environment; and potentially substantially affecting rare, threatened or endangered species, or its habitat.⁷³ Flawed analyses prevent the DEIS from accurately assessing and addressing these effects, in part, because the DEIS uses as a baseline, current conditions, which have been impacted by decades of the aquarium collecting activity.⁷⁴ Therefore, the scope fails to factor the impacts of collection pressure over time. Proper examination of the magnitude of the effect of aquarium collecting on natural populations and the coral reef ecosystem over time requires a proper baseline such as occur in MPAs, which reflect natural populations, before they were depleted by this activity, and have been used as such in numerous studies.⁷⁵</p>	<p>Your comment has been forwarded to the decision makers.</p>
For the Fishes	<p>IV. Failure to Adequately Analyze and Address Significance Criteria and Other Areas of Concern Proposed by DLNR in NOD DLNR, in the Final Environmental Assessment, Notice of Determination, described five HEPA significance criteria and eleven additional areas requiring further analysis by the Applicant. Here too, the DEIS is totally inadequate, falls far short of providing proper analyses, and fails to reach conclusions that are supported by the evidence.⁷⁶</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The HEPA significance criteria, and the Applicant's conclusions, are provided in Section 5.6 of the EIS.</p>
For the Fishes	<p>A. HEPA Significance Criteria #1: To the question of "whether the annual take of cumulative numbers of fish as a percentage of estimated population results in irrevocable loss or destruction of populations of fish," the DEIS wrongly concludes "the Preferred Alternative (i.e., Limited Permit Issuance Alternative) does not involve an irrevocable commitment or loss or destruction of any natural or cultural resource."</p>	<p>Your comment has been forwarded to the decision makers.</p>

Commentor	Comment	Response
For the Fishes	<p>Fish Populations: Any and all substantial reductions in natural abundance of aquarium species on O’ahu indicate lost natural and cultural resources. While it may be true that a potential revocable loss may be indicated by increasing populations of some aquarium species once aquarium collecting is halted, such as occurred for yellow tangs in the WHRFMA FRAs after their establishment in 2000 and in the open areas after collection was prohibited in 2018, there is no evidence that natural abundance will ever return. This is especially true given that the Preferred Alternative would allow important fish species to be annihilated, some many times over, under the existing and proposed bag limits and would allow for continued unlimited collection under aquarium CMLs.</p> <p>Furthermore, coral bleaching caused by climate change has already reduced coral cover on O’ahu and is only expected to worsen, with annual bleaching events that could begin as early as 2030 and which will result in the loss of 70% of Hawai’i’s reefs. This loss of habitat virtually assures that a depleted population will not be able to rebound to the same extent, or at all, in the future, though it may have in the past.</p> <p>Further evidence is found throughout this document and all combined point to significant adverse impacts to fish populations as a result of all proposed Alternatives, including the No Action alternative, due to unlimited and illegal collection currently occurring under CMLs.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The Preferred Alternative has been revised to include total allowable catch limits and creation of a White List, limiting collection to just 31 fish species and 4 invertebrates.</p> <p>In addition, the FEIS has been revised to reflect changes in CML issuance that occurred in January 2021.</p>
For the Fishes	<p>Reef Habitat: The DEIS wrongly claims that “it is not anticipated that a significant impact on reef habitat as a result of the Preferred Alternative would occur.”</p> <p>Damage to reef habitat from commercial aquarium collection is well documented. See “Damage to Reef Habitat” later in this document and also Appendix 4 where photographs of these practices and their effects can be found.</p> <p>The DEIS cites a 2003 study (Tissot and Hallacher) in an attempt to conclude that no significant impact on aquatic invasive algae control is anticipated as a result of the Preferred Alternative, noting that the authors “found no increases in the abundance of macroalgae where the abundance of herbivores was reduced by aquarium collecting.” However, the DEIS omits the author’s subsequent conclusion that the study may not be a good test of that hypothesis for several reasons, including that herbivores taken by aquarium collectors primarily consume filamentous algae (i.e. turf), not macroalgae, and that further investigation is warranted.⁷⁷ Additionally, macroalgae accounts for <2% of algal cover in West Hawai’i – the majority is turf algae, further underscoring the irrelevance of the 2003 study.⁷⁸</p> <p>Evidence throughout this comment document points to significant adverse impacts to reef habitat as a result of all proposed Alternatives.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>Additional details on herbivory have been added to the FEIS, including clarification on turf algae.</p> <p>Breaking or damaging coral will remain illegal under state law (HAR 13-95-70 and HAR 13-95-71) under any of the alternatives under consideration.</p>

Commentor	Comment	Response
For the Fishes	<p>Cultural Resources: The DEIS wrongly claims that “populations of the fish species analyzed in this EIS are not anticipated to significantly decline under the Preferred Alternative. Therefore, it is not anticipated that a significant impact on cultural resources would occur as a result of the Preferred Alternative.”⁷⁹ This follows the conclusion in the CIA that “cultural impacts would occur if issuance of Aquarium Permits under an alternative would cause a significant decline in the population of a fish species considered to be a cultural resource, either directly through the collection of fish or indirectly through habitat impacts.” As described in detail in this comment document, a number of species are currently in decline as a direct result of aquarium collecting and will continue to decline as such as long as aquarium collecting occurs on O’ahu.</p> <p>Additionally, the Preferred Alternative would allow culturally important fish species such as Achilles Tang to be annihilated, some many times over, under the existing and proposed bag limits and would allow for continued unlimited collection under aquarium CMLs. Therefore, cultural resources are in fact impacted.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The FEIS has been revised to state that, given that some Hawaiians believe any collection for aquarium purposes is contrary to cultural practices, all action alternatives would impact cultural practices to varying degrees.</p> <p>In addition, the new Preferred Alternative limits collection to 31 species of fish and 4 invertebrates, and provides a hard upper limit on the number of each species that could be collected in a given year.</p>
For the Fishes	<p>HEPA Significance Criteria #2: To the question of whether “the take of aquarium fish curtails the uses of the environment, including aquatic invasive algae control, the tourism industry, and the overall integrity of diverse aquatic ecosystems,” the DEIS wrongly concludes “the Preferred Alternative does not curtail the range of beneficial uses of the environment.”</p> <p>Aquatic invasive algae control: The DEIS wrongly claims that “the pressures from commercial aquarium collection under the Preferred Alternative are anticipated to be lower than rates seen prior to the October 2017 ban on commercial aquarium collection using fine mesh nets; therefore, it is not anticipated that a significant impact on aquatic invasive algae control as a result of the Preferred Alternative would occur.” This is wrong because, the Preferred Alternative would allow four herbivorous fish species to be annihilated, some many times over, under the existing bag limits and would allow for continued unlimited collection of other herbivores under aquarium CMLs.</p> <p>Further, the DEIS cites a 2003 study (Tissot and Hallacher) to attempt to conclude that no significant impact on aquatic invasive algae control is anticipated as a result of the Preferred Alternative, noting that the authors “found no increases in the abundance of macroalgae where the abundance of herbivores was reduced by aquarium collecting.” However, the DEIS omits the authors subsequent conclusion that the study may not be a good test of that hypothesis for several reasons, including that herbivores taken by aquarium collectors primarily consume filamentous algae (i.e. turf), not macroalgae, and that further investigation is warranted.⁸⁰ Additionally, macroalgae accounts for <2% of algal cover in West Hawai’i – the majority is turf algae, further underscoring the irrelevance of the 2003 study.⁸¹</p> <p>Evidence throughout this comment document points to significant adverse impacts to aquatic invasive algae control as a result of all proposed Alternatives.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative limits collection to 31 species of fish and 4 invertebrates, and provides a hard upper limit on the number of each species that could be collected in a given year.</p> <p>Additional details on herbivory, and on turf algae, have been added to the FEIS.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
For the Fishes	<p><u>Tourism</u>: The DEIS wrongly claims that “populations of fish species collected by commercial aquarium collectors are not anticipated to significantly decline, therefore not significantly impacting viewing opportunities. Consequently, continued commercial aquarium collection under the Preferred Alternative, which would limit the number of Aquarium Permits and decrease collection, is not anticipated to significantly impact tourism.” However, this is wrong because, the Preferred Alternative would allow important fish species to be annihilated, some many times over, under the existing and proposed bag limits and would allow for continued unlimited collection under aquarium CMLs. As described below, viewing opportunities and marine tourism revenue losses resulting from depleted populations of beautiful, charismatic and iconic fishes are captured in studies documenting willingness to pay and consumer surplus losses. Therefore, there are significant adverse impacts to marine tourism as a result of all proposed Alternatives.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative limits collection to 31 species of fish and 4 invertebrates, and provides a hard upper limit on the number of each species that could be collected in a given year.</p> <p>In addition, as stated in the EIS, the Hawai'i tourism industry achieved new records in total visitor spending and visitor arrivals in 2017, marking the sixth consecutive year of record growth in both categories. Total spending by visitors to the Hawaiian Islands increased 5.6% to a new high of \$16.81 billion (HTA 2018). This occurred in the presence of commercial aquarium collection.</p>
For the Fishes	<p><u>Integrity of Diverse Aquatic Ecosystems</u>: The DEIS wrongly claims that “The pressures from commercial aquarium collection under the Preferred Alternative are anticipated to be lower than rates seen prior to the October 2017 ban on commercial aquarium collection using fine mesh nets; therefore, it is not anticipated that a significant impact on the integrity of diverse aquatic ecosystems as a result of the Preferred Alternative would occur.” However, this is wrong because, the Preferred Alternative would allow important fish species to be annihilated, some many times over, under the existing and proposed bag limits and would allow for continued unlimited collection under aquarium CMLs. As described throughout this document, aquarium species are currently in decline as a direct result of aquarium collecting and will continue as such as long as aquarium collecting occurs on O’ahu. Therefore, there are significant adverse impacts to the integrity of diverse aquatic ecosystems as a result of all proposed Alternatives.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative limits collection to 31 species of fish and 4 invertebrates, and provides a hard upper limit on the number of each species that could be collected in a given year.</p>
For the Fishes	<p>B. HEPA Significance Criteria #3: To the question regarding the extent to which the take of aquarium fish conflicts with the state’s long-term environmental goals, the DEIS wrongly concludes that “the Preferred Alternative does not conflict with the State’s long-term environmental policies, goals, or guidelines as expressed in chapter 344 HRS.” As described throughout this document, significant adverse impacts to natural resources would occur as a result of all proposed Alternatives.</p>	<p>Your comment has been forwarded to the decision makers.</p>

Commentor	Comment	Response
For the Fishes	<p>C. HEPA Significance Criteria #4: To the question of the impact of the take of aquarium fish on cultural practices in the state, the DEIS wrongly claims that “populations of the 23 species analyzed in this EIS are not anticipated to significantly decline under the Preferred Alternative. Therefore, it is not anticipated that a significant impact on cultural practices would occur as a result of the Preferred Alternative.” This follows the conclusion in the CIA that “cultural impacts would occur if issuance of Aquarium Permits under an alternative would cause a significant decline in the population of a fish species considered to be a cultural resource, either directly through the collection of fish or indirectly through habitat impacts.” As described in detail in this comment document, a number of species are currently in decline as a direct result of aquarium collecting and will continue to decline as such as long as aquarium collecting occurs on O’ahu. Additionally, the Preferred Alternative would allow culturally important fish species such as Achilles Tang to be annihilated, some many times over, under the existing and proposed bag limits and would allow for continued unlimited collection under aquarium CMLs. Therefore, cultural resources are in fact impacted.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative limits collection to 31 species of fish and 4 invertebrates, and provides a hard upper limit on the number of each species that could be collected in a given year.</p> <p>The FEIS has been revised to state that, given that some Hawaiians believe any collection for aquarium purposes is contrary to cultural practices, all action alternatives would impact cultural practices to varying degrees.</p>
For the Fishes	<p>D. HEPA Significance Criteria #8: to the question regarding the cumulative effect of the commercial take of aquarium fish using fine mesh nets when combined with the effects of: the commercial take of aquarium fish by other legal methods; the take of aquarium fish for recreational purposes; and, the commercial and non-commercial take of aquarium fish species for consumption as food, particularly including Achilles Tang and kole, the DEIS wrongly concludes “the Preferred Alternative does not involve a commitment for larger actions. When the full range of impacts to the fish species analyzed in this EIS are considered (e.g., recreational aquarium collection, non-aquarium commercial fishing, recreational fishing, tourism, climate change), there may be a significant cumulative impact to some species. However, the Preferred Alternative is not a significant contributor to the cumulative effect upon the environment.” However, this is wrong because, the Preferred Alternative would allow important fish species to be annihilated, some many times over, under the existing and proposed bag limits and would allow for continued unlimited collection under aquarium CMLs.</p> <p>As described throughout this document, fundamental errors in the DEIS’s impact analysis resulted in patently false findings of no significant impacts and improper evaluations of these HEPA significance criteria. By failing to properly identify the varied and significant effects of commercial aquarium collection, the DEIS fails to accurately assess the cumulative effects when combined with other extractive activities.</p> <p>The evidence is clear that all proposed Alternatives would significantly contribute to the cumulative effect upon the environment.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative limits collection to 31 species of fish and 4 invertebrates, and provides a hard upper limit on the number of each species that could be collected in a given year.</p> <p>The FEIS has been revised to remove conclusions of significance.</p>

Commentor	Comment	Response
For the Fishes	<p>E. Additional Areas Requiring Further Analysis as Described in the DLNR NOD: (noted in italics and followed by Commenters response/analysis)</p> <p>1) <i>“It is also necessary to analyze the potential impacts under the no action alternative resulting from non-issuance of aquarium permits, including the increased take of larger, reproductively mature aquarium fish using legal mesh nets.”</i></p> <p>Since aquarium collecting with fine mesh nets was prohibited in 2017, aquarium take on O’ahu has been “within the range of historic aquarium collection from 2000 – 2017... and suggest that collection may continue to follow historic rates, even without the use of fine mesh nets.” 82 Further, take of yellow tang and kole has increased substantially, with a record number of yellow tang taken in 2019 (since at least since 2000).83 Most of the Yellow tang and kole catch since 2017 has been reported from zones 407 (Kaneohe Bay) and 412 (Kahe Pt., Nakakuli, Maili Pt.) (see aquarium fish zones at Appendix 2). In fact, 55% of aquarium fish catch reported in 2018 and 2019 were from those two areas.84</p> <p>As previously stated, understanding and factoring larval dispersal and connectivity patterns is critically important for determining impact. It is through the identification of larval source and sink areas that appropriate direct, indirect and cumulative impacts, whether past, present or future, can be assessed and proper levels of take determined in order to prevent permanent harm to populations of targeted species.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The FEIS has been revised to reflect the change in CML issuance that occurred in January 2021, restricting commercial aquarium collection. The No Action Alternative now reflects no commercial aquarium collection.</p>
For the Fishes	<p>The DEIS asserts that under the no action alternative, aquarium take is performed by using purportedly legal nets with larger than 2-inch mesh, and therefore, small fish will not be captured at the same rates as they would be with small (less than 2 inch) mesh. Additionally, the DEIS states that “without the use of fine mesh nets and the regulations that accompany their use (see Section 1.2.3), the size class of fish collected may increase over that which is caught with fine mesh nets (i.e., the smaller fish would escape the larger mesh), but this impact cannot be quantified at this time.” 85</p> <p>We understand that because, with few exceptions, catch reports do not require information on fish sizes, it is impossible to determine size-related volumes of catch in the states commercial data. However, information gleaned from the retail market provides ample evidence that fish under 2” (i.e. small enough to escape purportedly legal mesh nets) continue to be captured in very high numbers despite the prohibition on small mesh nets (see Appendix 5 for examples). Further, and as noted in Appendix 1, there was no response to our questions as to the specific methods or net sizes used for ongoing collection under aquarium CMLs.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The EIS does not state that smaller fish will not be captured, only that the size class of fish collected may increase.</p> <p>Per the DAR, in lieu of fine mesh nets, other gear types that were previously allowed were still legal to use with a CML until January 2021.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
For the Fishes	<p>Further, the DEIS states that the No Action Alternative would have less than significant direct and indirect impacts on reef fish populations and the reefs on which they live.⁸⁶ Inexplicably, the DEIS later contradicts itself by stating that “collection...under the No Action Alternative would result in temporary and localized decreases in the number of fish...and invertebrates over the 5-year analysis period (occurring only at the time and place where collection is occurring), which may provide fewer viewing opportunities for tourists, a decrease in the prey base, and reduced competition between species for available resources.” The DEIS avoids describing the locations and duration of these impacts and attempts to erase them by stating that on the island-wide scale, the annual removal rate is so low that the impacts would be “minor or nonexistent”.⁸⁷</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The No Action Alternative has been revised to reflect changes to the CML that occurred in January 2021, effectively banning commercial aquarium collection.</p>
For the Fishes	<p>Lastly, the DEIS concludes that under all four alternatives, including the No Action Alternative, the cumulative impact of the activity is insignificant for the majority of species it analyzed, but may be significant for the most heavily targeted species, the yellow tang. However, the DEIS dismisses this by stating this would be the case only if significant population declines resulted when combined with the magnitude of the other cumulative impacts, “which cannot be quantified at this time.”⁸⁸ Therefore, the DEIS does not properly and thoroughly analyze the impacts and reaches the wrong conclusions.</p>	<p>Your comment has been forwarded to the decision makers.</p>
For the Fishes	<p>2) <i>“The FEA identifies the scope of the analysis as one year and states that an EA with updated data and analysis would need to be completed on an annual basis. This improperly segments the analysis which must include the long-term and cumulative impacts over time of aquarium collection.”</i></p> <p>The DEIS expands the scope of the analysis to 5 years. However, this time frame is too short to adequately analyze long-term and cumulative impacts over time. For example, though collection pressure has been removed from the White List species in the WHRFMA FRAs, populations of once heavily targeted species in those areas, such as yellow tangs, have yet to return to natural levels of abundance, as reflected in the baseline MPAs, even after 20 years of protections. For very long-lived species such as the yellow tang and other surgeonfishes heavily targeted by aquarium collection, which have lifespans measuring decades, and which may not reproduce until they are at least 5 years old, a 5-year analysis period is far too short.</p>	<p>Your comment has been forwarded to the decision makers.</p>
For the Fishes	<p>3) <i>“There is no statistical analysis of population growth compared to the life span of each fish and the number of years to and size of first reproduction against which this annual proposed take can be measured for purposes of estimating sustainable take.”</i></p> <p>The DEIS fails to address this issue entirely, providing zero of the statistical analyses that were requested and zero reasons for not doing so. Notably those statistical analyses form the foundation of determining estimations for sustainable in the Ochavillo and Hodgson (2006) work, which is referenced throughout the DEIS concerning what constitutes “sustainable reef fish harvest”. Instead, the DEIS relies solely upon</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>As stated in the EIS, specific research into sustainable levels of collection has not been conducted for the species collected on O’ahu. Therefore, the best available science (i.e., Ochavillo and Hodgson 2006) was used, in conjunction with the population estimates available.</p>

Commentor	Comment	Response
	<p>analysis of catch as % of population, which as described here, is far too flawed to be used to legitimately justify the levels of take proposed in the DEIS.</p>	
<p>For the Fishes</p>	<p>4) <i>“With regard to proposed levels of sustainable catch, using “5% to 25% annual take of estimated populations as proposed in several research papers, we note that 5% to 25% is a wide range, and the precautionary principle calls for applying the lowest estimated percentage of sustainable take in the absence of scientific certainty.”</i></p> <p>The DEIS claims that under the Preferred Alternative, upwards of 14% of yellow tang and 25% of Flame Wrasse island-wide populations would be collected. However, the assumptions the DEIS relies upon to make these determinations renders it useless. It is to be expected that inaccurate and under-reported catch levels applied to areas far beyond the directly impacted environment will result in a greatly reduced level of impact. As described earlier, in recent years, 55% of reported catch came from just two report zones while zero take was reported from a number of other zones. The 5% to 25% annual take of estimated populations, as proposed by Ochavillo and Hodgson (2006) pertains to small finite areas, called “collection areas” where the collection activity occurs. For example, two of the Philippine collection areas that form the basis for Ochavillo and Hodgson’s work, Batasan Island and Clarin, are part of Bohol, an island with a coastline that’s 390 km long and comparable to, though smaller than, Hawai’i Island’s 428 km long coastline and larger than O’ahu’S 180 km of general coastline.⁸⁹</p> <p>One area is Batasan Island, a minor island of less than 120,000 m² that lies about 6.4 km off the Bohol coast, and is part of the municipality of Tubigon, itself just 81.87 km². The other collection area is the neighboring municipality of Clarin, which has a total municipal land area of 62.79 sq. km and a coastline of approximately 6 linear km.</p> <p>The Ochavillo and Hodgson total allowable catch (TAC) as % of population is based on estimated natural mortality rates for certain reef fishes in those specific areas. Furthermore, their TAC relates to fish populations in those specific small areas, not the entire island of Bohol. The DEIS erroneously takes their 5% to 25% range, applies it to species that are not included in their work, to an area that encompass the entire island of O’ahu, and is orders of magnitude larger than the collection areas used by Ochavillo and Hodgson.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The FEIS includes a new Preferred Alternative which limits collection of any species to less than 4.5% of the island-wide population estimate, and limits collection to the species on the proposed White List.</p> <p>The new Preferred Alternative limits collection to 31 fish species on the proposed White List, and includes individual catch quotas limiting collection to at or below 4.5% of the estimated population. Of the 31 fish species on the proposed White List, 18 would be collected at <1% of the population, 5 would be collected at <2%, 3 would be collected at <4% and 2 would be collected at up to 4.5% of their population estimate.</p>

Commentor	Comment	Response
For the Fishes	<p>5) <i>“We also note that there are no bag limits for most species, and that the fishery as currently regulated does not limit the number of permits, so that the annual take as a percentage of estimated population could rise significantly. Alternatives of overall annual take limits, a limited entry aquarium fishery program, and restrictions including full moratoria on the take of herbivores, species of special concern, and species evidencing severe population declines have not been proposed or analyzed.”</i></p> <p>The DEIS does not address this issue. The Preferred Alternative includes limited issuance of permits in this instance, but nothing prevents others from pursuing additional permits for themselves. Additionally, an unlimited number of CMLs are issued for commercial aquarium collection that is purportedly done with legal gear. Further, under the existing bag limits for seven species and the proposed bag limit for Flame Wrasse, the 20 permits that would be issued under the Preferred Alternative, would allow catch that far exceeds the total island-wide populations for several of those species. The DEIS does not propose or analyze any alternatives to address this.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative limits collection to 31 species of fish and 4 invertebrates, and provides a hard upper limit on the number of each species that could be collected in a given year.</p>
For the Fishes	<p>6) <i>“The FEA asserts that certain types of fish such as Psychedelic Wrasse, Tinker’s Butterflyfish, and Fisher’s Angelfish inhabit waters deeper than the CREP monitoring studied, resulting in populations being underestimated and thus the annual take as a percentage of estimated population being overestimated.”</i></p> <p>The inclusion of these species on the state’s species of concern list indicates a heightened need for an accurate and thorough assessment of their populations.⁹⁰ As noted earlier, the annual take as a percentage of estimated population should factor under and non-reporting and should apply to the areas where direct impacts occur. Reporting zones would represent the largest area that might be considered appropriate, however more specific areas would be the most appropriate (e.g. bays, reefs, and depth ranges). Allowing limitless take under the Preferred Alternative is contrary to DLNRs conservation actions identified for these species which includes protecting current populations and establishing further populations to reduce the risk of extinction.⁹¹</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The proposed White List does not include the Psychedelic Wrasse or Tinker's Butterflyfish, so neither of these species would be collected under the Preferred Alternative. For the Fisher's Angelfish, even with the underestimated population estimate, collection would be capped at 1.38% of the island-wide population estimate. Given that the population estimate is likely underestimated, the actual impact is likely even less, and this is a outer limit of what could occur (each of the 15 fishers reaching their maximum catch quota for the year).</p>

Commentor	Comment	Response
For the Fishes	<p>7) <i>"In addition, we note the proposed alternatives for reduction in bag limits for Flame Wrasse, but do not see a scientific basis for concluding that the proposed reduction would be sufficient to sustain the population."</i></p> <p>The DEIS fails to address this issue entirely by omitting an analysis of the proposed daily bag limit of 10 Flame Wrasse, applied to 20 aquarium permittees. The outer possibilities of what the permits would allow must be considered. A cursory analysis of the Preferred Alternative and the data presented in the DEIS shows that 20 permittees taking 10 Flame Wrasse per day equates to 73,000 fish per year, an amount that exceeds to total island-wide population estimate by 1,284%.</p> <p>Combined with the unlimited take allowed by aquarium collectors under CMLs, the cumulative impact of aquarium collecting on this important species is extreme.</p> <p>The DEIS also fails to address the potential for extirpation of Flame Wrasses on coral reefs shallower than 98 feet where collection pressure is the greatest. A recent study found zero Flame Wrasses shallower than 98 feet on West Hawai'i reefs.⁹² The DEIS claims that "the Flame Wrasse spends much of its time below the 98-foot depth limit of population estimate surveys," but provides no scientific basis for the statement.⁹³ The DEIS then describes the Flame Wrasse as dwelling between 15' – 600'.⁹⁴ Elsewhere, the Flame Wrasse is described as occurring "generally at depths greater than 60 feet," and 27 depicted in several images taken between 40' – 80'.⁹⁵ Further, SCUBA divers, including two of the Commenters, have for decades consistently encountered harems of Flame Wrasses at depths ranging from 50 – 90 feet on multiple dive sites, as long as the sites weren't accessed by the aquarium trade. On sites accessed by the trade, Flame Wrasses at those depths have completely disappeared.⁹⁶ Therefore, the absence of Flame Wrasses in their natural range is more likely an indicator of severe over-collection by commercial aquarium collectors in the shallower depths they once inhabited.</p> <p>Historical catch records indicate that prior to 2008 collection of Flame Wrasses on O'ahu averaged just under 700 per year. Since 2008, the level of take has dramatically increased with annual catch ranging between 1,000 - >4,000 individuals.⁹⁷ The potential for Flame Wrasses to disappear from their shallower ranges on O'ahu, as they have from West Hawai'i, is very real, and even retailers admit they are becoming rare (see Fig. 2) [see pdf page 27].</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The FEIS includes a new Preferred Alternative which includes an individual catch quota for Flame Wrasse, limiting collection to 3,480 Flame Wrasse per year.</p>

Commentor	Comment	Response
For the Fishes	<p>8) <i>“We note the proposed alternative for an expansion of the Waikiki Marine Life Conservation District, but do not see a scientific review of the beneficial impact of Fishery Replenishment Areas on restoring populations, such as has been demonstrated in West Hawai’i, nor an analysis of the optimal placement of the Fishery Replenishment Areas on O’ahu to protect and restore populations of aquarium fish.”</i></p> <p>28</p> <p>The O’ahu FEA proposes to expand the Waikiki MLCD by 740 acres, and to prohibit only commercial aquarium collection within that expanded area. The DEIS fails to analyze the impact of closing a substantial portion of collection zone 400 and, specifically, how marine life populations in the areas open to collection are likely to experience further declines as a result of increased pressure that result from reduced access elsewhere, as has been demonstrated in West Hawai’i. Further, the DEIS fails to analyze the optimal placement of the Fishery Replenishment Area and, instead, assumes “the expanded Waikiki MLCD would have similar benefits as the Fish Replenishment Areas on Hawai’i Island,” while noting research showing that the biomass within the existing Waikiki MLCD is 2.5 times higher than adjacent sites. 98 While it can be assumed that once collection pressure is removed in an area, once targeted species in that area may increase, this is not always the case. Research in West Hawai’i has shown that multiple factors are associated with effective FRAs, such as successful recruitment (which relies upon favorable currents and sufficient adult populations in source areas), FRA size and habitat quality, especially reef width and “areas of high finger coral cover which is critical habitat for juvenile Yellow Tang and other fishes. 99 This analysis is completely missing from the DEIS.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The Preferred Alternative no longer includes an expanded Waikiki MLCD.</p>
For the Fishes	<p>9) <i>“Cultural impacts of aquarium fishing need significantly more analysis than provided in the FEA. The OEQC guidelines should be followed for assessing cultural impacts, including consulting with traditional cultural practitioners and other knowledgeable informants and sources about cultural resources, cultural practices, and the proposed action’s potential impacts. Traditional Hawaiian practices and subsistence uses, local place-based and life-cycle knowledge, and traditional Hawaiian cultural significance of each type of aquarium fish taken should be reviewed. The indirect impact of modern technologies for highly efficient catch methods on traditional harvest capabilities should be included in the analysis.”</i></p> <p>As extensively noted herein, the DEIS’ Cultural Impact Assessment (CIA) is extremely flawed and inadequate, with its inherent purpose-- to identify cultural impacts and propose mitigations measures to limit such impacts, not being met.</p>	<p>Your comment has been forwarded to the decision makers.</p>

Commentor	Comment	Response
For the Fishes	<p>10) <i>“Enforcement and compliance needs and challenges are key factors in the effectiveness of fisheries management, and should be analyzed as part of the environmental impact statement.”</i></p> <p>The DEIS fails to address this issue, citing only an unreliable claim regarding so-called “catch report validation” that did not indicate substantial underreporting of catch by aquarium collectors. DLNR is well aware of the major gaps and flaws in their reporting system that facilitates any amount of under and non-reporting. Additionally, an important avenue for validation, tallies of the species and their numbers leaving the state via air cargo, which are required by federal law, are not being provided, exposing both aquarium trade members and air cargo carriers to violations of the federal Lacey Act.¹⁰⁰</p> <p>Furthermore, the DEIS fails to analyze other significant gaps in enforcement and compliance, as we, too, spelled out in our comments to the Applicant/Stantec, responding with a single sentence, “enforcement is within the purview of the State of Hawai‘i, followed by a recitation of relevant state laws and penalties.”¹⁰¹</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>Enforcement is within the purview of the state of Hawai‘i.</p>
For the Fishes	<p>11) <i>“We appreciate that as an applicant action, the applicant can propose but not ensure regulations aimed at protecting and restoring populations of aquarium fish. We are interested in proposals for self-regulation by aquarium permit holders which could be incorporated into permit conditions even in the absence of or prior to establishing other regulations to accomplish the same purposes.”</i></p> <p>The DEIS fails to address this issue, providing no proposals for self-regulation that could be incorporated into permit conditions.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>Reporting of catch is already a permit condition.</p>
For the Fishes	<p>12) <i>“Overall, we appreciate that certain alternatives have been proposed, but believe they are more appropriately proposed as mitigation measures in an environmental impact statement to mitigate potential environmental impacts, rather than as alternatives in an environmental assessment, which, if implemented, might result in a finding of no significant impact. The Department of Land and Natural Resources is obligated to ensure full analysis under HRS Chapter 343 of potential environmental impacts of its actions in issuing aquarium permits. We believe this is most appropriate in an environmental impact statement.”</i></p> <p>The DEIS fails to address this issue and proposes no mitigation measures because their flawed analysis concludes there are no significant impacts to mitigate.</p>	<p>Your comment has been forwarded to the decision makers.</p>
For the Fishes	<p>V. Further Impacts Inadequately Analyzed</p> <p>Environmental impacts from aquarium trade activities have been documented for over forty years. Under the Preferred Alternatives, every fish and marine creature, other than corals and those associated with live rock, could be removed from one, or all, of the State of Hawai‘i’s reefs—with catastrophic effects. This is not speculation: there is currently no law, regulation or enforcement capability that would prevent this from occurring. The potential for unlimited collection is a fact that encompasses the outer limits of what the aquarium permits allow, as was explained earlier.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative limits collection to 31 species of fish and 4 invertebrates, and provides a hard upper limit on the number of each species that could be collected in a given year.</p>

Commentor	Comment	Response
For the Fishes	<p>Collecting individual species in high numbers poses a significant threat to coral reef health. As explained herein, herbivorous species, such as Yellow Tangs and Goldring Surgeonfishes, are the most heavily targeted.¹⁰² Herbivorous fish are essential to avoid algal overgrowth of corals and concomitant degradation of the reef. Other important functional groups include: planktivores (e.g. Hawaiian Dascyllus), corallivores (e.g. Fourspot Butterflyfish, Multiband Butterflyfish), fish predators (e.g. Hawkfishes, Hawaiian Lionfish) and cleaner fishes (e.g. Hawaiian Cleaner Wrasse). The reduction of natural populations of species taken by the aquarium trade in any area (e.g. specific site, zone, coastline, island or statewide), and by any amount, whether one or one hundred percent, indicates an irrevocable commitment and loss of a natural and cultural resource.¹⁰³ This very loss curtails the range of beneficial uses that would otherwise be provided by the natural abundance of these populations.¹⁰⁴</p> <p>We disagree with the DEIS response to our comment above that “this is not an irrevocable action, as commercial aquarium permits may be suspended pursuant to HAR 13-74-3(1) if the department determines that it is necessary for the protection and conservation of aquatic life. In addition, fish will continue to reproduce.” As previously stated, any and all substantial reductions in natural abundance of aquarium species on O’ahu indicate lost natural and cultural resources. While it may be true that a potential revocable loss may be indicated by increasing populations of some species when aquarium collecting is halted, such as occurred for yellow tangs in the WHRFMA FRAs after their establishment in 2000 and in the open areas after collection was prohibited in 2018, there is no evidence that natural abundance has or will ever return. The reduced populations of yellow tangs in the FRAs, compared to baseline, natural populations found in the MPAs, even after 20 years of no aquarium collecting, is further evidence of an irrevocable loss that has occurred.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The definition of "irrevocable" is "not able to be changed, reversed, or recovered; final". The loss of part of a population, if done sustainably, does not meet this definition, as the population is able to sustain a certain amount of loss.</p>
For the Fishes	<p>As has been long recognized,</p> <p>The impact of commercial aquarium fish collecting is a complicated issue. The fish community members are highly dependent on one another. There is a constant interaction between predators and competitors, as well as other members of the food web. There is a lot of variability in the system, even when it is not disturbed by man. Reefs seem to undergo natural cycles. At times they may be very abundant. There is also natural variation in the fish community at different locations.¹⁰⁵</p> <p>The DEIS fails to assess the high aesthetic value of this beautiful marine life as well as impacts to the complex relationships inherent in coral reef ecosystems and impacts to overall coral reef health. “Animal communities” are included in the rule definition for “environment,” however the EIS excludes any mention of the impact to fish and invertebrate communities, or the impact to the animals themselves.</p> <p>The Hawai’i State Wildlife Action Plan (SWAP) states that “Excessive extractive use constitutes a threat to wildlife. Certain reef fishes are harvested for sale in the aquarium trade. . .These activities are not sustainable on a large scale and impact native wildlife.”¹⁰⁶</p>	<p>Your comment has been forwarded to the decision makers.</p>

Commentor	Comment	Response
For the Fishes	<p><u>A. General Impacts on Targeted Species</u></p> <p>The list of species in the SWAP of greatest conservation need includes at least 18 native fish species that are threatened by the aquarium trade and in need of conservation actions to reduce the risk of extinction (see Fig. 3) [see pdf page 31]. Butterflyfishes are among the most beautiful of coral reef fishes (see Fig. 4) [see pdf page 32]. Their bright yellow, white and black markings are especially striking against pale corals and deep blue waters. When encountered by snorkelers/divers the beauty of these species is often breath-taking. They are heavily targeted by the aquarium trade in Hawai'i. In 1976 five of the top ten most collected species were butterflyfish (see Fig. 5) [see pdf page 32].¹⁰⁸</p> <p>Reported aquarium harvest of those same five species has since plummeted (see Fig. 6) [see pdf page 33]. The same is true for other heavily targeted butterflyfish species that have been among the top twenty aquarium fishes collected by the trade since 1976.¹¹¹</p> <p>This sharp decline in reported catch is not an indicator that these species are no longer in demand. Continuing demand is confirmed by several examples:</p> <ul style="list-style-type: none"> • These species' inclusion in the West Hawai'i White List. • Their exclusion from the O'ahu rules. <ul style="list-style-type: none"> o The O'ahu aquarium rule prohibits take of three butterflyfishes, citing their "coral diets" as the need for the restriction.¹¹³ Since 1999 total reported take of those three species was 50 fish.¹¹⁴ o Zero restrictions were provided for three additional coral eating butterflyfishes, with total reported take of over 51,000 individuals since 1999.¹¹⁵ • The Fourspot Butterflyfish catch increase that followed the 2014/2015 warming event and unprecedented fish bloom.¹¹⁶ Subsequently, catch of the Fourspot Butterflyfish declined to an all-time low.¹¹⁷ <p>The EIS fails to use a temporal baseline that captures the impacts of the heavy collection pressure on these species over time, before their natural populations were depleted by this activity.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>Of the four species identified in Figure 4 of the comment (the Longnose Butterflyfish and the Forcepsfish are now classified as the same species), only the forcepsfish is on the proposed White List. Collection would be limited to 0.82% of the population.</p>

Commentor	Comment	Response
For the Fishes	<p>B. <u>Damage to Reef Habitat</u> In nearly every encounter with commercial aquarium collectors on West Hawai'i reefs, snorkelers and divers have witnessed and documented destructive practices that harm corals, with the most damage coming from vessel anchors and chains. There is every expectation that the same practices are used on O'ahu. Sticks, buckets, nets, underwater propulsion devices (scooters) are laid in the corals and the fins, knees and legs of collectors often come in contact with the reef—in fact, they are typically described as “crawling across” or “standing” on the corals. The results of these actions include abrasion and coral breakage. The DEIS refers to studies that determined there was no evidence to indicate the presence of destructive fishing practices (e.g. breaking apart corals to capture hiding fishes).¹¹⁸ However, the abundance of photographic evidence documenting coral breakage from vessel anchoring and fish capture activities, these impacts cannot be dismissed and must be evaluated in the EISs. Photographs of these practices and their effects can be found at Appendix 4.</p> <p>Abundant coral reefs—put at risk by the Preferred Alternative—have a range of beneficial uses. The DEIS fails to adequately assess the curtailment of “the range of beneficial uses of the environment.”</p>	<p>Your comment has been forwarded to the decision makers.</p>

Commentor	Comment	Response
For the Fishes	<p>C. <u>Examples of Impacts in Various O’ahu Regions</u></p> <p>Unlike West Hawai’i, no aquarium fish population data was gathered during the early years of aquarium trade operations on O’ahu reefs. More recent data has been gathered in a yet to be published study by Dr. Gail Grabowsky of Chaminade University and is summarized below. Dr. Grabowsky reached the same conclusions reached by Williams and Walsh in a 2007 report documenting declines in populations of certain fishes on two Hawai’i Island reef areas: commercial aquarium collecting is implicated in the declines; and, the greatest declines are seen in the species that have faced the heaviest fishing pressure.¹¹⁹</p> <ul style="list-style-type: none"> • Using the same methods described in earlier research on Hawai’i Island documenting the magnitude of the effect of aquarium collecting on natural populations of heavily targeted species, Dr. Grabowski and her team quantified the abundance of aquarium collected fish at over 20 sites around O’ahu from 2008-2010.¹²⁰ • Surveyed species included Yellow tangs, Forcepsfish, the Hawai’ian “Domino” Damselfish, as well as additional butterflyfishes, surgeonfishes, and other fishes targeted by the aquarium trade. • The fish population surveys showed that species targeted by the aquarium trade are ten times more abundant at Hanauma Bay, Hawai’i’s first marine life conservation district, protected since 1967, than they are on other O’ahu survey sites.¹²¹ As with the Hawai’i Island studies conducted by Tissot and others, uncollected sites were selected as controls and served as a proxy for estimating natural abundance.¹²² • The data also showed that aquarium fish are rare at Pupukea and Coconut Island in Kaneohe Bay, both of which are protected similarly to Hanauma Bay, but unlike Hanauma Bay, are easily accessed by poachers. • There were no juvenile fish smaller than a silver dollar at Hanauma Bay, which led Dr. Grabowsky to surmise that it may be “that the fish are so depleted on O’ahu that those we see are the “living dead” who cannot effectively maintain a population due to their rarity. This is called the Allee effect and has been documented in other rare species.”¹²³ 	<p>Your comment has been forwarded to the decision makers.</p>

Commentor	Comment	Response
For the Fishes	<p>In addition to population surveys, catch data can provide an important view into the status of populations of targeted fishes. As explained elsewhere in these comments, using catch data to estimate the proportion of fishing mortality to total population is highly problematic since catch reports are unverified and both underreporting and non-reporting are highly likely. However, as explained above, where baseline population data are absent, and where consumer demand exists for a particular species or family group, it is highly likely that substantial declines of reported catch reflect reduced abundance of the target sizes. In fact, historical catch reports have been used to document the collapse of the aquarium fishery on southwest O’ahu reefs after hurricane Iwa hit Hawai’i in 1982 and damaged many reefs.¹²⁴ Per anecdotal reports from a number of aquarium collectors, the storm destroyed important habitat for yellow tangs and other targeted species. This resulted in the migration of many fishes to undamaged coral reef areas. Aquarium collectors then concentrated their efforts on these sites and within a few short years, populations of species targeted by the trade completely collapsed.¹²⁵ Referring to these data, researchers noted that since yellow tangs are in high demand, these declines reflect the situation on these reefs (i.e. reduced abundance of the small yellow tangs targeted by the trade).¹²⁶ Catch reports from 2016 confirm that yellow tang populations have yet to recover (see Fig. 7 [see pdf page 35], 8 [see pdf page 36]).¹²⁷</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>Underreporting is discussed in Section 5.4.3.6 of the EIS.</p> <p>The EIS uses the most recent population estimates available, from 2018, to evaluate impacts. The Preferred Alternative limits collection to species on the proposed White List, and provides hard upper limits on collection.</p>
For the Fishes	<p>D. <u>Examples of Impacts to Species</u></p> <p>As previously mentioned, the decline of butterflyfishes on O’ahu has also been documented in the aquarium fish population surveys conducted by Dr. Gail Grabowsky which showed a 90% decline in natural populations of butterflyfishes and other fish species heavily targeted by the aquarium trade.¹³⁰</p> <p>The Bluestripe Butterflyfish is a highly unique, endemic Hawai’ian species that, having no sister species elsewhere in the Indo-Pacific, is also known as a relic (see Fig. 9 [see pdf page 37]).¹³¹ It was among the top 21 aquarium fishes captured on O’ahu through 2005, but by 2019, average annual catch had fallen by 95% (See Fig. 10).¹³² The Bluestripe Butterflyfish is listed in the species of greatest conservation need in the 2015 SWAP. Threatened by the aquarium trade, conservation actions include to “protect current populations, but also to establish further populations to reduce the risk of extinction.”¹³³ Despite this listing and the alarming decline in reported catch, no take limits were placed on this species in the 2014 O’ahu Aquarium Rule discussed below). No longer among the top 20 species collected by the aquarium trade, they are excluded from the DEIS analysis, though still taken by the trade and in obvious need of proper evaluation.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The Bluestripe Butterflyfish is not on the proposed White List, and therefore would not be collected under the Preferred Alternative.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
For the Fishes	<p>The Teardrop Butterflyfish is beautiful species named for the striking upside-down black teardrop located mid-body (see Fig. 4 [see pdf page 32]). As shown below (see. Fig. 10 [see pdf page 37]): reported catch of the Teardrop Butterflyfish has also experienced drastic declines on O’ahu reefs; from 1976-1990, the Teardrop Butterflyfish was among the top ten to twenty fishes collected on O’ahu, 134 with an average annual harvest of 2,616 individuals taken in the earlier years; from 1976 to 2019, average annual catch dropped by 95%. Despite this alarming decline in reported catch, no take limits were placed on this species in the O’ahu Aquarium Rule. No longer among the top 20 species collected by the aquarium trade, they are excluded from the DEIS analysis, though still taken by the trade and in obvious need of proper evaluation.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The Teardrop Butterflyfish is not on the proposed White List, and therefore would not be collected under the Preferred Alternative.</p>

Commentor	Comment	Response
For the Fishes	<p>The Bandit Angelfish is another beautiful and highly unique, endemic Hawai’ian species with a color pattern unlike that of any other angelfish on Earth (see Fig. 11 [see pdf page 38]).¹³⁶ The Bandit Angelfish has been among the top twenty aquarium fishes captured on O’ahu on and off since 1976, most recently in 2016.¹³⁷ For the five-year period ending in 1980, annual reported catch averaged 1,380 individuals (see Fig. 10 [see pdf page 37]). Over the next 20 years, annual reported catch rarely exceeded 600 individuals and then beginning in 2000, dropped further to 209 individuals annually per the DEIS.¹³⁸ From 1976 to 2019, average annual catch declined by 76% (See Fig. 10 [see pdf page 37]).</p> <p>This fish is included in the DEIS as one of the three species regulated by the O’ahu aquarium rule, though it is not considered to be among the top 20 fish species covered in the statement. The DEIS states that because Bandit Angelfish live in deep water, a reliable population estimate could not be determined (i.e. there is no analysis of the impact of commercial aquarium collection). It also states its deep-water habitat means it is “generally only collected at depths at which normal recreational diving does not occur;” that it is collected in low numbers, averaging just 209 individuals per year, since 2000; and, “due to the complexity and difficulty of collecting the Bandit Angelfish, its population will likely continue to not receive significant pressure from the commercial aquarium fishery.”¹³⁹</p> <p>The DEIS fails to use available data to provide any analysis of the impacts to this important species. As described above, in the absence of population assessments, historic catch reports can reveal the abundance trend and status of high demand species. For example, from 1976 to 1980, the average annual catch of Bandit Angelfish was 6.6 times higher than in the period from 2000 to 2017. It is likely that they were taken in the shallower depths where the trade typically operates, and where they are no longer found in any abundance, because there is no reason to expect that aquarium collectors took them from deeper waters for at least five years, and then suddenly stopped doing so. It is more likely that similar to the Flame Wrasse, they were severely over-collected in the shallower part of their natural range. SCUBA divers, including two of the Commenters, have for decades consistently encountered Bandit Angelfish at diving depths ranging from 20 – 90 feet on multiple dive sites, not accessed by the aquarium trade.</p> <p>The landed value data found in catch reports also indicate increasing consumer demand for this precious species. From 1976-2003 the average landed value for a Bandit Angelfish was \$10.¹⁴⁰ By 2004 it had jumped to \$54 and in recent years has skyrocketed to \$180 each.¹⁴¹ A similar pattern was noted for Bandit Angelfishes captured in West Hawai’i and prompted University of Hawai’i and DAR researchers to point out that decreasing catch combined with increasing value signals a real population decline.¹⁴²</p> <p>Not surprisingly, the Bandit Angelfish is also listed among the species of greatest conservation need in the 2015 Hawai’i SWAP. Threatened by the aquarium trade, conservation actions include to “protect current populations, but also to establish further populations to reduce the risk of extinction.”¹⁴³</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>Under the Preferred Alternative, collection of Bandit Angelfish would be limited to 638 individuals per year or less (43 per permittee).</p>

Commentor	Comment	Response
For the Fishes	<p>E. <u>O'ahu Aquarium Life Management</u> Rules governing the take of certain aquarium species on O'ahu were adopted in 2014.¹⁴⁴ The development and adoption of these rules was highly controversial because they were not scientifically sound and did not address the concerns of stakeholders outside the aquarium trade.¹⁴⁵ Over 4,000 testimonies were received by DAR, and 98% of the comments preferred that aquarium collecting should end altogether or in the very least should include limits on the number of permits issued, and scientific and community- based limits on species and take levels. Many comments noted that the so-called "limits" allowed take that far exceeded the number of animals historically taken by the trade, and in fact, allowed limitless catch because they included no restrictions on input (i.e. permit limits), and no meaningful restrictions on output (species or take limits).¹⁴⁶</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The Preferred Alternative includes a limited issuance of permits (15), creation of a White List of 31 fish species that can be collected, and includes annual catch limits for all species on the White List.</p>

Commentor	Comment	Response
For the Fishes	<p>Among those opposed to the rules was coral reef and marine fisheries biologist, Frazer McGilvray, who was the DAR Administrator at the time. Mr. McGilvray opposed the rules because they were neither based on science, nor were they developed under a multi-stakeholder approach. The written and oral testimony Mr. McGilvray presented to the board governing DLNR included the following:</p> <ul style="list-style-type: none"> • “All stakeholders should be consulted and everyone’s opinion should be taken into account.” • “There appears to be no scientific basis for the proposed bag limits for each species.” • “The proposed take limits were akin to setting a speed limit at 400 MPH.” • “These rules do not address the take of undersize, sexually immature fish.” • “The majority of yellow tang allowed to be taken under this rule are immature and have not contributed to the future of the species.” • “These rules, driven by the demands of the trade, are contrary to good natural resource management.” • “The take of juveniles is generally prohibited” in other fisheries, but not by the aquarium trade. • “The take of adults is allowed, but only where good management practices govern the take” in other fisheries, but not by the aquarium trade. • “The taking of 100 immature yellow tang per person per day is not consistent with good natural resource management when there are more than 50 licensed aquarium collectors on O’ahu.” • “It is my belief that these rules require further work and are not yet ready for adoption.” 147 <p>The DLNR submittal to the board conceded that the proposed limits were not intended to reduce take, but were, instead, based on animal welfare.148 This statement does not stand up to scrutiny since no animal welfare experts or groups familiar with the aquarium trade were consulted, and in fact, the concerns of several of animal welfare groups were dismissed outright.</p> <p>In addition to the general bag limits described earlier, bag limits were imposed for certain sizes of Yellow tang, kole, and Bandit Angelfish. However, DLNR noted that because aquarium catch reports do not capture fish sizes, it is impossible to determine or even estimate the impact of a size limit in the aquarium fishery.149 Notably, catch reports document that the O’ahu Aquarium Life Rule, once enacted in 2014, did not reduce the level of catch. For example, despite the combined catch, size and number of animals per trip/vessel limits, yellow tang catch in 2015 and 2016 was the highest since 2000, and possibly on record until that point. This was due, in part, to an unprecedented ocean heat wave that bleached and killed many corals, but also brought large numbers of young fishes to Hawai’i’s reefs during 2014 and 2015. A similar, unprecedented, event occurred in 2019, and yellow tang catch was, once again, record breaking.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative includes annual catch quotas, providing a hard upper limit on the number of fish which can be collected. It also includes a proposed White List, limiting collection only to species on that list. The 2014 rules would also remain in effect.</p>

Commentor	Comment	Response
For the Fishes	<p>F. <u>Other Regulated Species and Invertebrates</u></p> <p>The DEIS describes the Achilles Tang, Bandit Angelfish, and Hawaiian Cleaner Wrasse as “not collected to the level of the top twenty collected species.” 150 However, according to both historical and recent catch data, this is inaccurate. These three species have historically, and recently in one case, been among the top twenty collected species on O’ahu as follows:</p> <ul style="list-style-type: none"> • Achilles Tang was among the top twenty during the five-year period that ended in 1985 • Bandit Angelfish was among the top twenty during the five-year period that ended in 1980 and again in 2014, 2015 and 2016. • Hawai’ian Cleaner Wrasse among the top twenty during the five-year period that ended in 1980 <p>Bandit Angelfish have been described earlier, and Achilles Tangs are both a culturally important food source and an important herbivore on the reef. The Hawaiian Cleaner Wrasse plays a particularly critical role in the reef ecosystem by feeding on parasites, dead tissue and mucus of reef and other fishes (see Fig. 12 [see odf page 41]). In 2008 the West Hawai’i aquarium trade included the Hawaiian Cleaner Wrasse in its list of Species of Special Concern that should not be captured, citing the key role the play in maintaining the “health of the reef population, as the doctors of the sea”.151 Obviously this species plays a similar role on reefs throughout Hawai’i. This is another clear example of how the dictates of the North American aquarium trade are driving extremely poor management decisions. The DEIS fails to properly analyze the cumulative impact of long term sustained heavy collecting pressure on these and other important species.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The top 20 species were calculated based on data from the EIS analysis period (2000-2017), and did not include data from prior to 2000. Furthermore, the Preferred Alternative now limits collection to 31 species on the proposed White List, and all 31 of those species are now analysis in the FEIS.</p>

Commentor	Comment	Response
For the Fishes	<p>In addition to fishes, marine invertebrate species such as hermit crabs, Feather Duster Worms, sea stars and snails, are taken in very high numbers by commercial aquarium collectors. Since 2000, more than 3 million invertebrates representing 66 species have been reported on aquarium catch reports. These invertebrates play a key role in the coral reef environment, and their overharvesting may have serious ecological consequences.¹⁵² There are no population estimates for these important marine animals and, therefore, the impact has not been assessed.</p> <p>Further, as noted by DLNR, “collection of attached reef invertebrates like Feather Duster Worms, often is done by breaking apart the reef structure.”¹⁵³ Catch reports indicate that the vast majority of Feather Duster Worms are taken from Kaneohe Bay, and per the DEIS, the 20 aquarium collectors seeking the permits reported taking ~12% of the Feather Duster Worms from 2000-2017.</p> <p>Additionally, experts have expressed concerns about the very high levels of hermit crab collection, including:</p> <ul style="list-style-type: none"> • “The removal of available shells, a critical resource for hermit crabs, will doom the hermit crab population in any given area; replenishment of shells of all sizes due to natural causes will not be able to keep up with the artificial removal by collectors; hermit crabs are essential to the ecosystem. Not only are they grazers but even more importantly they are detritus feeders and scavengers keeping the ecosystem ‘clean’.” ¹⁵⁴ • “Collectors do not merely take the crabs, they take also the shells. This amounts to destroying the available habitat for these animals; hermits regularly outgrow their shells and seek new ones, leaving the smaller shells for smaller hermits. When a hermit dies, it leaves its shell for another hermit; taking all the shells will leave no shells for hermits to live in. The population will crash; taking the shells will eventually make shells so uncommon that there are virtually no hermits.” ¹⁵⁵ 	<p>Your comment has been forwarded to the decision makers.</p> <p>The Preferred Alternative includes a limited number of invertebrates that can be collected, and a hard upper limit on that collection.</p>

Commentor	Comment	Response
For the Fishes	<p>G. <u>Failure to Assess Impacts to Aesthetic Value</u> In addition to the impacts to biodiversity, ecosystem function, and other fisheries, aesthetic and other social values are also heavily impacted.¹⁵⁶ Species experiencing the heaviest collection pressure, with a corresponding reduction in natural abundance, are Hawai'i's most beautiful, charismatic and iconic fishes. The diminished aesthetic value from the cumulative and substantial reductions in species such as Yellow Tangs, butterflyfishes and Moorish Idols, which are dominated by vibrant yellows and oranges and striking white and black patterns, cannot be overestimated (see Fig. 13 [see pdf page 43]). These colors are more than aesthetically pleasing, as our eyes are physiologically attuned to them. The frequencies and wavelengths of yellows, oranges and reds allow them to strike our eyes much faster than the other colors.¹⁵⁷ By removing the species with prominent yellow, orange, red or white coloration and markings, the palette and very essence of what makes a coral reef beautiful to the human eye is diminished and degraded. It is impossible to decrease populations of a coral reef's beautiful wildlife without greatly decreasing the natural beauty of the place. Divers who have frequented these coral reefs, such as some of the Commenters, have noticed decreased abundance of colorful fish in recent years. While acknowledging that "temporary and localized...fewer viewing opportunities for tourists" [and residents] may result from the No Action and Pre-Aquarium Collection Ban Alternatives, for the Preferred Alternative, the DEIS fails to acknowledge and address these cumulative losses and to propose proper mitigation measures. Further, it inexplicably concludes that "regarding the aesthetic values of fish...the percent of each population collected would be imperceptible to observers."¹⁵⁸</p>	<p>Your comment has been forwarded to the decision makers.</p>
For the Fishes	<p>H. <u>Failure to Assess Impacts to Property/Amenity Value</u> The DEIS fails to acknowledge and address the effects of the trade on the amenity/property values and propose proper mitigation measures. Houses that are within a block or 100 meters of beautiful, clean and healthy coastlines, beaches and coral reefs are more valuable and sell for significantly higher prices than comparable properties elsewhere. The same is true for condos and hotels/hotel rooms which generally command higher room and occupancy rates. Healthy coral reefs are also more likely to prevent beach erosion and, therefore, add value as a form of coastal protection. One and a half percent of the sale price of these properties is attributable to the marine ecosystem. Hawai'i's reef-related property value in 2001 was calculated at \$40 million.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The EIS evaluates impacts to land values in Section 5.2.2. As stated in the EIS, despite the housing crisis and recent recession, the average sale price of homes steadily increased in Hawai'i from 2011 to 2014 after a few years of year-to-year fluctuation. The average sale price of homes in 2014 was \$594,440, which was 26.4% higher than the average sale price in 2011. A rapid price increase was observed particularly in 2013 and 2014. The average sale price in 2013 and 2014 was about 10% higher than the price in the prior year. In 2015, the total number of home sales increased by 9.3%, but the average sale price was 0.3% lower than the previous year (HDBEDT 2016). This occurred while commercial aquarium collection was also occurring.</p>

Commentor	Comment	Response
For the Fishes	<p>I. <u>Failure to Assess Impacts to Recreational Value</u> The DEIS fails to acknowledge and address the effects of the trade on the recreational value of this marine life and their coral reef homes and propose proper mitigation measures. The annual estimated expenditures related to marine life viewing (i.e. snorkeling and scuba) in Hawai'i is \$551 million. Reef-adjacent marine tourism expenditures (including hotel rooms) within 30 km of the coastline are an annual \$680 million.¹⁵⁹ These amounts exclude the lost value from declining fish abundance which is captured in willingness to pay surveys and summarized below:</p> <ul style="list-style-type: none"> • Healthier reefs lead to substantial economic gains. <ul style="list-style-type: none"> • Recreational users are willing to pay higher rates for a healthier marine environment. 160 • Snorkel/dive businesses benefit when there are more fish for their clients to see.¹⁶¹ One recent study showed divers were willing to pay \$93 to \$110 more to dive with abundant fish life. 162 • Without new regulations the potential for increasing losses is real. <ul style="list-style-type: none"> • Inability to stem declining reef fish numbers could cause significant losses to dive tourism industry (i.e. reductions in willingness to pay).¹⁶³ <ul style="list-style-type: none"> • These consumer surplus losses could range from \$1.2 million to \$12.2 million annually.¹⁶⁴ • Areas with degraded reefs and low fish populations could also see significant losses from a decrease in their share of the global dive market.¹⁶⁵ • Anecdotal reports from long-time residents and visitors point to revenue loss already occurring from reduced abundance of beautiful fishes on Hawai'i reefs. 	<p>Your comment has been forwarded to the decision makers.</p> <p>While the commenter cites "anecdotal reports" about revenue loss, as stated in Section 5.2.2.2 of the EIS, there is no available data to suggest that commercial aquarium collection has impacted the tourism industry. In fact, Hawai'i's tourism industry achieved new records in total visitor spending and visitor arrivals in 2017, marking the sixth consecutive year of record growth in both categories. Total spending by visitors to the Hawaiian Islands increased 5.6% to a new high of \$16.81 billion (HTA 2018). When adjusted for inflation, total visitor spending was up 3.5% from 2016 (Figure 3). A total of 9,404,346 visitors came by air or by cruise ship to the state, up 5.3% from the previous record of 8,934,277 visitors in 2016. Total visitor days rose 4.8% compared to 2016. The average spending per day by these visitors (\$198 per person) was also higher than 2016 (\$197 per person; HTA 2018).</p>
For the Fishes	<p>J. <u>Failure to Assess Impacts to Passive Use Value</u> The DEIS fails to acknowledge and address the effects of the trade on the substantial non-use values of this marine life and their coral reef homes and propose proper mitigation measures. Intrinsic and social values associated with coral reefs are diminished by reduced fish populations. Concern for the marine environment has increased in recent years and people now place tremendous value on coral reef ecosystems. Many people value beautiful and healthy coral reef ecosystems as part of their legacy and responsibility to ensure future generations are able to experience them. A 2011 report for the National Oceanic and Atmospheric Administration (NOAA) estimated the passive use annual value of Hawai'i's coral reef ecosystems through a willingness to pay survey of U.S. households. The survey included a visual representation of an overfished and an abundant coral reef (see Fig. 14 [see pdf page 45]). The project determined that increased protections and restoration of degraded coral reefs in Hawai'i is worth about \$288 to the average U.S. household which aggregated over all U.S. households amounts to a \$34 billion annual passive use value for Hawai'i's coral reefs.¹⁶⁷ This and other socio-economic values described here provide meaningful insights into the public's concerns and should be addressed in a comprehensive EIS.</p>	<p>Your comment has been forwarded to the decision makers.</p>

Commentor	Comment	Response
For the Fishes	<p>K. <u>Failure to Assess Impacts to Aquatic Life Post Capture</u></p> <p>A major factor that drives the rates of collection is premature mortality rates in captivity. According to a long-time industry insider, most yellow tangs die with the first month in a hobbyist tank and fewer than 1% of those captured survive one year in captivity.¹⁶⁸ A 2012 study determined that mistreatment in capture, handling, transport, and holding plays a larger factor in these premature deaths than hobbyist inexperience.¹⁶⁹ The researchers also determined that each step in the supply chain significantly profits from customer purchases to replace fish that die prematurely, and that profits from replacement fish sales are so high, stores have no incentive to take action to reduce deaths.¹⁷⁰</p> <p>A number of practices frequently utilized as cost saving measures by the aquarium trade in Hawai'i are inhumane and significantly contribute to the stressors that accumulate and ultimately lead to premature deaths of captive marine life. They include rapid surfacing and subsequent use of a technique known as "fizzing" to mitigate the resulting barotrauma injury to swim bladders; starving fish for 2 – 10 days prior to transport and spine cutting. Alternatives to these practices include slow surfacing, transport in larger volumes of water to dilute any waste produced by fishes during transport, and transport in hard plastic containers that cannot be punctured by fish spines.</p> <p>Every fish that dies early puts extra pressure on natural resources because of the take of replacements. There is a general consensus in many countries that it is not ethical to trade in live animals, unless their health and welfare are ensured. These unnecessary and early deaths have given the trade a poor image. A \$20 million, multi-stakeholder reform effort failed, in part, because of trade reluctance to address, and take steps to reduce, mortality rates.</p> <p>Fifty percent of species among Hawai'i's historical top 20 fish list are either not guaranteed to arrive alive or stay alive longer than 7 – 14 days when purchased from online or "brick and mortar" retailers. Examples are found in Appendix 6.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>A discussion on post-collection mortality has been added to Section 5.4.2 of the EIS. However, the paper referenced here (Cartwright et al. 2012) is focused on marine ornamentals from the "Coral Triangle" (Philippines, east Malaysia, Indonesia, Timor-Leste, Papua New Guinea, and the Solomon Islands), where they commonly use harmful chemicals such as cyanide and dynamite to catch fish, which then leads to extremely high mortality rates in the supply chain. These practices are not used in Hawaii.</p>

Commentor	Comment	Response
For the Fishes	<p>The DEIS erroneously excludes an analysis of impacts to fish and other aquatic life once they are taken, stating “because population effects have already occurred once an individual fish has been removed from the ocean, it is beyond the scope of this analysis to evaluate effects on individual fish once they are removed from the population.” One of the core requirements of the aquarium collection statute, HRS § 188-31 is that aquatic life taken under the permit is maintained alive and in reasonable health. Aquarium catch reports capture presumed mortalities between capture and sale to marine dealers and indicate that an average of 3% of captured fishes die at this stage of the chain of custody. Self-reporting by a handful of wholesaler’s report that up to 2% more die while in their custody and an additional 1% - 2% die in air cargo transport. Wholesalers receiving fish from Hawai’i report a similar “dead on arrival” rate, and note that the industry standard is to allow up to 5% to arrive dead with no charge-back to the shipper for losses.</p> <p>Per Appendix 1, the Applicants failed to respond to any questions regarding mortality rates. In order to fulfill its statutory duties to exercise discretion in granting permits, DLNR needs the average and maximum annual mortality rates for fish taken by the 20 fishers. Without this information the state has no way of assessing whether these permittees are responsible aquarium collectors that deserve these exclusive privileges. Furthermore, the public needs this information, as well, which is one of many reasons why withholding the identity of the 20 fishers is unacceptable.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>A discussion on post-collection mortality has been added to Section 5.4.2 of the EIS.</p>
For the Fishes	<p>VI. Flawed Analysis of Cultural Impacts and Lack of Proposed Mitigation Measures</p> <p>As set forth in HAR §§ 11-200-10 and -16 through -18, a complete analysis and discussion of impacts to cultural resources is required. The EIS must acknowledge and address the direct, indirect, and cumulative impacts on cultural resources. The loss and harm caused by the irrevocable commitment of natural resources equally applies to impacts to cultural resources, as well. The EIS must also acknowledge and address the effects of the trade on Native Hawaiians traditional reliance on species targeted by the trade for subsistence, and most importantly, propose proper mitigation measures.</p> <p>Decades of Applicant actions have removed millions of animals on O’ahu; directly impacting at least 238 fish species and 66 invertebrate species found in Hawai’i’s coral reefs, one of the most complex ecosystems on Earth, where the fate of each species is determined by the existence, abundance and diverse actions of a multitude of other species that inhabit or otherwise rely upon these unique places. The CIA initially acknowledges “As stated in the OEQC Guidelines for Assessing Cultural Impacts, the goal of the oral interview process is to identify information ‘relating to the practices and beliefs of a particular cultural or ethnic group or groups’ (State of Hawai’i, Office of Environmental Quality Control 2012:11). It is our contention that, in addition to assessing the significance of any identified traditional cultural properties, oral interviews should also be used to augment the process of identifying traditional cultural properties.”¹⁷¹</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The impacts on cultural resources were analyzed in the CIA, which was included as an appendix to the EIS and incorporated by reference. The EIS has been revised to include language indicating that given that some Hawaiians believe any collection for aquarium purposes is contrary to cultural practices, all action alternatives would impact cultural practices to varying degrees</p>

Commentor	Comment	Response
	<p>Thus, it is the researcher’s responsibility to utilize the gathered cultural-historical background information, as well as the information collected through the consultation process, to identify and describe potential cultural impacts to resources, practices, and beliefs, and to propose appropriate mitigative measures for those impacts as necessary.</p>	
<p>For the Fishes</p>	<p>While the CIA provided an extensive history of native Hawaiians and their symbiotic relationship with the ocean and its animal inhabitants, only 6 of 42 people selected responded to the inquiry for input. The number of respondents consulted is completely inadequate and unacceptable given 80 percent of take of marine life on O’ahu is from the top 20 species taken by the trade, and the top 3 species collected; yellow tang, kole, and Potters’ Angelfish, all have strong historical significance to native Hawaiian traditional and customary practices.</p> <p>Of the six who responded, one was a long-time aquarium collector who continues to support the trade and only gave up his aquarium collection permit when he was publicly called out on the conflict of interest in his possessing a permit while at the same time serving as Chair of the Department of Land and Natural Resources. After he left DLNR he immediately renewed his permit and claims to have only stopped collecting due to the 2017 Supreme Court ruling. This individual does not even recognize SCUBA as modern technology that has had a significant impact on the numbers of animals that can be taken for the commercial aquarium trade. Further, he states that “nobody uses slurp guns” due to their being inefficient in capturing marine life for the aquarium trade, while his fellow aquarium collectors claim to be using this method to get around the question of what methods are being used for continued collection given DLNR’s policy states that fine meshed nets are prohibited. When asked what would trigger an impact if at the current effort there is no impact, he replied “<i>nothing other than people’s emotional objection.</i>” 172 This</p>	<p>Your comment has been forwarded to the decision makers.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
	response shows his lack of concern for impacts and the need for even the most basic mitigation measures.	

Commentor	Comment	Response
For the Fishes	<p>The 2nd respondent concedes that his support for the trade is based on fear, the “slippery slope” that actions against the aquarium trade could ultimately impact his personal profits in the commercial food fishing industry. When asked for an alternative to mitigate potential impacts if the State chooses the no action option or if there is some sort of middle ground that could be reached between the aquarium fishing industry and the State, he stated <i>“there is no middle ground for this.”</i> He went on to say that <i>“it is all or nothing, because they lose everything and have already lost a lot during the last legislative session.”</i> 173</p> <p>Two other respondents note the importance of mauka to makai—that actions on land impact the ocean and vice versa.174</p> <p>Lastly, two respondents, Mr. Crowell and Ms. Punawai, point out their oppositions to the trade stating, respectively, below:</p> <p>Mr. Crowell finds it acceptable to exhibit Native Hawaiian fish in aquariums for educational purposes, however, he finds it unacceptable for native fish to be displayed in private collections and after much contemplation, concluded that the fish population will be depleted if allowed to be used for any aquarium purpose. He closed his interview with the following statement, <i>“Again, I oppose all Native Hawaiian fishes for aquarium purpose.”</i> 175</p> <p>Ms. Punawai states, <i>“I do believe that the practice of aquarium fishing will have an impact on traditional cultural practices in these areas. And I think with the ocean—and it’s not just the ocean—I think in general, traditional and cultural practices is not really a site assessment that I can give. It’s just that broader impact and the ability for these things to be considered abundant...The value of the ability for a species to live in its own environment. I have a hard time seeing how taking a hīnālea and putting it in a tank in Nevada can allow that being to continue being a hīnālea. So the traditional practice of our species being able to have their own ‘ōiwi is being affected through the practice of aquarium collecting and having live pets.”</i> 176</p> <p>It’s important to note that more than 90 percent (50 of 55) of those interviewed in the CIA for the (recently rejected) West Hawai’i aquarium trade EIS noted how the trade both directly and indirectly impacts their cultural resources, beliefs, practices and values. Yet, in that EIS as well as this DEIS, none of those concerns were included in the conclusion or proposed mitigation measures.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The EIS has been revised to include language indicating that given that some Hawaiians believe any collection for aquarium purposes is contrary to cultural practices, all action alternatives would impact cultural practices to varying degrees</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
For the Fishes	<p>A. <u>Inadequate proposed mitigation measures</u> Outrageously, the DEIS summarizes the CIA in three sentences by simply stating, “no significant adverse direct or indirect cultural resource impacts are anticipated under any of the four alternatives under consideration. Significant cumulative impacts are anticipated; however, commercial aquarium collection is a less than significant factor in the cumulative impact. Therefore, no mitigation is required or proposed.” 177</p> <p>While more comprehensive than the applicant's summary above, the CIA also fails to propose any substantive mitigation measures to address the biological and various socio-economic impacts to cultural resources and the ethical concerns and harm done to the animals, themselves, offering only meaningless general recommendations, such as providing a document to potential permittees that contains a “synopsis of the traditional cultural significance of the fishery,” and supporting funding for enforcement. 178</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The EIS has been revised to include language indicating that given that some Hawaiians believe any collection for aquarium purposes is contrary to cultural practices, all action alternatives would impact cultural practices to varying degrees</p>
For the Fishes	<p>Further, while the CIA rightfully recommends that additional research and studies be performed on the top 20 species taken by the O’ahu trade, since both current and historical data are lacking, it is completely ignored in the DEIS.</p>	<p>Your comment has been forwarded to the decision makers.</p>
For the Fishes	<p>Finally, the CIA mentions the formation of a Fishery Council on O’ahu similar to the West Hawai’i Fisheries Council (WHFC) but neglects to discuss that the formation of the Council completely dismissed the will and wishes of the native Hawaiian community who recommended stronger protections for many more than the 40 species currently on the West Hawai’i “white list”. Further, the WHFC has to date never provided any comments or even basic input, regarding the West Hawai’i aquarium trade EA or EIS, demonstrating that they have not been engaged in this issue for some years.</p>	<p>Your comment has been forwarded to the decision makers.</p>
For the Fishes	<p>B. <u>Flawed data results in flawed assumptions of cultural impacts</u> The biological assessments used to analyze the impacts of the trade are extremely flawed, thus, the below conclusions, that the issuance of 20 permits will have no significant impact, is equally, inherently flawed. For example, as discussed in detail above, the current and proposed bag limits on eight species, including four that are endemic, would allow annual take ranging from 23% to 1265%, far exceeding the noted threshold of “significant decline” in order for a cultural impact to occur.179</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The Preferred Alternative now limits collection to species on the proposed White List, and includes a total allowable catch limit for all species. Species limits were based on historic collection rates, and were capped at 4.5% of the estimated Oahu population. Nevertheless, the EIS has been revised to include language indicating that given that some Hawaiians believe any collection for aquarium purposes is contrary to cultural practices, all action alternatives would impact cultural practices to varying degrees</p>

Commentor	Comment	Response
For the Fishes	<p>C. <u>Comments and concerns not adequately addressed</u> We continue to agree with a number of concerns earlier raised by DLNR and the Office of Hawaiian Affairs: <i>“Cultural impacts of aquarium fishing need significantly more analysis than provided in the FEA. The OEQC guidelines should be followed for assessing cultural impacts, including consulting with traditional cultural practitioners and other knowledgeable informants and sources about cultural resources, cultural practices, and the proposed action's potential impacts. Traditional Hawaiian practices and subsistence uses, local place-based and life-cycle knowledge, and traditional Hawaiian cultural significance of each type of aquarium fish taken should be reviewed. The indirect impact of modern technologies for highly efficient catch methods on traditional harvest capabilities should be included in the analysis”</i> (emphasis added). 180 The DEIS also failed to respond to numerous questions from our organizations regarding what type of gear/nets are currently being used to collect animals (outside of fine mesh nets). 181 The CIA failed to include a discussion on gear types or recommend any regulations or prohibitions on the use of aquarium collection gear, that allows for the take of hundreds more animals per day, than if using traditional subsistence fishing methods, “pono” fishing practices, the foundation of which is taking only what is needed, or a discussion on “resting” (closing) certain areas from commercial extraction. In summary, the CIA remains extremely flawed, inaccurate and inadequate, with its inherent purpose—identifying cultural impacts and proposing mitigations measures to limit such impacts—not being met.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The Preferred Alternative is now limited to the use of fine mesh nets; other fish collection methods would not be permitted. The collection is also limited to species on the proposed White List and includes individual catch quotas for each species, providing a hard upper limit on the number that can be collected within a year. Furthermore, the EIS has been revised to include language indicating that given that some Hawaiians believe any collection for aquarium purposes is contrary to cultural practices, all action alternatives would impact cultural practices to varying degrees.</p>
For the Fishes	<p>VII. Additional Deficiencies A. <u>Lack of Meaningful Alternatives Analyses</u> The DEIS does not propose or consider adequate alternatives. The Limited Permit Issuance Preferred Alternative is not reasonable, as is required by HEPA.182 The Preferred Alternative ignores the vast majority of comments submitted on the DEA, FEA and by the consulted parties. Instead, it focuses on just one species, the Flame Wrasse, one area, an expansion of the Waikiki MLCD, and ignores the many comments naming locations where the impacts of collecting pressure are of concern. The conclusion that no significant adverse effects would occur as a result of the Preferred Alternative is erroneous and unsupportable,</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>In response to comments, the Preferred Alternative has been revised to include total allowable catch limits and creation of a White List, limiting collection to just 31 fish species and 4 invertebrates.</p> <p>Conclusions of significance have been removed from the EIS.</p>

Commentor	Comment	Response
For the Fishes	<p>The Agency’s letter of determination stated that “because the applicant can propose but not ensure regulations aimed at protecting and restoring populations of aquarium fish, [the Agency] is interested in proposals for self-regulation by aquarium permit holders which could be incorporated into permit conditions even in the absence of or prior to establishing other regulations to accomplish the same purposes.”¹⁸³ We dispute the value of any self-regulation measure. Meaningful change must be binding on the industry, and a meaningful alternatives analysis requires the Applicant to propose binding measures. Here, the Applicant proposed neither self-regulation nor binding measures.</p> <p>A reasonable alternative would require the Agency to first determine:</p> <ol style="list-style-type: none"> 1) the life history, spawning grounds and offspring/recruitment patterns for each species to be collected for aquarium purposes (see DLNR list of aquarium species at Appendix 3);¹⁸⁴ 2) natural abundance (i.e. unfished) levels and complete stock assessments, for each collection zone, for those same species (see aquarium fish zones at Appendix 2);¹⁸⁵ 3) a definition for “sustainable” as it relates to the natural abundance of coral reef species taken in Hawai’i for aquarium purposes; and 4) annual total allowable catch, by species, designed to restore and then sustain natural abundance levels, with negligible impacts as defined in the Queensland Ecological Risk Assessment of the Marine Aquarium Fish Fishery, for each species to be taken for aquarium purposes, in each zone.¹⁸⁶ <p>After making these necessary threshold determinations, the Agency should issue limited numbers of Aquarium Permits, by zone and by species with corresponding total allowable catch limits, per the above parameters. Additionally, the Agency should require Aquarium Collection Permits, for all take for aquarium purposes, regardless of the method of collection.</p>	Your comment has been forwarded to the decision makers.
For the Fishes	<p><u>B. Lack of Mitigation Measures</u></p> <p>HEPA also requires an EIS to consider mitigation measures.¹⁸⁷ With minor exceptions, such a discussion is plainly absent from the DEIS. Decades of Applicant actions have directly impacted more than 300 species and indirectly impacted an unknown number of additional vertebrate and invertebrate species found in Hawai’i’s coral reefs, one of the most complex ecosystems on Earth, where the fate of each species is determined by the existence, abundance and diverse actions of a multitude of other species that inhabit or otherwise rely upon these unique places. Yet, the DEIS claims there are no significant impacts whatsoever, and therefore, proposes no mitigation measures outside of the bag limit for Flame wrasse and an expanded MLCD found in the Preferred Alternative.¹⁸⁸ The DEIS also fails to propose mitigation measures to address biological and related impacts to the various socio-economic values described herein, and also fails to propose mitigation for impacts to cultural resources, and for the ethical concerns and harm done to the animals, themselves, also described herein.</p>	Your comment has been forwarded to the decision makers.

Commentor	Comment	Response
For the Fishes	<p>VIII. Conclusion</p> <p>For the reasons explained above, the DEIS is patently insufficient in its analysis of the impacts of commercial aquarium collection permits.</p> <p>A serious overhaul of aquarium fish permitting in Hawai'i is needed.</p> <p>Because currently there are not restrictions on the number of collection permits or the amount of take per species under a fine mesh net (i.e. aquarium) permit or commercial marine license, the impact that collection may have on target species must be evaluated before issuing permits. As such, each aquarium collection permit or commercial marine license issued for aquarium collecting must show the total allowable catch, per species and ideally per zone that permit holders must follow to prevent unsustainable fishing. Catch limits per species and per zone should be calculated in conjunction with input from all stakeholders and based on the stock assessment for each target species in the specific areas where they will be allowed to be taken under a permit.</p> <p>The legislature has decreed it the "policy of the State" that DNLR and other agencies must "[c]onserve natural resources . . . by preserving or augmenting natural resources, and by safeguarding the State's unique natural environmental characteristics . . ."189 The Agency must also "[e]ncourage management practices which conserve . . . all natural resources," and encourage all individuals "to fulfill the responsibility as trustees of the environment for the present and succeeding generations."190 In enacting HEPA, the State legislature found "that the quality of humanity's environment is critical to humanity's well-being, [and] that humanity's activities have broad and profound effects upon the interrelations of all components of the environment . . ."191 The Agency simply cannot meet these mandates by continuing to allow unlimited aquarium collection, in light of the serious environmental consequences of those permits.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The Preferred Alternative represents a major overhaul of aquarium fish permitting by limiting issuance of permits (15), proposing a White List of 31 fish species and 4 invertebrates that can be collected, and proposing individual catch quotas for each of those species, which provide a hard upper limit on the number that can be collected in any given year.</p>
For the Fishes	<p><u>Appendix 1</u> <u>Background</u></p> <p>We submitted the below comments and questions to Stantec on October 16, 2019. The questions were prompted after we were made aware of the scope of the forthcoming O'ahu DEIS, as well as the DEIS's intent to provide exclusive aquarium collection privileges to 21 individuals (now 20) which was not specified in the earlier Draft Environmental Assessments (DEA). Stantec's failure to provide this crucial information to all Consulted Parties continues to undermine HEPA's notice requirements.</p> <p>Despite our objections to this flawed process, we submitted the below comments and questions to Stantec in an effort to inform and improve the DEIS and ensure that they were thoroughly evaluating the environmental impacts of this proposed action pursuant to HEPA. Stantec's response to our concerns with compliance with the HEPA process were again dismissed, with the applicants simply stating "Comment noted. The commenters were included in the consultation process for the DEIS."</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The Applicant notes that these comments are based on the EAs, and significant changes have been made since that time, including the preparation of a Draft and Final EIS, and two revisions of the Preferred Alternative in direct response to public comments received. Therefore, the new Preferred Alternative addresses many previous comments.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
For the Fishes	<p><u>Outstanding Questions</u> Below are our outstanding questions that were either inadequate in their response, or were not answered at all, and thus continue to await the applicant and/or DLNR's response:</p> <p>1. What are the environmental benefits of removing tens to hundreds of thousands of animals annually from O'ahu's coral reefs for the aquarium trade? NO RESPONSE</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>Environmental consequences, including benefits, are included in Section 5.0 of the EIS.</p>
For the Fishes	<p>2. a) Specifically, why is the proposed DEIS limited to O'ahu? The Hawai'i Dept. of Land and Natural Resources (DLNR) issuance of aquarium collection permits under HRS 188-31.5 applies to collection statewide; b) Do the 21 (20) collectors propose to collect only on O'ahu?; c) How would this be regulated given the existing permitting scheme has no geographic limits? INADEQUATE RESPONSE – APPLICANT ASSUMES DLNR CAN/WILL ADD A PERMIT CONDITION TO EACH PERMIT.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The FEIS has been revised to clarify that a permit condition would be added to the permits issued, limiting their use to Oahu.</p>
For the Fishes	<p>3. Recent research into two species of small bodied surgeonfishes, including kole which is heavily targeted by the aquarium trade, has determined that populations of these fishes are genetically distinct on each of the main Hawaiian Islands. This means that, for at least these two species, there is little genetic mixing between islands, and once species are depleted on any given island, there is no other source for population replenishment. Further, connectivity and dispersal studies on the island scale for certain species have identified important spawning source areas that are essential for maintaining populations on other reefs across the island. The currents and conditions that control larval connectivity and dispersal processes are complex. The larvae of some species are able to travel between islands, while others do so to a lesser extent. Regardless of whether larval connectivity exists mainly intra-island or extends inter-island, a depletion of species in important source areas impacts that species in other areas as well. Specifically, what are your plans for ascertaining key spawning source areas for all of the species the applicants intend to take? INADEQUATE RESPONSE – LARVAL DISPERSAL AND CONNECTIVITY PATTERNS CANNOT BE USED TO JUSTIFY APPLICANT'S ERRONEOUS TREATMENT AND ANALYSIS OF THE 15 (AT A MINIMUM) DISTINCT AND UNIQUE AREAS, SUCH AS REPRESENTED BY THE AQUARIUM TRIP REPORT ZONES, AS ONE LARGE, HOMOGENOUS AFFECTED AREA.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>Collection of Kole under the Preferred Alternative would be limited to 0.71% of the estimated population size.</p> <p>The DAR will receive the collection data by zone, and can review any necessary changes when they issue the permits on an annual basis. In the unlikely event that all collection occurred within a single AQ reporting zone, the DAR would be able to evaluate this information; however, this would effectively leave the rest of the coast completely free of collecting, and essentially create an FRA everywhere else. Given that on the island of Hawaii there is connectivity between adjacent reefs (up to 184 kilometers), with fish from protected FRAs being documented to seed unprotected areas (Christie et al. 2010), it is similarly assumed that the population growth occurring in non-fished areas on O'ahu would seed the collection zones where fishing occurred, and therefore the total allowable catch limits should be based upon the entire population, not subpopulations along the O'ahu coast.</p> <p>This language has been added to Section 3.6.1 of the FEIS.</p>

Commentor	Comment	Response
For the Fishes	<p>4. The Proposed DEIS would provide exclusive take and related privileges to 21 individuals that no other person would otherwise have access to. Given these 21 applicants are requesting special permission to take constitutionally protected public trust resources, the below information is needed to explain how and why these 21 applicants should be granted this exclusive privilege, that would otherwise be denied to others.</p> <p>a) Please identify the 21 applicants by name and business or trade name (i.e. “Doing Business As”). NO RESPONSE/NOT DISCLOSED</p> <p>b) How many reef animals have been taken by the 21 applicants in the past decade (list per year, per species and method of collection) and in what area, and how many are the applicants proposing to take each year for the next decade (list per species and method)? NO RESPONSE/NOT DISCLOSED</p> <p>c) What are the GPS coordinates for the exact sites the 21 applicants propose to operate on? NOT DISCLOSED</p> <p>d) Have any of the applicants been charged with any offense related to the aquarium trade or occurring during the course of aquarium trade activities, or county or state natural resource related offenses? If so, include date, offense and outcome of each offense. NO RESPONSE/NOT DISCLOSED</p> <p>e) What steps will be taken by the 21 applicants to reduce the impacts of climate change, specifically, coral bleaching and ocean temperature rise, which is predicted to occur more frequently and more severely over the next decade, given they will be removing thousands of herbivorous species? INADEQUATE</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>Other Aquarium Permits could be issued, but applicants would need to undergo their own HEPA review.</p> <p>The following language has been added to the FEIS: The 15 permittees covered by this FEIS may file individual permit applications with Department of Land and Natural Resources (DLNR) after the submission of this FEIS to Office of Environmental Quality Control (OEQC) and DLNR. DLNR will review such applications and take action upon them if this FEIS is accepted.</p> <p>The historic collection of these 15 fishers is included in the data disclosed in the FEIS, but is not separated from other fishers as collection would be limited based on the proposed individual catch quotas for the White List species, and no collection of other species would be allowed. Therefore, historic collection trends for these 15 fishers are not applicable to projecting future impacts since collection would be limited based on the Proposed White List and individual catch quotas. Collection would be allowed in any area legally open to commercial aquarium collection.</p>
For the Fishes	<p>5. On August 23, 2019, the DLNR warned of possible severe and widespread coral bleaching across the state within the next two months as the result of sea temperatures that are currently 3 degrees above normal. Real-time <u>reports from across the state</u> indicate that widespread bleaching is occurring. Elevated temperatures are projected to continue at least through the end of October, and the National Oceanic and Atmospheric Administration (NOAA) <u>bleaching alert</u> remains at the highest level, indicating likely coral mortality. This bleaching event will likely be even worse than the one that damaged so many of Hawai’i’s reefs 4 – 5 years ago. DLNR and NOAA have asked the public to take actions to minimize any additional stress to H Hawai’i’s reefs. Notably, among the actions to be avoided are many that are widespread and/or inherent to the aquarium trade, referenced below.</p> <p>a) How will the 21(20) applicants specifically comply with the following recommended actions:</p> <ul style="list-style-type: none"> • Reduce or stop taking herbivorous fishes such as surgeonfish which are needed to keep algae growth under control so as not to smother and kill corals stressed from bleaching • Avoid touching, standing in corals • Keep vessel anchors and chains off corals <p>b) Given the extremely limited enforcement resources and capabilities of DLNR,</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>Additional data on climate change has been added to the FEIS. The new Preferred Alternative includes hard upper limits on collection of all species, including herbivores, and limits collection to 31 fish species.</p>

Commentor	Comment	Response
	<p>how do they propose to show compliance with the above recommended actions? NO RESPONSE OR DISCUSSION, ONLY CLAIM TO COMPLY WITH EXISTING LAWS, NO MITIGATION OR PROACTIVE MEASURES</p>	
<p>For the Fishes</p>	<p>6. How do the 21 applicants propose to prevent population reductions of reef species when, outside of the current court order, there are no limits on:</p> <ul style="list-style-type: none"> • the issuance of State aquarium collection permits • the issuance of Commercial Marine Licenses • caps on the issuance of the above permits or a limited entry program • the use of certain types of gear that may be detrimental to the environment • overall take (Total Allowable Catch) • area/geographical limitations outside of areas already designated as “no take” areas, such as Marine Life Conservation Districts • collection of species (despite HAR 13-77 O’ahu Aquarium Life Management, which in effect, imposes no limits on species or numbers taken to those not in possession of a small mesh net). <p>INADEQUATE RESPONSE – EXISTING AND PROPOSED BAG LIMITS PROVIDE NO PROTECTIONS FOR TARGETED SPECIES</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The Applicant proposes to prevent population reductions by limiting permit issuance to 15 (additional permits issued would need to complete their own HEPA review), limiting collection to 31 fish species and 4 invertebrates on the proposed White List, limiting collection of fish species to 4.5% or less of available population estimates (18 would be collected at <1% of the population, 5 would be collected at <2%, 3 would be collected at <4% and 2 would be collected at up to 4.5% of their population estimate), and providing a hard upper limit on collection of each speies.</p> <p>The FEIS has been revised to reflect changes in CML issuance since January 2021, and also limits the Preferred Alternative to the use of fine mesh nets (no other gear would be used). An assumption has also been added that the DAR will add a permit condition limiting the geographic scope of the permits to the island of O’ahu.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
For the Fishes	<p>7. The DLNR, specifically the Division of Aquatic Resources and their enforcement arm, the Division of Conservation and Resource Enforcement (DOCARE) has severely restricted resources, such as inadequate staff and funding for enforcement, and there are current statutory restrictions on searches of certain containers carrying marine life and certain vessels.</p> <p>a) How do the 21 applicants propose that enforcement will be achieved on any proposed limits to their activities, including verifiable compliance with current administrative rules, and state and federal laws, including those listed below. NO RESPONSE/NO PROPOSED MITIGATION</p> <p>b) How are the 21 applicants currently complying with the following? NO RESPONSE</p> <ul style="list-style-type: none"> • Federal Lacey Act requirements USC Title 16 • Hawai'i Misdemeanor Cruelty to Animals statute HRS 711-1109 	<p>Your comment has been forwarded to the decision makers.</p> <p>The 15 fishers who would receive permits under the preferred alternative would comply with all laws, regulations, and permit conditions regarding harvest, storage, transport, and reporting of catch.</p>
For the Fishes	<p>8. The commercial aquarium trade has long operated with fewer regulations, oversight and compliance-verification mechanisms than those that commercial food fisheries must adhere to. Further, while the issuance of aquarium collection permits is discretionary, and subjects the permit holder to certain legal obligations, including inspection of facilities holding marine life, many of these regulations have not been actively enforced. For clarification, do the 21(20) applicants cooperate and comply with the following:</p> <ul style="list-style-type: none"> • provide open and immediate access to coolers, containers, vessels and other aquarium related gear, equipment and holding facilities upon request of a DLNR DOCARE Officer, as per the conditions of their permits? • allow observers on their vessels with/without notice? <p>INADEQUATE RESPONSE; NO PROPOSED MEASURES TO ASSIST WITH ENFORCEMENT; NO OFFER OF VOLUNTARY COMPLIANCE OR OTHER</p>	<p>Your comment has been forwarded to the decision makers.</p>

Commentor	Comment	Response
For the Fishes	<p>9. The earlier DEAs for the aquarium trade failed to include data and records which are not readily accessible to the public and other interested parties. Please provide the necessary data and response to the following to address our outstanding concerns with enforceability of the above-referenced laws specifically as it relates to animal health, welfare and mortality rates:</p> <p>Hundreds of thousands of fish and invertebrates have been taken by the aquarium trade from O’ahu reefs since the Supreme Court opinion and subsequent District Court orders were issued in September and October of 2017 which prohibited the use of fine mesh nets (nets with a mesh less than 2 inches). Ninety plus percent of fish catch prior to the court ruling involved the use of fine mesh nets. NO RESPONSE/EXPLANATION OF CURRENT CATCH METHODS</p> <p>a) Please explain in detail the gear and method(s) of collection currently (October 2017 to present) used by each of the 21(20) applicants and for what species. If the 21(20) collectors did NOT collect during this period please provide that information as well. NO RESPONSE</p> <p>b) For the 21 applicants please provide: NO RESPONSE TO ANY OF THE FOLLOWING</p> <ul style="list-style-type: none"> • the numbers of fish/animals that were shipped out of Hawai’i by each applicant per month since October 2017 to the present; and • specifically, where these fish/animals were shipped to (e.g., interstate or international); and • the mortality rates for each shipment (a) upon arrival and (b) at 14 days post-shipment; and • what percentage of animals remain in Hawai’i (for resale) versus those who are shipped 1) to the US mainland and 2) international; <p>c) For each of the 21 applicants please note whether the collector is also a dealer. If the collector is not a dealer, provide who the collector sells their catch to; NO RESPONSE</p> <p>d) For each of the 21 applicants, please note which collectors engage in the following practices in contradiction to HRS 711-1109: NO RESPONSE TO ANY OF THE FOLLOWING</p> <ul style="list-style-type: none"> • withholding of food (starvation) and for what period of time; • flogging or puncturing of the swim bladder; • cutting of spines or dorsal fins; • body compression (squeezing animal to force out ejection of fecal matter). 	<p>Your comment has been forwarded to the decision makers.</p> <p>Data on collection numbers is available via a information request from the DAR and summarized in the FEIS.</p> <p>The Preferred Alternative limits collection to the use of fine mesh nets. In addition, the No Action Alternative has been revised to reflect the change in CML issuance that occurred in January 2021. The Preferred Alternative lists the 31 fish species and 4 invertebrate species that would be collected under that alternative. Available information on post-collection mortality is included in the FEIS.</p>

Commentor	Comment	Response
For the Fishes	<p>10. The following issues raised by DLNR in the O’ahu FEA still await your response: INADEQUATE OR NO RESPONSE TO ALL OF THE FOLLOWING</p> <p>a) “There is no statistical analysis of population growth compared to the life span of each fish and the number of years to and size of first reproduction against which this annual proposed take can be measured for purposes of estimating sustainable take.”</p> <p>b) “With regard to proposed levels of sustainable catch, using "5% to 25%" annual take of estimated populations as proposed in several research papers, we note that 5% to 25% is a wide range, and the precautionary principle calls for applying the lowest estimated percentage of sustainable take in the absence of scientific certainty. We note also that there are no bag limits for most species, and that the fishery as currently regulated does not limit the number of permits, so that the annual take as a percentage of estimated population could rise significantly.”</p> <p>c) “Alternatives of overall annual take limits, a limited entry aquarium fishery program, and restrictions including full moratoria on the take of herbivores, species of special concern, and species evidencing severe population declines have not been proposed or analyzed.”</p> <p>d) “The alternatives propose reduction in bag limits for flame wrasse, but there is not a scientific basis for concluding that the proposed reduction would be sufficient to sustain the population.”</p> <p>e) “The alternatives propose an expansion of the Waikiki Marine Life Conservation District, but do not include a scientific review of the beneficial impacts of Fishery Replenishment Areas on restoring populations, such as has been demonstrated in West Hawai’i, nor an analysis of the optimal placement of Fishery Replenishment Areas on O’ahu to protect and restore populations of aquarium fish.”</p> <p>f) “As noted earlier, enforcement and compliance needs and challenges are key factors in the effectiveness of fisheries management and should be analyzed as part of the environmental analysis.”</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The Preferred Alternative now includes a limited permit issuance (15), a proposed White Llist of 31 fish and 4 invertebrates that can be collected, limits collection to the use of fine mesh nets, and includes individual catch quotas by species for the species on the White List, providing a hard upper limit on the number that can be collected in a given year. Under the Preferred Alternative, collection is limited to 4.5% or less of any population estimate. This provides a total allowable catch limits for all species that would be collected, including the Flame Wrasse. The Preferred Alternative no longer includes an expansion of the Waikiki MLCD</p>
Sierra Club	<p>Aloha,</p> <p>These comments are prepared by the Conservation Committee of Sierra Club, Hawaii Island Group, on behalf of the members and supporters of the Sierra Club that reside in the Hawaiian Islands.</p> <p>This DEIS fails to identify affected parties, omits fundamental critical analyses, contains multiple inaccuracies, misrepresentations, and fails to address constitutionally protected rights of our resident citizens. If the Draft were to be accepted, the NO Action Alternative is the only acceptable proposal.</p>	<p>Your comment has been forwarded to the decision makers.</p>

Commentor	Comment	Response
Sierra Club	<p>Sierra Club concurs with DLNR’s mission to “Enhance, protect, conserve and manage Hawai’i’s unique and limited natural, cultural, and historic resources held in public trust for current and future generations of the people of Hawai’i nei, and its visitors, in partnership with others from the public and private sectors.” https://dlnr.hawaii.gov The legislature has decreed it the “policy of the State” that DNLN and other agencies must “[c]onserve natural resources . . . by preserving or augmenting natural resources, and by safeguarding the State’s unique natural environmental characteristics”¹ The Agency must also “[e]ncourage management practices which conserve . . . all natural resources,” and encourage all individuals “to fulfill the responsibility as trustees of the environment for the present and succeeding generations.”² In enacting HEPA, the State legislature found “that the quality of humanity’s environment is critical to humanity’s well-being, [and] that humanity’s activities have broad and profound effects upon the interrelations of all components of the environment.” Chair Suzanne Case stated, after the preceding Environmental Assessment was found insufficient, that “The scope of our review of each commercial aquarium permit EA was thorough. The EIS process for commercial aquarium permits requires an even more in-depth analysis of all available science and data. It will also give interested parties the opportunity to offer additional documentation and comment.”</p>	<p>Your comment has been forwarded to the decision makers.</p>
Sierra Club	<p>1) The applicant, however, admits that data to defend the proposed “take” of our public trust resource is non-existent. (See page 19 of the document): “it is unknown which, if any, species are experiencing population declines, as population trend data is not available for the fish species analyzed in this EIS for the island of O’ahu.” A key ‘study’ that is referred to over and over again (Ochavillo and Hodgson - 2006) turns out to be nothing more than a field guide for aquarium collecting in the Philippines, certainly not a ‘gold standard’ peer reviewed study. The document referenced was funded by the Transforming the Marine Aquarium Trade (TMAT) Project and the International Finance Corporation- Global Environment Facility, Marine Aquarium Market Transformation Initiative in cooperation with the Marine Aquarium Council and the Community Conservation Investment Forum. The species described in the referenced document’s “natural mortality models” used to estimate a general “rule of thumb” are not found in Hawaii. And yet, that is precisely what they would pass off as “the best available science”. It becomes the linchpin for many of the dubious thresholds for ‘sustainability’ of individual species. In it, a wide range of 5%-25% was cause for alarm by the receiving agency (DLNR/DAR) scientists. The proposing consultant has not complied with the agency’s directive to clarify how its interpretation and latitude can be justified to the species level.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative limits collection to less than 4.5% of the population estimate of any species, a value below the lower end of sustainable collection. Additional citations on sustainable collection have also been added to the EIS.</p> <p>Of the 31 fish species on the proposed White List, 18 would be collected at <1% of the population, 5 would be collected at <2%, 3 would be collected at <4% and 2 would be collected at up to 4.5% of their population estimate.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Sierra Club	While acknowledging that at least four significant multi-species barriers limit dispersal along the length of the island chain, and that species that appear capable of extensive dispersal (such as Yellow Tang and Kole) show significant population differentiation within the Hawaiian Archipelago, the applicant provides only a vague statement regarding possible replenishment of O'ahu specific populations through the seeding from protected Fish Replenishment Areas (FRA) : "It is assumed that this would also be applicable to the smaller island of O'ahu." (Page 32)	Your comment has been forwarded to the decision makers.
Sierra Club	<p>Species of Greatest Conservation Need (SGCN) are identified in Hawai'i's State Wildlife Action Plan (SWAP) but are not threatened, endangered, or otherwise legislatively protected species. However, recognizing the need to take action to protect endemic species, the DLNR identified Hawai'i's indigenous SGCN in Exhibit 1 of Hawai'i Administrative Rules Chapter 124. The SWAP (2015) addresses these species and identifies the following actions to ensure the species conservation and sustainability:</p> <p>1. Conservation Actions: The goals of conservation actions are to not only protect current populations, but to also establish further populations to reduce the risk of extinction. Commercial licenses are required for aquarium collectors. In addition to common statewide and island conservation actions, specific actions include: Restoration of habitat; and, Maintaining healthy populations with appropriate fishing regulations and education. 2. Monitoring: Continue to survey for populations and distribution in known and likely habitats. 3) Research Priorities: Improve understanding of factors affecting the species population size and distribution; and, Support aquaculture research to develop captive breeding for species used in the aquarium trade.</p> <p>We see no sincere effort in the DEIS to address or mitigate for these conditions. Three of the fish species taken and reported by O'ahu aquarium collectors are listed as Species of Greatest Conservation Need (SGCN), are identified in Hawai'i's State Wildlife Action Plan (SWAP).</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>One of the SGCN species previously collected is not on the Proposed White List and would not be collected under the new Preferred Alternative. The Bandit Angelfish and Fisher's Angelfish, both SGCN, remain on the Proposed White List.</p>
Sierra Club	Perhaps it would be feasible to ascertain the effect aquarium collecting would be on the 238 fish species collected from O'ahu reefs if reporting were accurate and transparent, but some data reporting fall under the DAR confidentiality statute, in which totals are not released publicly. (Pages 37 and 67) We are left to trust the consultant about the accuracy of the statements.	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative is limited to 31 fish species, and would not include collection of the other 207 fish species that had historically been collected. The DAR only provided publicly available data to the Applicant, though specific fishers involved in the EIS chose to waive their right to confidentiality and those data are included in the EIS.</p>
Sierra Club	2. The document's failure to assess the cumulative impact that the proposed preferred alternative would have include global warming, ocean acidification, increased frequency of coral bleaching, landward run-off and pollution, other legal forms of fishing tending to overfishing, and the general disruption of under-appreciated ecological services by living marine communities. The preferred alternative would allow virtually unregulated taking, while claiming that removal of a large quantity of the dwindling reef herbivores would have "no significant cumulative impact".	<p>Your comment has been forwarded to the decision makers.</p> <p>Additional information on climate change and herbivores has been added to the FEIS. Furthermore, the new Preferred Alternative includes a proposed White List and individual catch quotas for the 31 species which would limit the total allowable catch.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Sierra Club	<p>3) This document was predicated on complaints regarding the open-ended “take” that permittees had been entitled to under the past regulatory regime. The new proposal suggests that a check on unlimited take is to select a limited number of unidentified collectors (20). Like the West Hawaii FEIS rejected by the Board in May, this document forces the hand of DLNR, without providing an opportunity for substantive conditions on self-selected permittees. This has been presented within the ‘preferred alternative’. But such an arrangement leaves the issue of unlimited taking unaddressed on the majority of 238 species of marine organisms now being targeted by the industry. Nor does the issuance of permits under the proposed scheme preclude collectors from ranging far and wide throughout the state and not be tied to Oahu. As a guide for decision making, this still leaves decision-makers adrift.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative includes a proposed White List and individual catch quotas for the 31 species which would limit the total allowable catch. The Preferred Alternative includes an assumption that a permit condition would be added to each permit limiting the geographic scope to the island of Oahu, preventing collectors from collecting elsewhere.</p> <p>The following language has been added to the FEIS: The 15 permittees covered by this FEIS may file individual permit applications with Department of Land and Natural Resources (DLNR) after the submission of this FEIS to Office of Environmental Quality Control (OEQC) and DLNR. DLNR will review such applications and take action upon them if this FEIS is accepted.</p>
Sierra Club	<p>There are no proposed reductions in bag limits beyond the existing Oahu bag limits, plus one new bag limit for the flame wrasse. However, if the bag limits were to be applied as described in the DEIS ‘preferred alternative’, the populations of O’ahu’s remaining reef fish could plummet to extinction over the first year of collecting. In fact, the bag limits would allow the total island-wide population of yellow tangs to be wiped out in 4 months, and Achilles Tang and Flame wrasse to be wiped out in less than one month.</p> <p>[see comment for EIS PREFERRED ALTERNATIVE APPLIED TO OAHU AQUARIUM TRADE BAG LIMITS Table]</p> <p>The DEIS claims that the ‘preferred alternative’ would provide for a sustainable take of 5% - 25% of a population (annually). To achieve the putative ‘sustainable take’ the proposed “bag limits” should be adjusted, and applied only to the trip collection zones, and not the entire island-wide population.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative includes a proposed White List and individual catch quotas for the 31 species which would limit the total allowable catch for any species to less than 4.5% of the population estimate.</p>
Sierra Club	<p>3. Although the FEIS includes a Cultural Impact Assessment (CIA) as an Appendix, the document itself is essentially dismissive of the cultural impacts to practitioners and their communities. The document references the West Hawaii Regional Fishery Management Area, but does not reflect the incorporation of Hawaiian culture described therein. While acknowledging that commercial aquarium fishing “remains a point of conflict “ and that “many of the fish species collected by commercial aquarium fishers have a cultural significance in Hawai’i, and there are “distinct differences between the traditional Native Hawaiian approach to fish harvest and management and the western model approach” the DEIS claims that there would be no significant adverse direct or indirect cultural resource impact under any of the proposed alternatives.</p> <p>This document fails to follow in good faith the directive to incorporate the ecological concerns of the host culture and the traditional wisdom associated with pono’ fishing practices. It is interesting to note that of the 42 or so individuals sought out on O’ahu for the mandated cultural survey, only 6 chose to cooperate, and of them few gave tacit approval for the extractive industry as it presently exists.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The cultural resource discussion in the FEIS has been updated to disclose potential impacts due to the belief of some Hawaiian’s that any collection, regardless of impact on populations, may be a cultural impact.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
	<p>In addition, the history of overwhelming disapproval by the general public has never been adequately addressed in any socio-economic study.</p>	
Sierra Club	<p>4. Part of the public disgust with the industry has been the lack of effective enforcement and verifications of any regulatory standards such as thorough collection reports and shipping protocols. Waste of public trust resources (mortality rates estimated in the 10 to 20% range) and inhumane treatment of living organisms merely for private ephemeral ornamentation is dismissed as irrelevant. A recent poaching case on Hawaii Island vividly demonstrates the problem of inadequate monetary penalties being applied by a judicial system that is unconcerned about the handicaps and ambiguities under the current system which has allowed unrestricted takings even during the court ordered moratorium AND the business restrictions under 'COVID-19' proclamations. They persist due to the lucrative business prerogatives overwhelming all social norms and expectations for justice. But again, this applicant's EIS disclaims any admission and responsibility of the industry for a host of unlawful abuses.</p>	<p>Your comment has been forwarded to the decision makers.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Sierra Club	<p>5. Future serious impacts to the coastal near-shore habitat due to climate change are ignored in this document, and the proposed action alternatives do not address mitigation for the anticipated loss of coastal habitat. The FEIS preferred alternative proposes to exploit a public resource for the economic benefit of an unidentified few, at the expense of the subsistence communities, the resident public, the visitors, and the health of the state as a whole. A recent DAR announcement appealed to subsistence and recreational reef fishers to refrain from taking herbivorous fish off the reefs. This tacit recognition of the vital symbiotic service they perform in this delicate coral reef ecosystem is overdue and yet completely absent in the DEIS. The 'preferred alternative' in the document would allow (with one exception) for unlimited takes by unidentified permittees of many of these same important organisms. Any declines whether driven by, or contributed to, by the trade are simply not justified by the logic and necessity of sustainability. Likewise, the consultant fails to account for the myriad ecological services of herbivores and other reef specialists even though these creatures are all nature's essential "tools" of reef recovery and health. (Please note the photographic image following the comments. It depicts the essence of biotic community and mutuality; that fails to register anywhere in this Environmental Impact Statement!) [see copy of comment for referenced image]</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>Additional information on climate change and herbivores has been added to the FEIS.</p>
Sierra Club	<p>In sum, the misleading assumptions and gross inaccuracies in this document have been and will continue to be challenged by Hawai'i residents, reputable conservation organizations, and ultimately, the courts. The proposal that taking unlimited numbers of marine animals and selling them to the aquarium pet trade outside Hawai'i would have no significant impacts on cultural, biological, and socioeconomic resources is preposterous. We believe that the aquarium collection industry undermines the public trust for private gain, harming the animals, the habitat, the host culture, the residents, and visitors.</p> <p>We acknowledge the work and testimonies of the many others providing more detailed analysis and discussion. We look forward to the day when the state agencies can freely and firmly uphold the ideals of our conservation heritage.</p> <p>Thank you for the opportunity to comment.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative includes a proposed White list of 31 species which could be collected and individual catch quotas limiting collection of those species to less than 4.5% of a species estimated O'ahu population.</p>
Angela Huntemer-Sidrane	<p>Dear BLNR members and Chair Case,</p> <p>In an attempt to organize my comments I have quoted and italicized my responses. Boldface was added in an attempt to clarify and underlined to draw attention. I apologize for any errors or shortcomings. Thank you for taking the time to read.</p>	<p>Your comment has been forwarded to the decision makers.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Angela Huntemer-Sidrane	<p>“The HEPA defines cumulative impacts as the impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions.”</p> <p>This document does not adequately address the cumulative impacts of climate change, particularly ocean acidification and increased storm action. Coral bleaching is only one piece of the puzzle here. This document does not adequately address the cumulative impacts of other fisheries and stressors on the nearshore marine environment and/or the ocean in general.</p> <p>Regarding numbers used to estimate impact, due to:</p> <ol style="list-style-type: none"> 1/ self-reported / declared catch numbers, 2/ confidentiality of catches, 3/ no data on morality within the first 24 and 48 hours of captivity, 4/ lack of any reliable numbers for other near-shore fisheries, 5/ a history of unlawful taking, <p>-the numbers reported in the EIS are virtually meaningless for the purposes of understanding impacts.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>Additional information on climate change has been added to the EIS, including details on ocean acidification and increased storm action.</p> <p>Regarding the comment on numbers used:</p> <ol style="list-style-type: none"> 1. As stated in the EIS, analysis by the DAR (2019a) has shown that actual underreporting of catch is small, with a 3.5% difference between the number of animals reported caught and sold in 2010 and a 0.4% difference in 2014, which likely represent live releases and mortality. 2. The confidentiality of catches, and Hawai'i's confidentiality law, is explained in Section 5.1 of the EIS. Twenty fishers did release their data for analysis. The new Preferred Alternative relies on individual catch quotas to calculate impacts, rather than historic catch, thereby removing this potential source of bias. 3. Data on mortality has been added to Section 5.4.2 of the EIS. 4. The Applicant used the best available data to calculate cumulative impacts from other nearshore fisheries. 5. The cumulative impact of poaching is addressed in Section 5.4.3.6 of the EIS.
Angela Huntemer-Sidrane	<p>“At present, there is no provision for the verification of submitted reports, so any catch numbers and dollar amounts should be regarded as minimum, not absolute values (DAR 2018a). Predictions rely heavily on two studies, one for population estimates, CREP (2018), and the other for the percentage of marine life that can be extracted sustainably, (Ochavillo and Hodgson 2006).</p>	<p>Your comment has been forwarded to the decision makers.</p>
Angela Huntemer-Sidrane	<p>MITIGATION:</p> <ul style="list-style-type: none"> • Minimizing impact • Limiting the degree or magnitude of action • Rectifying impact • Repairing, rehabilitating, restoring • Reducing or eliminating impact over time • Preservation and maintenance activities • Compensating for the impact • Replacing or providing substitutes <p>Regarding potential mitigation measures, there was no mention of:</p> <ol style="list-style-type: none"> 1/reducing pre-retail mortality 2/limiting the degree or magnitude of action 3/increasing captive breeding 4/any other attempt to reduce and limit impact overall. 	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative includes creation of a White List of 31 species which can be collected (no other species would be collected) and imposes individual catch quotas on those species, thereby reducing and limiting impacts. Section 3.7 now includes an alternative related to captive breeding.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Angela Huntemer-Sidrane	<p>Regarding questions that needed to be have been answered by the EIS:</p> <p>1. The effects of the Commercial Aquarium Fishery on Flame Wrasse (<i>Cirrhilabrus jordani</i>) and Yellow Tang (<i>Zebrasoma flavescens</i>) and the estimated rate of annual take.</p> <p>- See above on figures used. There is no way to estimate effects if the correct numbers for population, extraction and reproductive are not available.</p>	<p>Your comment has been forwarded to the decision makers.</p>
Angela Huntemer-Sidrane	<p>2. The adequacy of the analysis presented in the DEA, including but not limited to removal and replenishment rates for vulnerable species; specifically, how is the estimated sustainable range of 5% to 25% annual take of the estimated total population arrived at, and should the threshold be 5% or 25%.</p> <p>“Ochavillo and Hodgson (2006) suggest collection of between 5% and 25% is sustainable for various reef species in the Philippines that are similar to those found on O’ahu (e.g., tang, wrasse, butterflyfish, angelfish, triggerfish). Similar data for the species collected on O’ahu are not available to determine DRAFT ENVIRONMENTAL IMPACT STATEMENT Environmental Consequences 79 species-specific sustainable thresholds; therefore, this research represents the best available science.”</p> <p>- <i>This is not data on what is sustainable and what is not. These are suggestions. The document clearly says “Similar data for the species collected on O’ahu are not available to determine DRAFT ENVIRONMENTAL IMPACT STATEMENT Environmental Consequences...” If that is the best available science, we clearly need more.</i></p> <p>- <i>The entire DEIS document relied pretty much exclusively on Ochavillo and Hodgson (2006). There is no detail therein regarding actual population impact or replenishment rates for the impacted areas on Oahu. Oahu has typically experienced more stressors than the Island of Hawaii for example but this DEIS relies more heavily on data from other places and almost none from Oahu. There is no answer to the question of how or why a rate of extraction should be, or could be 5% to 25%.</i></p> <p>- <i>The extrapolation of figures from a single study, from in the Philippines, referred to over and over again, is clearly inadequate in this regard.</i></p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative would limit collection to less than 4.5% of the estimated population of any of the Proposed White List Species. This value is 10% below the lower end of the 5% to 25% range previously used (90% of 5% = 4.5%).</p>
Angela Huntemer-Sidrane	<p>3. The interpretation of data presented in the DEA, including the analysis of NOAA NMFS Coral Reef Ecosystem Project (CREP) data versus DLNR Division of Aquatic Resources West Hawai’i Aquarium Project (WHAP) data.</p> <p>- <i>Comparisons of data from CREP and WHAP may, or may not relate to Oahu’s nearshore marine ecosystem for obvious reasons.</i></p>	<p>Your comment has been forwarded to the decision makers.</p> <p>WHAP data are not applicable to Oahu, but the NOAA data used are Oahu-specific.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Angela Huntemer-Sidrane	<p>4. Conservation measures to minimize or avoid impacts to target species, and specifically, whether other alternatives might be proposed to minimize or avoid impacts other than the two presented of no action, with no Aquarium Permits issued, and the preferred alternative of programmatic issuance of Aquarium Permits for the Island of Oahu - such as consideration of specific management measures for Flame Wrasse, Yellow Tang, or other species.”</p> <ul style="list-style-type: none"> - <i>This study failed to consider many things. One of the most glaring is a lack of “no aquarium collection on Oahu” as an alternative. The No Action alternative would continue to allow unregulated extraction of wildlife from reef habitats which runs contrary to the mission of DLNR.</i> - <i>The action regarding the Waikiki MLCD is indicative of a complete lack of effort in this regard. The aquarium collectors are not the ones mitigating in this regard, it is not theirs to give away, this is an action of the State. This is an action that the State could take, along with others, to protect coral reef habitats.</i> - <i>Regarding Alternatives Dismissed:</i> “Full moratorium on commercial aquarium collection - This alternative was dismissed because it does not meet the Applicant’s need to continue commercial aquarium fishers’ livelihoods.” - <i>This is not an adequate reason for dismissing this alternative. Livelihoods can change, and sometimes they must, as evidenced by the impacts of COVID 19. Reef habitats cannot.</i> - <i>Uncertainty regarding population estimates are repeated in proposed alternatives and are dismissed. Uncertainties are no different in the preferred action.</i> “Moratorium on species experiencing population declines - This alternative was dismissed because it is unknown which, if any, species are experiencing population declines, as population trend data is not available for the fish species analyzed in this EIS for the island of O’ahu. Therefore, this alternative could not be meaningfully developed or analyzed.” - <i>This could pretty well sum up the lack of data available.</i> 	<p>Your comment has been forwarded to the decision makers.</p> <p>The FEIS has been revised to include a new No Action Alternative which takes into account recent changes in CML issuance, and therefore no aquarium collection would now occur under the No Action Alternative. The No Action Alternative is now equivalent to a full moratorium on commercial aquarium collection alternative.</p>
Angela Huntemer-Sidrane	<ul style="list-style-type: none"> • Significance Criteria #1 - Is the annual take of cumulative numbers of fish as a percentage of the estimated population an irrevocable loss or destruction of said populations? - <i>The answer to this question remains unknown given the data (or lack thereof) presented.</i> 	<p>Your comment has been forwarded to the decision makers.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Angela Huntemer-Sidrane	<p>• Significance Criteria #2 - To what extent does the take of aquarium fish curtail the use of the environment, including: Aquatic invasive algae control Tourism industry Integrity of diverse aquatic ecosystems</p> <ul style="list-style-type: none"> - <i>Algae control is asserted to be affected to a negligible degree.</i> - <i>Places such as Palau have increased their value on the tourism front by banning aquarium collection and commercial fishing. The modern, sophisticated traveler is attracted to places that values protection over extraction.</i> - <i>There can be no doubt that, given the pressures being placed on all ecosystems today that any removal of "rivets" in said systems is to be discouraged. Although this concept is central to ecosystem management the authors of the DEIS are reticent to point to it.</i> 	Your comment has been forwarded to the decision makers.
Angela Huntemer-Sidrane	<p>• Significance Criteria #3 - Does the take of aquarium fish conflict with the state's long-term environmental goals?</p> <ul style="list-style-type: none"> - DLNR Mission Statement: 'Enhance, protect, conserve and manage Hawai'i's unique and limited natural, cultural, and historic resources held in public trust for current and future generations of the people of Hawai'i nei, and its visitors, in partnership with others from the public and private sectors.' In pursuit of this mission, the DLNR has compiled, analyzed, and reported on the many facets of Hawai'i's socioeconomic, cultural, physical, and biological resources that make up the affected environment. The following sections rely heavily on the DLNR's Hawai'i's Comprehensive Wildlife Conservation Strategy (CWCS; Mitchell et al. 2005) and the DLNR's Hawai'i's State Wildlife Action Plan (SWAP; DLNR 2015), with numerous other sources cited as appropriate." - <i>This document "relies heavily" on the DLNR documents mentioned above but fails to answer the questions that DLNR posed. The onus is on the applicant, not the approving agency, to provide the answers.</i> 	Your comment has been forwarded to the decision makers.
Angela Huntemer-Sidrane	<p>• Significance Criteria #4 - To what extent does the take of aquarium fish impact cultural practices in the state?</p> <ul style="list-style-type: none"> - <i>That remains unknown. What we do know is, after approximately 100 pages of an interesting Cultural Impact Assessment, that extracting creatures from the reefs for ornamental purposes, does not have any relationship to Hawaiian traditions. It may in fact run contrary to them.</i> 	<p>Your comment has been forwarded to the decision makers.</p> <p>The cultural resource discussion in the FEIS has been updated to disclose potential impacts due to the belief of some Hawaiian's that any collection, regardless of impact on populations, may be a cultural impact.</p>
Angela Huntemer-Sidrane	<p>• Significance Criteria #8 - What is the cumulative impact of the take of aquarium fish when combined with: Commercial take of aquarium fish using other legal methods Recreational take of aquarium fish Commercial and non-commercial take of aquarium fish for consumption (particularly the Achilles Tang and Kole)</p> <ul style="list-style-type: none"> - <i>These questions remain unanswered. There is insufficient data on these activities on Oahu.</i> 	<p>Your comment has been forwarded to the decision makers.</p> <p>The Applicant used the best available science and data provided to evaluate cumulative impacts.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Angela Huntemer-Sidrane	<p>“The commercial aquarium fishery has contributed an average of \$2,172,028 (inflation-adjusted 2019 dollars) to the State’s economy over the past 18 years (Table 4-1). According to DAR (2019a), the marine aquarium fishery is the most economically valuable commercial inshore fishery in the State of Hawai’i.”</p> <p>- <i>So lacking any cultural significance, this fishery is valuable only financially to the recipients of any permits, collectors (legal and illegal) without permits, and dealers and retailers in reef wildlife used for ornamental purposes.</i></p>	<p>Your comment has been forwarded to the decision makers.</p> <p>Indirect socioeconomic impacts are analyzed in Section 5.2.2 of the EIS.</p>
Angela Huntemer-Sidrane	<p>Consider these references to uncertainty: “For the Yellow Tang, all alternatives under consideration may have a significant negative cumulative impact if the magnitude of the <u>other cumulative impacts, which cannot be quantified at this time</u>, when added to commercial aquarium collection, results in a significant population decline.</p>	<p>Your comment has been forwarded to the decision makers.</p>
Angela Huntemer-Sidrane	<p>“It is acknowledged that, in addition to the number of fish collected, incidental mortality may occur in fish that are released. However, there are <u>no data available to analyze these impacts</u>, and it is therefore assumed that the magnitude of these impacts would not change from what has historically occurred.”</p>	<p>Your comment has been forwarded to the decision makers.</p>
Angela Huntemer-Sidrane	<p>“Sixteen of the 20 top collected species would be collected at a rate of less than 1% of their population annually (Table 5-2). Of the remaining four species, the Potter’s Angelfish and Kole would both be collected at less than 2% of their population annually (Table 5-2). In addition, the IUCN has noted that, while popular, commercial aquarium collection is not considered a major threat to the Kole, and there is no evidence of declines from harvesting (McIlwain et al. 2012b), and that the collection of Potter’s Angelfish for the aquarium trade is not considered to be impacting the global population (Pyle and Myers 2010a). The Flame Wrasse would be collected at a rate of 4.1% to 8.9% of the CREP population estimate; however, as described in Section 4.4.4.6, Kane and Tissot (2007) found densities of Flame Wrasse to be up to 1,000 times greater at depths below the CREP survey limits. Therefore, it is not possible to know the exact proportion of the population that would be collected for this species, though it is assumed to be less than 1% of its overall population.</p> <p>- <i>How can we accept estimated percentages of populations - but no comprehensive data exists on actual populations?</i></p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The EIS includes estimated population sizes provided by PIFSC (previously CREP), which are explained in Section 4.4.3.1 of the FEIS. Section 5.5.1 summarizes the percentage of each population which would be collected by Alternative.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
<p>Angela Huntemer-Sidrane</p>	<p>“The last species, the Yellow Tang, would be collected at a rate of 12.6% to 27.5% of the CREP population estimates (Table 5-2), in large part due to the higher proportion of the collection that this species represents under the No Action Alternative when compared to conditions prior to the October 2017 ban on Aquarium Permits (59.2% of the collection without the use of fine mesh nets, compared to 7.0% under the PreAquarium Collection Ban Alternative).”</p> <p>“However, there is uncertainty about the percent of the population that would be collected due to uncertainty in the population estimate. A recent study (Heenan et al. 2017) found that CREP data may underestimate some population estimates due to species’ behavior; specifically, the SCUBA gear used by CREP surveyors leads to significantly lower counts of target fish species by divers when compared to divers using closedcircuit re-breathers (CCR), which do not emit noisy and conspicuous bubbles. Therefore, it is conceivable that many of the impacts calculated in this DEIS are overestimates, as the populations of reef fish may be higher than CREP surveys report. Lindfield et al. (2014) found that, within areas open to fishing (e.g., not MPAs), bubble-free survey methods may record up to 260% higher fish abundance. If this estimate were applied to the Yellow Tang, the actual population could be as large as 562,962 Yellow Tang, in which case the collection of 27,335 to 59,592 per year would represent 4.9% to 10.6%, which falls within the 5% to 25% sustainable threshold (Ochavillo and Hodgson 2006).”</p> <p>- Too much uncertainty. If the data is not there, decisions for take cannot be made.</p>	<p>Your comment has been forwarded to the decision makers.</p>

Commentor	Comment	Response
<p>Angela Huntemer-Sidrane</p>	<p>An “intermezzo” on invertebrates: “Between 2000 and 2017, only 44 species were reported by enough permits (>2 permits reporting from each area of collection during each year of collection) to determine total number of individuals collected. Collection areas with less than three permits reporting fall under the DAR non-disclosure agreement, in which totals are not released publicly (Section 5.1). A total of 2,971,008 individual marine invertebrates have been reported under Aquarium Permits since 2000 on the island of O’ahu, which is an average of 165,056 invertebrates per year, and a maximum of 419,804 (Table 4-5). Of the invertebrates collected from O’ahu, 89.7% (2,664,728 individuals) reported represent just three species; hermit crabs (species not specified), Feather Duster Worms, and Zebra Hermit Crabs (Table 4-5). An additional 41 species account for the other 10.3% of invertebrates reported collected (excluding non-disclosed data) (DAR 2018a). While data from 2018 (Table 4-5) show a decrease in collection of invertebrates, it is unclear whether this decrease is related to the ban on fine mesh nets. The decrease in reported collection of invertebrates could be an artifact of data confidentiality rules, or due to reporting of invertebrates via a CML Catch Report rather than the Aquarium Catch Report (see Section 4.4.6). Data on CML Catch Reports are not available at this time. Given that collection of invertebrates is not an activity governed by Aquarium Permits, the issuance or nonissuance of Aquarium Permits is not anticipated to affect the number of individuals or the species of invertebrates collected over the 5-year analysis period. Therefore, it is anticipated that these historic collection levels would continue annually over the 5-year analysis period under any of the four alternatives under consideration, for a total of 825,280 to 2,099,020 invertebrates collected over the 5-year analysis period.” - <i>The uncontrolled and unmonitored collection of invertebrates needs to be stopped.</i></p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative limits invertebrate collection to just four species. Due to changes in the CML issuance, collection of other invertebrates for commercial aquarium purposes is no longer allowed. The new Preferred Alternative includes an annual limit on the four invertebrate species which would still be collected, and no collection would occur for any other species.</p>
<p>Angela Huntemer-Sidrane</p>	<p>“For the 1 remaining species, the <u>Flame Wrasse</u>, it is estimated that approximately 28% to 61% of the known <u>Flame Wrasse population would be collected annually</u>. However, as described in Section 4.4.4.6, Kane and Tissot (2007) found densities of Flame Wrasse to be up to 1,000 times greater at depths below the CREP survey limits. <u>Therefore, it is not possible to know the exact proportion of the population that would be collected for this species, though it is assumed to be less than 1% of its overall population.</u>” - <i>Here are two different habitats. A species cannot be extirpated from one and assumed to be healthy, especially when there is so much uncertainty regarding population.</i></p>	<p>Your comment has been forwarded to the decision makers.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Angela Huntemer-Sidrane	<p>SGCN</p> <p>“Psychedelic Wrasse ...and Fisher’s Angelfishboth of these species tend to occur at depths greater than those surveyed by CREP. Therefore, in all likelihood, the actual populations of Psychedelic Wrasse and Fisher’s Angelfish on O’ahu are substantially greater than that reported by the CREP data, and the actual percentage of the populations removed by aquarium collection is <u>likely</u> lower than reported in this DEIS. Additionally, for the Fisher’s Angelfish, Pyle and Myers (2010b) reported that aquarium collection is localized and is not considering to be <u>impacting the global population.</u>”</p> <p>- <i>What about the local population?</i></p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The EIS includes estimated population sizes provided by PIFSC (previously CREP), and therefore the impacts analyzed in the EIS are to the local population. Pyle and Myers (2010b) did not evaluate the local population. Furthermore, the Psychedelic Wrasse is not on the proposed White List, and would therefore not be collected under the Preferred Alternative.</p>
Angela Huntemer-Sidrane	<p>“Due to the complexity and difficulty of collecting the Bandit Angelfish, its population will <u>likely continue to not receive significant pressure from the commercial aquarium fishery.</u> As noted in Section 4.4.5.2, the overall global population is considered stable (Pyle et al. 2010b).</p> <p>- <i>Again “likely” and what about the local population?</i></p>	<p>Your comment has been forwarded to the decision makers.</p>
Angela Huntemer-Sidrane	<p>One cannot possibly estimate or predict the scale of “additional collection from other fishers without Aquarium Permits” because so many unknown variables drive the demand for reef wildlife by aquarium owners.</p>	<p>Your comment has been forwarded to the decision makers.</p>
Angela Huntemer-Sidrane	<p>The Proposed Action is a mess of uncertainties and omissions:</p> <p>Given the proposed bag limits, who is to say that a bag inspected by a DOCARE officer is not the second or third bag collected by the individual permittee for the day? There is a lack of punitive or corrective fines and confiscations of equipment for violations. The Big Island poaching case, May 2020, is a sad example of this. There must be a policy change to collect fines for infractions to the fullest extent of the regulations that exist already. Given the lack of resources for enforcement, operations should be kept simple, no nets, no bags, no collection of live fish for decoration. Thank you for your time and consideration.</p>	<p>Your comment has been forwarded to the decision makers.</p>
Mālama Pūpūkea-Waimea (MPW)	<p>Aloha Director Case and Board Members,</p> <p>Mālama Pūpūkea-Waimea (MPW) is a Hawai’i non-profit organization founded on the North Shore of O’ahu in 2005. Our mission is “working to replenish and sustain the natural and cultural resources of the Pūpūkea and Waimea ahupua’a for present and future generations through active community stewardship, education, and partnerships.” For sixteen years, we have focused our stewardship and education efforts on the Pūpūkea Marine Life Conservation District (MLCD), one of only three MLCDs on O’ahu.</p> <p>We appreciate the opportunity to share our concerns about the Draft Environmental Impact Statement (DEIS) prepared by the Pet Industry Joint Advisory Council (PIJAC) for the proposed Commercial Aquarium Permits and Commercial Marine Licenses for O’ahu (“proposed action”) and ask that the Department reject the DEIS as inadequate.</p>	<p>Your comment has been forwarded to the decision makers.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
<p>Mālama Pūpūkea-Waimea (MPW)</p>	<p>Overview As a preliminary matter, we ask that the DEIS clarify the prohibitions and boundaries of the Pūpūkea MLCD. First, the DEIS should more clearly emphasize that no take of any of the proposed target fish is allowed, now or under the applicant’s proposal, from the Pūpūkea MLCD. Second, Figure 1 on Page 20 should be redrawn and enlarged to more accurately demarcate the current boundaries of the Pūpūkea MLCD, specifically because of the applicant’s proposed alternative that differentiates between Commercial Marine License (CML) area 414, which overlaps the MLCD, and 405, which is the adjacent, continuing along the North Shore to Ko’olauloa. See Page 165, which further supports the need for visual and written clarification in the DEIS (“a small portion of the nearshore waters located in Pūpūkea Ahupua’a at the westernmost end of Ko’olauloa is included within FRCA 414 and is thus included in the current [CIA] study area.”)</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The following language has been added to Section 3.0 of the FEIS: Under any alternative, the existing policies and controls described in Section 1.2 would remain in effect, including the MLCDs described in Section 1.1.</p>
<p>Mālama Pūpūkea-Waimea (MPW)</p>	<p>Although the applicant’s proposed action would not directly affect the Pūpūkea MLCD because aquarium collection is prohibited in the MLCD, Haleiwa Harbor is one of the four harbors on O’ahu used by the industry (Page 47: “4.3.2 Physical Aspects of the Commercial Aquarium Fishery”), and therefore the MLCD is subject to permittees “accidentally” or illegally coming into the MLCD waters to collect from boats along this shoreline. Poaching continues to be a major problem in the Pūpūkea MLCD given the abundance of marine life within its boundaries and the nearly unrestricted access. In addition, MPW is concerned about the overall welfare and sustainability of the nearshore marine ecosystems of the North Shore of O’ahu in particular and the future of coral reef ecosystems throughout the archipelago. In short, given the inadequacy of information displayed in the DEIS that would allow DLNR to uphold its public trust responsibilities regarding the commercial take of the targeted reef fish, we support the No Action Alternative (Page 31) – that is, we support the continued ban on commercial aquarium take with fine mesh nets.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The EIS includes an analysis of poaching in the cumulative impacts analysis. Under any of the alternatives analyzed, collection within the Pūpūkea MLCD would not be permitted.</p>

Commentor	Comment	Response
<p>Mālama Pūpūkea-Waimea (MPW)</p>	<p>Before addressing some of the specific points in the DEIS, we share three overarching points. <i>First, MPW finds it unusual, confusing, if not improper, to have a private party such as PIJAC prepare an EIS for what is a state-administered program of permits.</i> Under H.R.S. Chapter 343, and H.A.R. 11-200 (2018, revised) the commercial aquarium permit program would best be characterized as an “agency” not an “applicant” program or action. Is the “action” the “PIJAC’s application for 20 commercial aquarium permits”? Or, is the “action” the “DLNR’s program of issuing commercial aquarium permits”? Looking at the alternatives proposed, which are really <i>policy choices</i>, not private-applicant “give me a particular permit” choices, the confusion grows over the applicant v. agency roles. The options of limiting the overall number of permits, closing down certain zones, expanding an MLCD, and other proposals are governmental policy choices, not something that a private applicant should be the driving force behind proposing or analyzing in an applicant EIS. Thus, the essential framing of the DEIS seems wrong - and the involvement of a trade organization and private consultants essentially doing the HEPA work of a state agency when the focus is on the <i>entire program of permits</i> seems out of sync with the letter and spirit of HEPA. Given the statewide significance of aquarium collection permits, DLNR should have either prepared the DEIS itself or have a neutral entity prepare the DEIS to assist the public understanding of these issues and to ensure that DLNR carries out its public trust responsibilities to protect the public trust nearshore reef resources at stake. An EIS done by DLNR would have, we suspect, taken a different approach to the analysis and alternatives.</p>	<p>Your comment has been forwarded to the decision makers.</p>
<p>Mālama Pūpūkea-Waimea (MPW)</p>	<p>Second, the entire DEIS is riddled with indications that data are inadequate to make a decision on the permit program for various reasons including the undue restrictions placed by DLNR on sharing CML take information. We would support DLNR using its departmental discretion to remove data restrictions on public access to take reports from CMLs under H.R.S. § 189-3. (Permittee names could still be withheld but the data and locations of take should be public information.) As pointed out below, the DEIS data on “other means” of aquarium collecting and on CML take generally is sorely lacking, creating an overall blurry picture of reef fish depletion on O’ahu and weak understanding of the potential impacts on this island for these target fish (and invertebrate) species, which is contrary to the public trust and the precautionary principle. The secrecy particularly does not make sense given that reef fish are a public trust resource, and that even a single permittee can take an <i>unlimited</i> number of fish and have a big impact on a small area that may have special ecological significance.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The EIS uses the best available data that were provided to the Applicant. The new Preferred Alternative includes individual catch quotas which limit the number of fish that can be collected each year, creates a White List which limits collection to just 31 species, and retains existing daily bag limits would remain in effect.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Mālama Pūpūkea-Waimea (MPW)	<p>Third, PIJAC’s “20 fishers” proposal is – well, fishy. Who are the 20 fishers “who would be issued commercial Aquarium Permits under the Proposed Action.”? See Page 40. Are the permittees pre- determined? By PIJAC? PIJAC knows who they are, and perhaps DLNR knows who they are, but they are not disclosed in the DEIS. Certainly it cannot be up to PIJAC to determine who receives the permits from DLNR. A key purpose of HRS Chapter 343 is disclosure to the public and a DEIS cannot hide the ball. A lot of economic information in the DEIS assumes that all 20 fishers rely on the aquarium collection permits for full-time employment, which is unlikely. (See Page 87 - the preferred alternative would “create a minimum of 20 jobs for the 20 fishers who would have permits.”). This truly odd “pre- selection” and “veil of mystery” over the 20 permittees further confirms that DLNR - not PIJAC - should be preparing the EIS for the commercial aquarium permits.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The following language has been added to the FEIS: The 15 permittees covered by this FEIS may file individual permit applications with Department of Land and Natural Resources (DLNR) after the submission of this FEIS to Office of Environmental Quality Control (OEQC) and DLNR. DLNR will review such applications and take action upon them if this FEIS is accepted.</p> <p>Additional fishers could still apply for Aquarium Permits and CMLs, but would need to conduct their own HEPA review.</p>
Mālama Pūpūkea-Waimea (MPW)	<p>1. Purpose & Need Misframed</p> <p>The focus of DLNR’s aquarium fish collection permit program is, as it PIJAC sees it, focused on propping up the livelihoods of a handful of commercial permittees on O’ahu. But that should not be the focus on DLNR, which manages marine resources for the benefit of the public trust. There is no cultural, sustenance, or ecological “need” to collect fish for display in private aquarium tanks. While there may be a justification to collect these species for educational purposes, for scientific research, or captive propagation – uses that MPW could support, if done sustainably and with proper analysis and regulation -- that is not the core purpose of the proposed action, which is to re-open commercial licenses for collecting targeted fish for captive display in private tanks primarily outside of the islands.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The Purpose and Need in the FEIS has been revised.</p>
Mālama Pūpūkea-Waimea (MPW)	<p>Understandably but improperly, PIJAC focuses only on its clients’ interests (and not the broad public interest), and therefore unduly narrowly describes the purpose of the proposed action as to “ensure that commercial aquarium fish collection” continues through the issuance of 20 permits, and describes the need as “to continue commercial aquarium fishers’ livelihoods.” (Action Summary). See also Page 32: “Applicant’s purpose and need [is] to continue fishers’ livelihoods.”</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The Purpose and Need in the FEIS has been revised.</p>
Mālama Pūpūkea-Waimea (MPW)	<p>The DEIS should disclose the nature of the “20 permittees” including how many of them are truly dependent on this license. See Page 85 (indicating they have other means of livelihoods). The DEIS states that “Commercial aquarium fishers may no longer find it feasible to target aquarium fish and may begin to participate in other fisheries, but this is not possible to quantify at this time.” If these are PIJAC members, the information about alternative livelihoods should be readily available and must be disclosed to have any validity, to allow agency evaluation, and facilitate public participation.</p>	<p>Your comment has been forwarded to the decision makers.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Mālama Pūpūkea-Waimea (MPW)	Moreover, when the DEIS narrows down the economic focus to the difference between the proposed permits and “other means,” see Page 86, it acknowledges that aquarium collectors have been using other legal means to collect reef fish since the Hawai’i Supreme Court decision, therefore the loss of these particular fine mesh permits means the economic value at stake (if No Action were adopted) is much less than stated in the document – it is only “(average of \$167,065 per year).” (Emphasis added.)	Your comment has been forwarded to the decision makers. The FEIS has been revised to include updates to CML issuance which have occurred since publication of the DEIS. The No Action Alternative has also been revised to reflect these changes, which result in no commercial aquarium collection occurring under the No Action Alternative.
Mālama Pūpūkea-Waimea (MPW)	Yet, elsewhere, the “need” for the proposed action is what appears to be an overstated estimated economic benefit to the handful of individuals in the collection trade (assuming an estimated 14 jobs) of “\$422,612 to \$642,225 per year” (page 135). Note also that the proposed alternatives do not appear to include any give back – no permit fees are discussed and no give-back required to the resource or communities from where the fish were extracted.	Your comment has been forwarded to the decision makers.
Mālama Pūpūkea-Waimea (MPW)	Where do the fish go? The DEIS should clarify the actual venues to which the collected fish are sold and end up. On Page 26, the DEIS states that the species are “intended for live aquarium displays, HAR §13-77.” The DEIS description on this issue is vague and misleading. In section “4.2.1.1 Public and Private Aquariums,” it first mentions public zoo and aquaria and then private owners, without any detailed information about where the O’ahu fish end up and which is a more significant market for the take from O’ahu. This is a glaring omission in the DEIS. How can the environmental effects be evaluated without information on the “end use” of the public trust resource?	Your comment has been forwarded to the decision makers.
Mālama Pūpūkea-Waimea (MPW)	The reality seems to be that Hawai’i’s reef fish, including many endemic species, are being collected and exported for purely aesthetic pleasure outside of Hawai’i, which is for one type of personal luxury not a “need.” See Page 43: “Although specific export data do not exist for the aquarium fishery, it is clear that most of the aquarium catch is shipped out of the state to dealers on the mainland United States, Europe, and Asia (Dierking 2002).” The fish are not eaten, used for research or propagation, or – its eems – used of public education. This omission prohibits any comparative analysis the “value” of their export and captive lives v. leaving them in their natural habitat. The slant of the preparer’s perspective is underlined when the DEIS makes a rather sad attempt to argue the value of the calming effects of viewing fish in a tank (Page 46: “Aquarium fish are also sold to home aquaria owners, of which 70% report that their fish are calming and stress reducing . . .”), but fails to provide any mention of the psychological value of residents of Hawai’l viewing fish in the native habitat.	Your comment has been forwarded to the decision makers.

Commentor	Comment	Response
<p>Mālama Pūpūkea-Waimea (MPW)</p>	<p>2. Unsustainability of Collection of Targeted Species Fish caught for the aquarium trade experience a high mortality and morbidity rate. The DEIS States, Page 120, “Under all alternatives, mortality of fish post-harvest will occur,” but does not provide any data, which should be made available and part of the analysis. See Page 120: “Additional mortality may occur during transportation, shipping, or once the fish has reached its final destination. No post-collection data are available for fish collected in Hawai’i.” Why is the data not available? PIJAC and the State should have the data and make it accessible. Also, no information is presented on mortality during the process of take. See Page 95 “It is acknowledged that, in addition to the number of fish collected, incidental mortality may occur in fish that are released. However, there are no data available to analyze these impacts.” These questions should be answered in the DEIS.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>Publicly available information and data on mortality are included in Section 5.4.2 of the FEIS.</p>
<p>Mālama Pūpūkea-Waimea (MPW)</p>	<p>One particularly visible gap in species mortality or morbidity is for the endemic Bandit Angelfish, a deepwater fish. If, as stated on Page 74, the fish is “seldom seen at depths less than 30 feet,” how does it fare being collected, decompressed, packaged up, traveling across the Pacific, and then living out a confined life in a tank in a dentist’s office in Ohio?</p> <p>Also consider that many of the targeted reef fish are long-lived. The DEIS notes one Yellow Tang was found to be 41 years old. (Page 103, “While studying habitat- and sex-specific life history patterns of Yellow Tang, Claisse et al. (2009) found a 41-year-old individual.”). So how does collecting process affect the life-span and health of these otherwise long-lived fish? The data are absent.</p> <p>Information on this issue of trade mortality and morbidity abounds but is not included in the DEIS. See, e.g., http://divemagazine.co.uk/eco/7098-the-deadly-trade-in-reef-fish (“it is the incredibly high mortality rate among the fish that are taken that necessitates so many being caught. Most start dying from the moment they are captured, and the losses continue during the time they are in the holding tanks, while in transit to Europe and the US and then when they are on sale in the aquarium shop. It’s reckoned that 90 per cent of collected fish die before they even reach the hobbyist’s tank. Sadly that high death rate continues even then as marine systems are very difficult to keep stable in a small tank. This then drives further demand as the dead fish need to be replaced.”).</p> <p>PIJAC could have obtained this information from its members or from the “20 fishers” proposed to obtain permits and its other trade members. Moreover, DLNR should unquestionably have this kind of information in order to evaluate the impacts of these permits. At minimum, such information should be a reporting requirement of any such permit.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>Publicly available information and data on mortality are included in Section 5.4.2 of the FEIS.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Mālama Pūpūkea-Waimea (MPW)	<p>Similarly, how do we properly view what is “sustainable” for the ecosystem left behind? The DEIS admits that we do not know important information and the preparers have to really stretch to fill the analytical space. See Page 103: “While specific research into sustainable levels of take has not been conducted for the majority of reef fishes, as discussed previously, Ochavillo and Hodgson (2006) suggest collection of between 5% and 25% is sustainable for various reef species in the Philippines that are similar to those found on O’ahu (e.g., tang, wrasse, butterflyfish, angelfish, triggerfish).” (Emphasis added.) Unfortunately, this “suggested” 25% level inappropriately becomes the mantra for sustainability in the DEIS.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative includes a Propsoed White List and limts collection of any species on the White List to below 4.5% of the species' population estimate. Of the 31 fish species on the proposed White List, 18 would be collected at <1% of the population, 5 would be collected at <2%, 3 would be collected at <4% and 2 would be collected at up to 4.5% of their population estimate. Additional citations and data on sustainable collection have also been added to the EIS.</p>
Mālama Pūpūkea-Waimea (MPW)	<p>PIJAC also dismissed the "moratorium on species with declining populations" alternative (Page 36) because it is unknown if any species are experiencing population decline due to lack of population trend data. This must suggest the same for target aquarium fish, no? Under the precautionary approach, DLNR must recognize the lack of certainty behind an environmental threat when there is not clear evidence of the threat before the damage occurs. PIJAC is operating on the assumption that reef fish can sustain high levels of continuous harvest because of high fertility and long-life spans but the effect of removing juveniles from the population has not, apparently, been studied. This does not appear to be a form of sustainable collection, nor does it reflect sustainable thinking. Also under this assumption, PIJAC theorizes that the Bandit Angelfish (as well as a few other species) populations are much higher because they are out of the depth range of the CREP reef surveys and human pressures. A larger than estimated population cannot be confirmed, especially with the "lack of [reef fish] population data;" therefore, the precautionary approach here is to reject the take until further data are available. This should be true for all species.</p> <p>The total number of fish estimated to be taken under the Preferred Alternative proposed 20 permits (not including by other legal means, such as without a fine mesh net) (see Page 112) is “269,600 fish . . . over the 5-year analysis period.” Adding in “other means,” the collection projections increase by “31.2% of the impacts” to a total of “265,041 to 426,633 fish over the 5-year analysis period.” (Page 112, emphasis added.) This indicates the serious questions about sustainability.</p>	<p>Your comment has been forwarded to the decision makers. The FEIS has been revised to include a new No Action Alternative which takes into account recent changes in CML issuance, and therefore no aquarium collection would now occur under the No Action Alternative. The No Action Alternative is now equivalent to a full moratorium on commercial aquarium collection alternative.</p>
Mālama Pūpūkea-Waimea (MPW)	<p>The DEIS also highlights that some of the target fish as on the State’s list of Species of Greatest Conservation Need (SGCN) yet rejects that alternative (Page 35). See also Page 51 (“Three of the SGCN fish species that have been reported as being collected by commercial aquarium collectors on O’ahu between 2000 and 2017 are analyzed in this EIS.” These are the Psychedelic Wrasse [see Section 4.4.4.16] 2. Fisher’s Angelfish [see Section 4.4.4.20] 3. Bandit Angelfish [see Section 4.4.5.2]). It seems completely contradictory for the State to list such species at SGCN yet to allow commercial aquarium collection take that can be unlimited and under-reported.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The revised Preferred Alternative includes only two SGCN species, which are analyzed in the FEIS.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Mālama Pūpūkea-Waimea (MPW)	<p>What is the impact of removal of almost half a million reef fish from O’ahu? Who will do the appropriate monitoring of the impact of the take? DAR and DOCARE do not have the resources to monitor these permits and will simply have to trust there is no impact, which is not an acceptable management approach. The DEIS is overly optimistic in painting a picture of DLNR’s post-permit monitoring ability. The suggested “annual review” of all permits seems laughably unrealistic given DLNR’s lack of resources and other pressing priorities. See Page 30: “20 fishers who would be issued Aquarium Permits under the Proposed Action come up for renewal each year, DLNR will evaluate whether there are significant new circumstances or information relevant to environmental concerns and bearing on the commercial aquarium fishery or its impacts requiring a supplemental HEPA review.” (Emphasis added.) Adaptive management sounds nice but it is simply not realistic particularly given the current lack of monitoring and data gaps acknowledged all throughout the DEIS, so “allowing for the HEPA process to quickly recognize and address any potential issues (i.e., adaptive management)” is simply a nice thing to say to fill the DEIS with promises, but is not meaningful. Does the preparer have any examples of it working and being well resourced in Hawai’i?</p>	<p>Your comment has been forwarded to the decision makers.</p>
Mālama Pūpūkea-Waimea (MPW)	<p>Another major weakness in the DEIS is the odd focus on tourism and real estate economics instead of the value of reef fish in their natural habitat, which is a value (economic, personal, and spiritual/cultural) enjoyed by residents. See Page 88 (“tourist businesses such as snorkel and dive operations that rely on seeing and interacting with a healthy reef ecosystem. The presence of a healthy reef ecosystem may also impact overall land/home values on the island of O’ahu.” See also Page 89, looking only at tourism and land values.) This odd tourism lens may be attributable to the preparer being from outside Hawai’i?</p> <p>The DEIS only glancingly mentions the value of fish left in their natural environment and appears not to give any value to resident enjoyment or non-tourist recreational value of fish in situ, which is significant. Valuing reef ecosystems is a sophisticated approach that looks at way more than tourism. See Page 37: “In 2002, the Hawai’i Coral Reef Initiative funded a study regarding the economic valuation of the coral reefs of Hawai’i, where the value of coral reefs to the Hawai’i economy was estimated to be about \$380 million dollars per year (DLNR 2015). In 2001, Cesar et al. documented the annual recreational value of the coral reefs of the Hawaiian reefs for snorkelers and divers was estimated to be \$281 million and \$44 million, respectively.”</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>Section 5.2.2 of the FEIS has been revised to include additional indirect impacts on local residents.</p>
Mālama Pūpūkea-Waimea (MPW)	<p>3. Inadequate Alternatives and False Preferred Alternative</p> <p>PIJAC’s alternatives appear to be based on politics and strategy, and not science and sustainability of the resource. Again, as stated above, it is very odd to have a private applicant proposing policy alternatives for a program from which it hopes to receive permits for its members.</p>	<p>Your comment has been forwarded to the decision makers.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
<p>Mālama Pūpūkea-Waimea (MPW)</p>	<p>The “3.3 EXPANDED WAIKIKI MLCD AND FLAME WRASSE CONSERVATION ALTERNATIVE,” described on Page 33, would increase by “10.5 times the size of the current Waikiki MLCD.” All other fishing would be allowed, only aquarium collection would be banned. In other words, PIJAC is willing for its members to give up Waikiki – for which it provides no estimates of past collection data -- in the interest of increased collecting on the rest of the island? What is the rationale? This does not make sense given the purpose and need. The only plausible (but not acceptable) explanation is on Page 90: “The expanded Waikiki MLCD is located near Waikiki and Honolulu, an area used quite extensively by tourists and tour operators.” Thus the justification is tourism? Or there are too many tourists who bother the collectors? The DEIS further just tosses out the idea, without support, that the expanded MLCD would “eliminate any user conflict there and potentially serve as a refuge for fish populations.” Page 90. Anyone with experience with MLCDs in Hawai’i knows that creating a marine protected area is just not that simple, and that the Waikiki shoreline, sadly, is not a good refuge given the multiple use and sources of pollution, and the severe lack of attention paid to the existing MLCD there. This alternative seems like a loss leader.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The biological impacts of expanding the Waikiki MLCD are included in Section 5.4.1.3 of the EIS. As stated in Section 5.4.1.2 of the FEIS, "Friedlander et al. (2007) found that biomass within the existing Waikiki MLCD was 2.5 times higher than adjacent control sites. While the expanded area of the Waikiki MLCD would only be closed to commercial aquarium collection, similar areas in West Hawai’i have shown that fish from protected Fish Replenishment Areas (where only commercial and recreational fishing is banned, and other forms of fishing can continue) will seed unprotected areas (Christie et al. 2010). The use of areas closed to aquarium collection in West Hawai’i was implemented in 1999, and the DAR has determined that it has been “very successful” at driving increases in Yellow Tang populations (the most heavily targeted aquarium fish in West Hawai’i; DAR 2019a). It is assumed that the expanded Waikiki MLCD would have similar benefits as the Fish Replenishment Areas on Hawai’i Island. "</p>

Commentor	Comment	Response
<p>Mālama Pūpūkea-Waimea (MPW)</p>	<p>Similarly, PIJAC has another shiny lure alternative called “Limited Permit Issuance (Preferred) 20 Aquarium Permits issued; bag limit reduced for Flame Wrasse, expansion of the Waikiki MLCD.” The proponent suggests it is the preferred alternative – “reducing the number of Aquarium Permits issued, implementing a daily bag limit for Flame Wrasse, and expanding the Waikiki MLCD (which would only apply to commercial aquarium collectors),” and at Page 132, states “it results in the lowest collection of the 23 species analyzed and includes a bag limit for the Flame Wrasse. In addition, the Preferred Alternative is the only Alternative under consideration which limits the number of permits that would be issued (20 permits).” But this is simply a made-up alternative without scientific justification and still allows for essentially unlimited collection of all target species except for the Flame Wrasse.</p> <p>Page 86 of the DEIS says it has no data for the Waikiki area: “However, the data available for this DEIS cannot be used to quantify the number of fish collected or the species collected from this area.” And the DEIS states that in any event fishers would just redirect effort elsewhere so there is no gain “through redirection of effort and resources.” See Page 111 (“any reduced collection of aquarium fish within this area would be offset by redirection of effort and resources by commercial aquarium fishers to other areas of O’ahu”).</p> <p>Indeed, the DEIS provides no explanation for the Flame Wrasse limit and the justification given in fact undercuts the entire case for the permits. The DEIS says if the State allows less take, the value of each fish will increase: “This impact may be buffered however, as the cost per fish may increase as the supply of Flame Wrasse decreases, negating any socioeconomic impact to the fishers. If this were to be case, the socioeconomic impact of the bag limit would be seen on the consumer side (i.e., those purchasing aquarium fish, who would have to pay a higher premium due to decreased supply).” Page 87 (emphasis added). Under this rationale, the take per permit should be 1 fish per year of each species, because the value would adjust to be very high to reflect the rarity of the fish. That is way more sustainable for the resource than more voluminous take and cheaper pricing. Was a limited take to change the market pricing considered in the DEIS?</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The FEIS includes a new Preferred Alternative which includes implementation of a "White List" of 31 species which could be collected (and no collection of any other species), issuance of 15 permits, and implementation of individual catch quotas for each of the 31 White List species, thereby providing a hard upper limit on collection.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Mālama Pūpūkea-Waimea (MPW)	<p>In short, the alternatives appear to be simply made up for political and strategic reasons and are impossible to evaluate in terms of feasibility or environment impact. The Waikiki MLCD expansion, as proposed, would not prohibit other kinds of fishing. Creating a “leaky MLCD” does more harm than good and creates public confusion and enforcement issues. A true MLCD could be done separately from the proposed action. It makes no sense other than as an artificial sweetener for the PIJAC DEIS.</p> <p>MPW suggests that alternatives that do not depend on wild stock should be explored to satisfy the purported “purpose and need,” if the “need” is to display certain species of reef fish in private tanks. PIAJC should have considered and supported aquaculture as recommended by the 2015 State Wildlife Action Plan (SWAP), see Page 52 “Support aquaculture research to develop captive breeding for species used in the aquarium trade.” That solution is more sustainable and could potentially garner wide support.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The biological impacts of expanding the Waikiki MLCD are included in Section 5.4.1.3 of the EIS. As stated in Section 5.4.1.2 of the FEIS, "Friedlander et al. (2007) found that biomass within the existing Waikiki MLCD was 2.5 times higher than adjacent control sites. While the expanded area of the Waikiki MLCD would only be closed to commercial aquarium collection, similar areas in West Hawai'i have shown that fish from protected Fish Replenishment Areas (where only commercial and recreational fishing is banned, and other forms of fishing can continue) will seed unprotected areas (Christie et al. 2010). The use of areas closed to aquarium collection in West Hawai'i was implemented in 1999, and the DAR has determined that it has been “very successful” at driving increases in Yellow Tang populations (the most heavily targeted aquarium fish in West Hawai'i; DAR 2019a). It is assumed that the expanded Waikiki MLCD would have similar benefits as the Fish Replenishment Areas on Hawai'i Island. "</p> <p>Section 3.7 now includes an alternative related to captive breeding.</p>
Mālama Pūpūkea-Waimea (MPW)	<p>4. Failure To Consider Coral Reef Resiliency and Climate Change Link to Target Species</p> <p>With an increase in global warming and major coral bleaching events creating stress on coral reef ecosystems especially here in Hawai'i, it makes no sense that the for-profit aquarium trade would be allowed to take an <i>unlimited</i> amount of valuable reef fish out of Hawai'i to sell to aquarium hobbyists across the nation.</p> <p>While climate change is discussed generally in the DEIS, the link to stocks of reef fish, including the threats to the populations at low-lying atolls of Papahānaumokuākea Marine National Monument, which is used as an indirect justification for take on O'ahu is not analyzed.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>Additional information on climate change has been added to the FEIS.</p> <p>Additionally, the new Preferred Alternative includes individual catch quotas and a "White List" of 31 species, which are the only species which would be collected.</p>

Commentor	Comment	Response
<p>Mālama Pūpūkea- Waimea (MPW)</p>	<p>5. Inadequate Public Information on Take Key flaws in the entire proposal by PIJAC are the big holes in the information available to the public on aquarium fish collecting. Despite that these fish have been collected for years, until the ban, there is a serious lack of information due to an archaic DLNR “confidentiality” rule. See Page 111 : “Of these 238 [collected] species, 124 species account for less than 1% each of the total aquarium fish catch from 2000-2017. An additional <i>94 species do not have data</i> available due to the DAR confidentiality requirements (Section 5.1).” (Emphasis added.) See also Page 125: “Data evaluated for non-aquarium commercial fishing is [sic] lacking due to the DAR confidentiality regulations (HRS §189-3). Since most nonaquarium commercial fishers do not target aquarium species, <i>there are usually less than three fishers reporting</i>. Therefore, the data presented in Table 5-5 is <i>underestimated</i>.” (Emphasis added.) See also Page 54: “<i>Only 161 species</i> [of the 238] were reported by enough permits (>2 permits reporting from each collection area (Figure 1) during each year of collection) to determine total number of individuals collected (Table 4-3). Collection areas with less than three permits reporting fall under the DAR confidentiality statute, in which totals are <i>not released publicly</i> (Section 5.1).” (Emphasis added.) See also Page 75, re Invertebrates: “<i>Only 44 species</i> [of 66] were reported by enough permits (>2 permits reporting from each area of collection during each year of collection) to determine total number of individuals collected. Collection areas with less than three permits reporting fall under the DAR non- disclosure agreement, in which totals are not released publicly (Section 5.1).” (Emphasis added.)</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The Applicant was only able to provide the data it was provided by the DAR, though 20 fishers waived their right to confidentiality and released additional data, as explained in the EIS.</p>

Commentor	Comment	Response
Mālama Pūpūkea-Waimea (MPW)	<p>DAR apparently has discretion to collect the data, or could condition the permits on waiver of confidentiality, but takes the position that under H.R.S. § 189-3, “The DAR complies with this statute by keeping confidential any catch data when less than three collectors report from an individual collection zone (Figure 1).” Page 84.</p> <p>See also Page 84: “The impact of this statute on data analysis is minimal but can cause confusion when numbers in the text or in the tables do not exactly match up, or do not match previously published reports for which the n.d. data were available (i.e., DAR reports). Although it is possible for 1-2 aquarium fishers to collect large numbers of fish and skew the data, this concern was minimized by the manner in which data were analyzed. Data provided by the DAR for this DEIS were evaluated using many parameters, thereby minimizing bias due to confidentiality. The data were also viewed in aggregate and over extended time periods (i.e., 2000-2017) to further minimize confidentiality issues. Additionally, the 20 fishers included in the Proposed Action waived their right to confidentiality, so all data from 2000 through 2017, as well as from 2018, for these 20 fishers were released for analysis in this EIS.” (Emphasis added.). This explanation makes the data problem even worse in terms of public disclosure requirements under HEPA. For PIJAC, the collectors waived their confidentiality but not for the public?</p> <p>The information that PIJAC obtained and used for the DEIS should not also be made public so that it can be considered and reviewed by DLNR and the public.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>All data obtained by the Applicant are disclosed in the EIS.</p>
Mālama Pūpūkea-Waimea (MPW)	<p>An example of why the data gap matters is for the Achilles Tang. On Page 104, the DEIS states that “The Yellow Tang has been the most collected species every year since 2004.” and “In recent years (2014– 2017) Yellow Tang were collected nearly twice as much as the next highest collected aquarium fish (Kole).” “Since 2000, 273,356 Yellow Tang were collected on the island of O’ahu.” Page 104. Yet, the DEIS states there is “no data” (n.d.) for commercial <i>non-aquarium</i> collectors of this fish, for O’ahu or Statewide. Table 5.5, Page 125. Thus, the collection could be in the thousands by two such permittees, and still not disclosed. Thus, the ability to understand cumulative impact is frustrated.</p>	<p>Your comment has been forwarded to the decision makers.</p>
Mālama Pūpūkea-Waimea (MPW)	<p>The data are also simply lacking on related key issues of cumulative impacts. See Page 126: “some species are declining in various management areas (i.e., both within areas open to commercial aquarium collection as well as within areas closed to collection) due to factors other than commercial aquarium collecting, which include non-aquarium commercial and non-commercial fishing. This may be the case on O’ahu as well. However, there is <i>no way to fully quantify</i> the cumulative effects of past and ongoing non-aquarium commercial and non-commercial fishing on biological resources. Given the assumed past and present impacts of non-aquarium commercial and non-commercial fishing on biological resources, foreseeable future actions would likely result in some impacts to biological resources.” (Emphasis added.). This paragraph involves a lot of guessing, assumptions, and windy statements, and a leap to a conclusion, without support.</p>	<p>Your comment has been forwarded to the decision makers.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Mālama Pūpūkea-Waimea (MPW)	<p>Moreover, cumulative impact cannot be assessed because DLNR does not collect data on recreational aquarium fish permit take. See Page 129: “The DAR collected recreational aquarium fish catch information from 1975 until 1985, after which, data collection was <i>discontinued</i>, and currently <i>no reporting of catch is required for recreational aquarium permit holders</i>.” (Emphasis added.) “Because reporting of recreational aquarium catch is not required, the impact of recreational collection on species collected on O’ahu <i>cannot be quantified</i>.” (Emphasis added.)</p> <p>Even further, as stated on Page 120, and even with CML, the size of fish is not reported: “the size of fish collected under CMLs is not required to be reported to the DAR, and thus these data are not available.” Without this CML information, which is possible to require and not an unreasonable ask given all the other reporting and bag limitations, any analysis of the cumulative impact in terms of age and size of the fish is stymied.</p>	Your comment has been forwarded to the decision makers.
Mālama Pūpūkea-Waimea (MPW)	<p>And, as stated at Page 39, there is no agency <i>oversight</i> over the data that are submitted: “As throughout the state, O’ahu fishers are required to report their monthly catch on an aquarium fish catch report separate from, and more detailed than, the Commercial Marine License (CML) reports. At present, there is <i>no provision for the verification of submitted reports</i>, so any catch numbers and dollar amounts should be regarded as minimum, not absolute values (DAR 2018a).” (Emphasis added.) Without quality control, the data should be regarded as suspect.</p>	Your comment has been forwarded to the decision makers.
Mālama Pūpūkea-Waimea (MPW)	<p>All of these data gaps mean that the public – and the agency – are deprived of an array of vital information to determine the take and impact of take in various coastal areas on O’ahu. The CML secrecy might have made sense “back in the day” when it was first conceived a way to preserve “secret fishing spots,” but it particularly does not make sense today given the evolution of public trust law, the Supreme Court’s guidance in the aquarium fish case, the purpose of HEPA, and that even a single licensee can take an unlimited number of fish and have a big impact on a small area. This flawed DEIS underscores why DLNR should abandon the CML confidentiality policy.¹</p> <p>Therefore, the use of “CML data zones” for managing the proposed commercial collection of aquarium fish is seriously flawed. For example, Pūpūkea sits in Zone 414 and near Zone 405. There appears to be no information about commercial take, historically or current, in either zone. Therefore, as mentioned above, it is not possible to assess impacts or to determine the rationale behind excluding one zone and not the other in the proposed action. See Page 1 (“405 and 406 that encompass nearly all the nearshore region of the Ko’olauloa District”) – what is the explanation for that proposal? MPW believes this information is important to protecting the integrity of the Pūpūkea MLCD.</p> <p>¹ Laws must evolve to meet modern times and changing resource information. For example, the DEIS notes – mistakenly – that sand can be taken from the public beaches up to 1 gallon. See Page 27 (“The taking of sand, coral rubble or other marine deposits is permitted in certain circumstances. The material may not exceed one gallon per person per day.”) But that law changed - due to the evolution in our</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative includes implementation of a "White List" of 31 species (no collection of other species would occur) and individual catch quotas on these 31 species, addressing the "unlimited catch" concern.</p>

Commentor	Comment	Response
	<p>understanding of the importance of this natural resource and public trust law. In 2013, the “sand ban” was passed by our State Legislature. See H.R.S. §205A-44 Prohibitions.</p>	
<p>Mālama Pūpūkea-Waimea (MPW)</p>	<p>6. No Cultural Foundation for Aquarium Take In Hawaiian culture, taking of fish is traditionally for subsistence or spiritual reasons, was fully regulated by the konohiki, in real time, in specific places, and violations of kapu could have harsh punishment . The idea of taking reef fish for aquarium display, for pure entertainment and for trade, has no clear cultural foundation. Moreover, the taking of fish without regard to contextual information about seasons, place, and the health of the stock does not align with Hawaiian cultural tradition of careful management of fisheries.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The cultural resource discussion in the FEIS has been updated to disclose potential impacts due to the belief of some Hawaiian's that any collection, regardless of impact on populations, may be a cultural impact.</p>
<p>Mālama Pūpūkea-Waimea (MPW)</p>	<p>The DEIS’s attempt to somehow cloak the proposed take permits in Hawaiian culture is questionable. See Page 45: “4.2.1 Cultural Aspects of the Commercial Aquarium Fishery” somehow suggesting that because permittees appreciate Hawaiian culture (without any proof), that take is a cultural practice. Again, without any support for take as a cultural practice, the DEIS states, Page 45: “Native Hawaiians do participate in the fishery and Hawaiian culture has been a significant aspect of the fishery’s management since the 1970’s.” While it is true that some of the fishers are Native Hawaiian, that does mean they are practitioners or justify the cultural connection. Native Hawaiians are widely engaged in commercial enterprises today, but that does not automatically make these economic activities a cultural practice or culturally grounded.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The cultural resource discussion in the FEIS has been updated to disclose potential impacts due to the belief of some Hawaiian's that any collection, regardless of impact on populations, may be a cultural impact.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Mālama Pūpūkea-Waimea (MPW)	Overall, the Cultural Impact Statement (CIA), while containing some helpful interviews, appears to act more like a stakeholder interview exercise (e.g., with <i>“aquarium collectors, subsistence and commercial fishers, charter boat operators, and researchers, Page 92</i>), and does not comply with OEQC guidelines and Act 50 (amending H.R.S. Chapter 343), which encourages interviews with a particular type of stakeholder: cultural practitioners. See http://oeqc2.doh.hawaii.gov/OEQC_Guidance/1997-Cultural-Impacts-Guidance.pdf	Your comment has been forwarded to the decision makers.
Mālama Pūpūkea-Waimea (MPW)	The DEIS also takes the strange view that there is no impact on culture unless there is a significant decline in a particularly culturally important resource. Cultural impact cannot be quantified in that way and should be viewed through a value-based perspective. The interview with Noelani Puniwai ends with this statement “I do believe that the practice of aquarium fishing will have an impact on traditional cultural practices in these areas. It’s just that broader impact and the ability for these things to be considered abundant...The value of the ability for a species to live in its own environment. I have a hard time seeing how taking a hīnālea and putting it in a tank in Nevada can allow that being to continue being a hīnālea. So the traditional practice of our species being able to have their own ‘ōiwi is being affected through the practice of aquarium collecting and having live pets.” Page 264. The CIA itself makes this point. See Page 92 “However, some interviewees expressed the belief that collection for aquarium purposes, regardless of impact or sustainability, is a violation of traditional beliefs (see Appendix A).”	Your comment has been forwarded to the decision makers. The cultural resource discussion in the FEIS has been updated to disclose potential impacts due to the belief of some Hawaiian's that any collection, regardless of impact on populations, may be a cultural impact.
Mālama Pūpūkea-Waimea (MPW)	MPW believes that the views of Dr. Puniwai best capture the cultural concerns about the commercial aquarium trade proposed by PIJAC. Mahalo for considering our comments and MPW’s request to reject the DEIS as inadequate.	Your comment has been forwarded to the decision makers.
State of Hawaii Department of Land and Natural Resources Division of Aquatic Resources (DAR)	The Department of Land & Natural Resources (DLNR), Division of Aquatic Resources (DAR) submits the following comments on the Draft Environmental Impact Statement (DEIS) on the Issuance of Commercial Aquarium Permits and Commercial Marine Licenses for the Island of O’ahu. ¹ 1 As the approving agency, DLNR is responsible for determining whether the Environmental Impact Statement (EIS) adequately discloses the reasonably anticipated impacts of the proposed action. The EIS need not be exhaustive to the point of discussing all possible details bearing on the proposed action but will be upheld as adequate if it has been compiled in good faith and sets forth sufficient information to enable the decision-maker to consider fully the environmental factors involved and to make a reasoned decision after balancing the risks of harm to the environment against the benefits to be derived from the proposed action, as well as to make a reasoned choice between alternatives. Finding that the EIS adequately describes the environmental impacts of a project does not mean that the project must be approved. As stated above, it just provides information on which the agency can make a reasoned decision.	Your comment has been forwarded to the decision makers.

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
State of Hawaii Department of Land and Natural Resources Division of Aquatic Resources (DAR)	<p><u>Comments Regarding Population Estimates</u></p> <ul style="list-style-type: none"> The DEIS seems to rely on data from the Coral Reef Ecosystems Program (CREP). Please provide a detailed explanation of how CREP survey data was used to produce the population estimates used in the DEIS, including how data outputs from CREP were converted, extrapolated, or otherwise utilized to provide the island-wide abundance estimate. 	<p>Your comment has been forwarded to the decision makers.</p> <p>The population estimates were provided by the PIFSC, not calculated by the Applicant. Additional details regarding the population estimates has been added to the FEIS. In addition, the population estimates were updated with the most recent data available.</p>
State of Hawaii Department of Land and Natural Resources Division of Aquatic Resources (DAR)	<ul style="list-style-type: none"> The DEIS reports that the total hardbottom area for O’ahu is 16,840 ha. DAR believes this is the estimated hardbottom of the island of Hawai’i, not O’ahu. If this is correct, please make the necessary recalculations and edits. Please provide citations for any data used. 	<p>Your comment has been forwarded to the decision makers.</p> <p>This was an error in the DEIS, the calculations were all based on 25,119 ha, which is the value provided by the PIFSC. The typo in the text has been corrected, and the calculations had been done correctly.</p>
State of Hawaii Department of Land and Natural Resources Division of Aquatic Resources (DAR)	<ul style="list-style-type: none"> The applicant calculated island-wide abundance by multiplying observed fish densities by a single hardbottom estimate. DAR notes that fish density can vary widely across hardbottom habitat and can be largely influenced by other factors, such as rugosity. Rugosity and other factors may be used to provide a more accurate estimated abundance beyond using hardbottom presence alone. 	<p>Your comment has been forwarded to the decision makers.</p> <p>The population estimates were provided by the PIFSC, not calculated by the Applicant. The FEIS has been revised to explain that PIFSC provided the Applicant with the population estimates and that they were not calculated by the Applicant.</p>
State of Hawaii Department of Land and Natural Resources Division of Aquatic Resources (DAR)	<ul style="list-style-type: none"> In section 3.5 (Alternatives Considered but Dismissed), the applicant states that a moratorium on species experiencing population declines was not considered further because population trend data at the species level were not available. Throughout the DEIS, no population trends on the species or species group level are shown or discussed. The DEIS could have provided some analysis of species population trends using CREP data and life history characteristics. In the absence of any population trend analysis, it is improper to dismiss consideration of a moratorium on certain species. The Final Environmental Impact Statements (FEIS) should consider an alternative that proposes a moratorium on certain species based on the precautionary principle and lack of sufficient data. 	<p>Your comment has been forwarded to the decision makers.</p> <p>The FEIS includes a revised No Action Alternative that includes a moratorium on commercial aquarium collection, reflecting CML changes that have occurred since publication of the DEIS. The new Preferred Alternative includes a proposed White List, which would consist of a moratorium on any species not on the White List.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
<p>State of Hawaii Department of Land and Natural Resources Division of Aquatic Resources Resources (DAR)</p>	<p><u>Comments Regarding Total Allowable Catch (TAC), Daily Bag Limits, and Take</u></p> <ul style="list-style-type: none"> The DEIS proposes no limits on the annual take of any species. Daily bag limits put an annual cap on the total number of fish taken by the 20 collectors alone but cannot safeguard against unlimited take unless the fishery will limit the entry of any additional collectors. For O’ahu, please provide a proposed “white list” that includes all marine species authorized for collectors to take under this permit. Proposed take limits for each species on the list would help DAR to understand the potential impacts of the proposed action. 	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative includes a proposed White List of 31 species and individual catch quotas that would limit collection of those 31 species.</p>
<p>State of Hawaii Department of Land and Natural Resources Division of Aquatic Resources Resources (DAR)</p>	<ul style="list-style-type: none"> The DEIS does not adequately consider the impacts of the proposed action on a number of species (e.g., non-top 20, non-regulated species). If these species will be subject to collection under the proposed action, the applicant must analyze the impacts to these species. Alternatively, the proposed action could exclude collection of these species. 	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative includes a proposed White List of 31 species and individual catch quotas that would limit collection of those 31 species. No collection of other species would be permitted.</p>
<p>State of Hawaii Department of Land and Natural Resources Division of Aquatic Resources Resources (DAR)</p>	<ul style="list-style-type: none"> The applicant uses the 2006 Ochavillo and Hodgson study to set the acceptable TAC range of 5%-25%. The DEIS only accounts for the take of commercial aquarium collection. The applicant’s take estimates should include the combined harvest of all fisheries. 	<p>Your comment has been forwarded to the decision makers.</p> <p>The cumulative impact of other fisheries, based on the best publicly available data, is analyzed in Section 5.4.3 of the EIS.</p>
<p>State of Hawaii Department of Land and Natural Resources Division of Aquatic Resources Resources (DAR)</p>	<ul style="list-style-type: none"> In 2017, collections from the West Hawai’i Regional Fishery Management Area (WHRFMA) made up 65% of the statewide commercial aquarium fishery ex-vessel value. Following the closure of the WHRFMA to all aquarium collection, the importance of the O’ahu fishery in meeting market demand has increased. So too have the economic incentives to increase the take of species previously harvested in the WHRFMA, like yellow tang and kole. If granted fine mesh permits, the 20 collectors will have a near-monopoly on the collection of smaller fish species and size classes. The DEIS does not sufficiently analyze the potential for increased take on O’ahu to meet the increased demand created by the WHRFMA closure. The FEIS should provide an analysis of the historic levels of effort of the 20 collectors and propose limits, such as a TAC for each species, to enable DAR to understand the potential impacts of the proposed action. 	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative includes a proposed White List of 31 species and individual catch quotas that would limit collection of those 31 species.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
State of Hawaii Department of Land and Natural Resources Division of Aquatic Resources (DAR)	<ul style="list-style-type: none"> DAR recognizes that CREP data may not cover the preferred habitat of flame wrasse and other species found in waters beyond the Recreational Dive Limit. However, until deepwater surveys occur, CREP estimates of abundance offered in the DEIS remain the best available data. The projected take of flame wrasse under the preferred alternative is 9.4% - 24.5%. It is improper to conclude that this level of take is less than significant. Please propose a TAC for the species. 	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative includes a proposed White List of 31 species and individual catch quotas that would limit collection of those 31 species, including the Flame Wrasse.</p>
State of Hawaii Department of Land and Natural Resources Division of Aquatic Resources (DAR)	<ul style="list-style-type: none"> In section 5.2.1.3 of the DEIS, the applicant suggests that a daily bag limit of ten flame wrasse would result in a catch reduction of approximately 60%. This was based on an analysis of data reports starting in 2012, which found average catch to be 25.2 flame wrasse per trip. Aquarium fishers, especially those using fine mesh barrier nets, often work in groups of two or more permitted divers. Dive teams typically combine a day's catch into a single report instead of reporting per person. It is doubtful that the proposed daily bag limit of 10 flame wrasse per collector will reduce the amount of fish taken per trip by 60%. A team of three divers could take a combined 30 flame wrasse per trip under the proposed limit. To avoid this uncertainty about the impacts of a daily bag limit, DAR suggests proposing a TAC. 	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative includes a proposed White List of 31 species and individual catch quotas that would limit collection of those 31 species, including the Flame Wrasse.</p>
State of Hawaii Department of Land and Natural Resources Division of Aquatic Resources (DAR)	<ul style="list-style-type: none"> The applicant suggests applying Ochavillo and Hodgson's (2006) TAC range of 5%-25% will ensure sustainable take. However, there is little discussion regarding the population health of the species in which this range should be applied to. The 2017 study by Friedlander et al.2 suggests that fish biomass around the Main Hawaiian Islands (MHI) shows a significant negative correlation with population density. As expected, the biomass of "resource fish" species in O'ahu's nearshore waters was markedly lower than other areas in the MHI. Can a TAC of 5%-25% be applied to a depleted or overfished population and still be considered sustainable? Please provide discussion of the population statuses of commercially harvested aquarium species. Note any species collected by the O'ahu aquarium fishery that have been identified previously as overfished, in a state of overfishing, or otherwise population depleted. 	<p>Your comment has been forwarded to the decision makers.</p> <p>Additional details on resiliency of the fish species analyzed has been added to the EIS. No population trend data on the 31 species on the proposed White List are publicly available for the island of O'ahu.</p>
State of Hawaii Department of Land and Natural Resources Division of Aquatic Resources (DAR)	<p><u>Comments Regarding Collection Methods and Gear</u></p> <ul style="list-style-type: none"> The use of fine mesh barrier nets seems conducive for the collection of species like kole and yellow tang which tend to occur in aggregations. Are fine mesh barrier nets also used to collect solitary or less abundant species like wrasses and butterflyfish? For example, would a 30 ft barrier net be used to target a single flame wrasse or hawkfish that hide within coral when threatened? If not, what methods are used? Please describe in detail <u>any and all</u> methods that may be used, even if the method does not involve the use of fine mesh net. 	<p>Your comment has been forwarded to the decision makers.</p> <p>Additional details on methods have been added to the FEIS.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
State of Hawaii Department of Land and Natural Resources Division of Aquatic Resources (DAR)	<ul style="list-style-type: none"> The applicant cites Hawai'i Administrative Rules (HAR) § 13-77 as an existing limit on fine mesh collection. HAR § 13-77 sets bag limits and size restrictions on some species, but only if fine mesh is used. The effectiveness of this set of regulations is limited by the fact that a fisher possessing a fine mesh permit can also use non-fine mesh methods without the specified limits. For example, fishers can plausibly use a fine mesh net to target juvenile yellow tang on one day, and larger mesh to target larger conspecifics without limit the next day. If granted fine mesh permits, the 20 collectors would, therefore, be able to collect without any size limits. Please suggest additional measures to eliminate the ability to take all size classes. 	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative includes a proposed White List of 31 species and individual catch quotas that would limit collection of those 31 species, regardless of the method used to collect them.</p>
State of Hawaii Department of Land and Natural Resources Division of Aquatic Resources (DAR)	<ul style="list-style-type: none"> Despite the ban on fine mesh nets, kole and yellow tang are still being collected with legal gear. For example, in area 412, yellow tang and kole take increased after the fine mesh ban. Are all or some of the 20 collectors currently using legal mesh ($\geq 2''$) to collect kole and yellow tang? Are the 20 collectors taking daily amounts of certain species or size ranges otherwise prohibited under HAR § 13-77? Will targeting of larger yellow tang and kole by the 20 collectors discontinue if fine mesh permits are granted? 	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative includes a proposed White List of 31 species and individual catch quotas that would limit collection of those 31 species, regardless of the method used to collect them. The No Action Alternative has been revised to reflect changes to the CML that have occurred since publication of the DEIS.</p>
State of Hawaii Department of Land and Natural Resources Division of Aquatic Resources (DAR)	<ul style="list-style-type: none"> The applicant cites Tissot and Hallacher (2003) to support the claim that no significant coral damage occurs as the result of commercial aquarium collection. While DAR is aware of the study's findings, it seems unlikely that the methods described do not pose a threat to corals. DAR has received multiple photos of collectors in West Hawai'i setting nets directly on and moving close to live corals in addition to pictures showing coral damage resulting from anchoring. Whether the applicant agrees with the accounts of previous damage or not, the act of operating around live corals in this manner creates a risk of contact. Further, significant bleaching events occurring since the 2003 study have left many corals in degraded states, potentially lowering resilience to trauma. In the requested detailed description of collection methods, the applicant should include specific actions that will be taken to prevent contact with live coral including contact by anchors. 	<p>Your comment has been forwarded to the decision makers.</p> <p>The following language has been added to the FEIS to clarify interactions between fishers and coral: Due to the current coral protection laws, fishers place aquarium nets in low density coral areas to ensure no damage is done to the coral, and place anchors in sandy channel areas or flat hard bottoms when available. If no sandy channels or flat hard bottom isare available, fishers drift dive while collecting, which does not involve anchoring at all. This ensures no coral damage, and that the fishers remain in compliance with existing regulations (see Section 1.2.5).</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
<p>State of Hawaii Department of Land and Natural Resources Division of Aquatic Resources Resources (DAR)</p>	<p><u>Comments regarding the Waikiki Marine Life Conservation District (MLCD) Expansion</u></p> <ul style="list-style-type: none"> In the Expanded Waikiki MLCD and Flame Wrasse Conservation Alternative and the preferred Limited Permit Issuance Alternative, the applicant proposes that the existing Waikiki MLCD be expanded to the mouth of Honolulu Harbor’s main basin. The applicant states that within the expanded MLCD, all commercial aquarium collection would be prohibited, and no additional regulations would be placed upon other fisheries. Currently, the Waikiki MLCD is a no-take zone with any type of commercial or non-commercial harvest of marine life prohibited (HAR § 13-36). If the current Waikiki MLCD is included in this expanded area, its current level of protection would be lost, as it would then be open to non-commercial aquarium take and other fishing activity. Is the applicant proposing that current protections of the Waikiki MCLD be lost as a part of this expansion? It may be more appropriate to characterize the proposed management measure as a permit condition and the eventual establishment of a new Marine Managed Area where commercial aquarium collection is prohibited. 	<p>Your comment has been forwarded to the decision makers.</p> <p>The FEIS has been revised to better explain the proposed expansion, and clarify that the expanded area would apply only to commercial aquarium collection in the form of a permit condition.</p>
<p>State of Hawaii Department of Land and Natural Resources Division of Aquatic Resources Resources (DAR)</p>	<ul style="list-style-type: none"> HAR § 13-36 defines the outer boundary of the existing Waikiki MLCD as “from the highwater mark seaward a distance of 500 yards or to the edge of the fringing reef, whichever is greater.” Though not stated in the DEIS, Figure 2 seems to suggest that the proposed expanded Waikiki MLCD will have the same definition regarding its outer boundary. Though this expansion would protect nearshore waters from collection, it would not protect areas just outside of its outer boundary. Deepwater species such as flame wrasse will still be open to collection with little to no protection given by the expanded MLCD. Assuming the protection of fish from aquarium collection is the goal, an expansion of the proposed MLCD border out to the Exclusive Economic Zone (3nm) or the entire closure of DAR fish report collection area 400 to commercial aquarium collection, may more effectively achieve this goal. 	<p>Your comment has been forwarded to the decision makers.</p>
<p>State of Hawaii Department of Land and Natural Resources Division of Aquatic Resources Resources (DAR)</p>	<ul style="list-style-type: none"> DAR fish report collection area 400 (shown in figure 1 of the DEIS) includes the proposed expanded Waikiki MLCD area. In 2017 (pre-fine mesh ban), area 400 accounted for 4% of the total O’ahu finfish commercial aquarium catch. In 2018 (post-fine mesh ban), area 400 accounted for 5% of the total O’ahu finfish commercial aquarium catch. Considering that the proposed expanded Waikiki MLCD makes up only a portion of area 400, it is safe to assume fishery contribution from the proposed MCLD was less than 4%-5%. The proposed MLCD expansion area is not a commonly used area for commercial aquarium collectors, and its closure will likely have little positive impact. 	<p>Your comment has been forwarded to the decision makers.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
<p>State of Hawaii Department of Land and Natural Resources Division of Aquatic Resources Resources (DAR)</p>	<p><u>Comments Regarding Population and Fishery Trends</u></p> <ul style="list-style-type: none"> Please provide a discussion of how the O’ahu commercial aquarium fishery changed following the 2017 fine mesh ban. In the discussion, please address the following questions: <ol style="list-style-type: none"> How did finfish species composition change? Was there a change in the ratio of vertebrate to invertebrate catch? Were small-bodied fish species caught less frequently? Larger species targeted? How did gear use change? 	<p>Your comment has been forwarded to the decision makers.</p> <p>Finfish species composition and small vs large bodied fish: Section 5.5.1 includes a table comparing projected impacts under each alternative, including the CML-only Alternative (which follows trends that occurred after the ban on fine mesh nets), as well as the No Action Alternative (which is what is currently occurring under the January 2021 court order that halted the use of CMLs for aquarium collection).</p> <p>Ratio of vertebrate to invertebrate catch: Section 5.4.1.2 of the FEIS discusses collection trends that occurred under the use of CML licenses after the ban on fine mesh nets occurred. This includes the species collected, as well as a decrease in invertebrate collection which may have occurred.</p> <p>Gear use: The following language has been added to the FEIS: In lieu of collection with fine mesh nets, other gear types are legal to use when collecting aquarium fish with a CML. These methods can include using larger sized nets, fishing pole and hook-and-line fishing, slurp guns which suction individual fish directly into the diver’s catch bag, and night fishing.</p>
<p>State of Hawaii Department of Land and Natural Resources Division of Aquatic Resources Resources (DAR)</p>	<ul style="list-style-type: none"> Please provide information regarding the historical fishing effort of the 20 collectors. Include a discussion of any previous changes in effort over time, and how it is expected to increase moving forward. 	<p>Your comment has been forwarded to the decision makers.</p> <p>The FEIS has a new Preferred Alternative which includes individual catch quotas for 15 fishers, limiting collection to at or below 4.5% of estimated population. Therefore, historic changes in effort are no longer applicable to the analysis, as the total allowable catch provides an upper limit on allowable collection.</p>
<p>State of Hawaii Department of Land and Natural Resources Division of Aquatic Resources Resources (DAR)</p>	<ul style="list-style-type: none"> DAR notes that unlike West Hawai’i, O’ahu does not have Fish Replenishment Areas (FRAs) in addition to MLCDs. With less inshore refugia, impacts due to aquarium harvest in O’ahu’s nearshore waters may be more severe than in West Hawai’i. DAR recommends the applicant consider proposing the creation of a network of FRAs on O’ahu as an alternative or in addition to the Waikiki MLCD expansion. 	<p>Your comment has been forwarded to the decision makers.</p> <p>This was not included as an alternative since the Applicant does not have the authority/ability to establish FRAs. However, the fishers are supportive to adding FRAs to the island of O’ahu, and would like to participate in the process.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
State of Hawaii Department of Land and Natural Resources Division of Aquatic Resources (DAR)	<p><u>Comments Regarding Endemism</u></p> <ul style="list-style-type: none"> Of the top 20 fish species collected by the O’ahu commercial aquarium fishery, 10 are endemic to Hawai’i. Because these species are found nowhere else, it would seem prudent to offer them increased protection or at least provide a more in-depth consideration of the potential impact of take, especially if harvested by other fisheries (e.g., kole). 	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative limits collection to 31 fish species on the proposed White List, and includes individual catch quotas limiting collection to at or below 4.5% of the estimated population. Of the 31 fish species on the proposed White List, 18 would be collected at <1% of the population, 5 would be collected at <2%, 3 would be collected at <4% and 2 would be collected at up to 4.5% of their population estimate.</p> <p>Ten of the 31 species on the proposed White List are endemic (Kole, Potter's Angelfish, Ornate Wrasse, Flame Wrasse, Hawaiian Whitespotted Toby, Milletseed Butterflyfish, Shortnose Wrasse, Crowned Puffer, Saddle Wrasse and Bandit Angelfish). Of these ten species, population estimates are available for 8, of which 7 would be collected at 0.7% or less of their estimated populations, and 1 would be collected at up to 1.4% of the estimated population.</p>
State of Hawaii Department of Land and Natural Resources Division of Aquatic Resources (DAR)	<p><u>Comments Regarding Climate Change</u></p> <ul style="list-style-type: none"> The extreme threat of climate change on our reefs warrants extreme caution in reviewing activities that may affect them. The FEIS should further discuss potential effects of present and future levels of climate change including ocean warming, ocean acidification, coral bleaching, extreme storms, and resulting reef destruction and algae growth, and the potential for mitigating harm (i.e. further regulation) if the proposed fishery has unanticipated or greater negative effects due to climate change. 	<p>Your comment has been forwarded to the decision makers.</p> <p>Additional information on climate change has been added to the FEIS.</p>
State of Hawaii Department of Land and Natural Resources Division of Aquatic Resources (DAR)	<p><u>Comments Regarding Cultural Impacts</u></p> <ul style="list-style-type: none"> The applicant notes that, regarding the Cultural Impact Assessment (CIA), “some interviewees expressed the belief that collection for aquarium purposes, regardless of impact or sustainability, is a violation of traditional beliefs.” This sentiment was heard in the interview of O’ahu cultural practitioner Noelani Puniwai, and numerous others interviewed in the West Hawai’i CIA. Yet, the applicant asserts that cultural resources are not under threat because a significant population decline in collected species is not anticipated. This ignores the fact that these individuals believe that any take for commercial marine purposes is unacceptable. In light of this belief, it is improper for the DEIS to conclude that the impact to cultural resources is less than significant. 	<p>Your comment has been forwarded to the decision makers.</p> <p>The cultural resource discussion in the FEIS has been updated to disclose potential impacts due to the belief of some Hawaiian's that any collection, regardless of impact on populations, may be a cultural impact.</p>
State of Hawaii Department of Land and Natural Resources Division of Aquatic Resources (DAR)	<p><u>General Comments</u></p> <ul style="list-style-type: none"> The Board of Land and Natural Resources (Board) recently declined to accept a FEIS regarding aquarium collection in the WHRFMA (see attached Findings and Reasons for Non Acceptance of FEIS). DAR echoes many of the concerns noted by the Board and notes that the Board’s rationale for rejecting the FEIS may similarly apply to this DEIS. DAR suggests the applicant consider the Board’s reasoning to inform the applicant’s forthcoming FEIS. 	<p>Your comment has been forwarded to the decision makers.</p> <p>Comments received on the Hawaii FEIS were considered during developing of this FEIS.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
Resources (DAR)		

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
ASU Center for Global Discovery and Conservation Science	The Pet Industry Joint Advisory Council submitted a Draft Environmental Impact Statement (DEIS) to the State of Hawai'i Office of Environmental Quality Control on their analysis of the ecological and cultural impacts of issuing aquarium collection permits for the island of O'ahu. Our review largely focuses on the scientific integrity and validity of data and conclusions provided in the DEIS as it pertains to Oahu. We do not address cultural issues in our review of the DEIS.	Your comment has been forwarded to the decision makers.
ASU Center for Global Discovery and Conservation Science	<p>I. Insufficient attention to the role of herbivores and ocean climate</p> <p>The DEIS does not adequately assess the impacts of the aquarium industry on herbivores. The DEIS briefly mentions herbivores, stating that, "No parrotfishes, damselfishes, or rabbitfishes...occur in the top 20 list of fish species collected on O'ahu" (pg. 83). However, 53.1% of catch from the top 20 aquarium species collected under aquarium permits from O'ahu in 2000-2017 (Table 4-4, DEIS) are herbivores, information we present in Table 1 [see pdf page 8].</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>Additional information on the role of herbivores has been added to the FEIS.</p>
ASU Center for Global Discovery and Conservation Science	Furthermore, the DEIS mischaracterizes the ecological importance of herbivores on Hawaiian reefs. Herbivores are imperative for controlling algae that can smother and outcompete corals during and after bleaching events (Hughes et al., 2007). The DEIS cites Tissot and Hallacher (2003) to show that removal of aquarium fish did not affect macroalgal control. However, macroalgae is a relatively small component of O'ahu reefs compared to turf algae, a type of algae which the DEIS does not mention. Many aquarium fish species are important in controlling turf algae and are also shown in Table 1 [see pdf page 8] , along with their different roles of herbivory.	<p>Your comment has been forwarded to the decision makers.</p> <p>Additional information on the role of herbivores has been added to the FEIS.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
ASU Center for Global Discovery and Conservation Science	<p>Like many regions of the world, the Hawaiian Islands have entered a new ocean climate regime that is less favorable to coral reefs as a whole. As a result, building resilient coral reefs must be a focal point for resource management to give reefs the best chance for persistence. One of the major limitations of the DEIS rests in its narrow analysis of the Oahu coral reef ecosystem. Hawaiian reef ecosystems are part of the new ocean climate system that continues to rapidly expand in the Pacific and worldwide. In 2014 and 2015, the Main Hawaiian Islands underwent their first major system-wide ocean climate event, called a marine heatwave, that caused increased water temperatures resulting in large-scale coral bleaching and impacts on fish and invertebrate populations (Bahr et al. 2017; Couch et al. 2017). About half of the corals that bleached in 2015 ultimately died and became algal covered (Kramer et al. 2016). The 2019 marine heatwave again engulfed the Hawaiian Islands, causing an average 40% coral bleaching on reefs of Oahu (NOAA 2020). Marine heatwaves are the new norm, and will be increasing in intensity and/or frequency in the years to come (Frollicher et al. 2018), putting enormous additional stress on coral reefs of Hawai'i.</p> <p>Ocean temperature around Oahu is projected to increase as a result of climate change. By the middle of the century, average monthly sea surface temperature will be ~1°C (1.8°F) warmer than present-day, and for about 6 months of the year will be warmer than the present-day summertime maximum (27°C; 80.6°F). This increase in ocean temperature is projected to influence the frequency and severity of coral bleaching. For example, severe bleaching is projected to occur on an annual basis in the Hawaiian Islands beginning as early as 2035 (van Hooidonk et al. 2016).</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>Additional information on climate change has been added to the FEIS. Furthermore, the new Preferred Alternative includes a proposed White List and individual catch quotas for the 31 species which would limit the total allowable catch.</p>
ASU Center for Global Discovery and Conservation Science	<p>A pivotal issue determining the ability of O'ahu's coral reefs to persist in the new ocean climate rests in the abundance and diversity of the herbivore fish community. Herbivore fish are primary determinants of reef algal cover, which competes directly with slow-growing corals for space. Regular marine heatwaves not only cause coral bleaching and mortality, they also promote algal growth that colonizes dead coral and responds well to increased water temperature (Jessen et al., 2013; Graham et al., 2015). Herbivore fish biomass and diversity have become important combaters of algal growth during and between marine heatwave events.</p> <p>The DEIS states that, "Based on studies in the Great Barrier Reef, fishing pressure had minimal effect on bleaching (Hughes et al., 2017)" (pg. 110). However, the Great Barrier Reef is a different setting than O'ahu with vastly greater fish diversity and abundance (Stuart-Smith et al., 2013). In addition, the DEIS misinterprets Hughes et al. (2017). The onset of coral bleaching is caused by a variety of abiotic stressors, such as temperature, light and pollution, and, as stated in Hughes et al. (2017), is not related to fish abundance. In contrast, reef recovery after bleaching events is highly dependent on fish abundance, and particularly herbivores (Graham et al., 2015). In fact, Jouffray et al. (2016) found herbivore biomass to be one of the most important predictors of healthy reef regimes after bleaching in the Hawaiian Islands. This is not mentioned in the DEIS, but it is extremely relevant to any evaluation of biological impact of herbivore fish removal on O'ahu.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>Additional information on climate change and herbivores has been added to the FEIS. Furthermore, the new Preferred Alternative includes a proposed White List and individual catch quotas for the 31 species which would limit the total allowable catch. Text has been clarified related to the interpretation of Hughes et al. (2017).</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
<p>ASU Center for Global Discovery and Conservation Science</p>	<p>II. Missing data on fish population trends on O’ahu The DEIS states that “population trend data is not available for the fish species analyzed in this EIS for the island of O’ahu” (pg. 19). However, the DEIS uses the CREP dataset, for which data are, in fact, publicly available from 2010 to 2016. We present all the data below (Table 2 [see pdf page 9], Figure 1 [see pdf page 7]) to show the trends in the top 20 aquarium fish species, in comparison to the average of all fish recorded in CREP surveys in abundance per square meter. Several important findings are clear: (1) Fish species collected for aquarium purposes show extremely variable decreases and increases across survey years, (2) these increases/decreases are much larger than the average change seen across all species of surveyed fish, and (3) the impacts of the 2015 bleaching event on fish populations that were also being collected by aquarium fishers are severe, with the majority of species declining sharply in the year following the bleaching event in 2015. The DEIS does not discuss the impact of climate change on aquarium fish populations, despite its clear importance to cumulative impacts. The DEIS states, “No evidence exists of consistent growth in the number of fish collected on O’ahu” (pg. 78) and, in several cases, evaluates impact using the average and maximum collection of aquarium fish on O’ahu from 2000 to 2017. However, during this same period, reporting decreased from 69% of permit-holders in 2000 to 33% in 2017 (DEIS Table 4-2). Given this decline in reporting, data in the DEIS does not accurately show trends in catch.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>Table 2 provided by the commenter is not a statistical analysis of population trends, which is what would be needed to determine whether populations are declining, stable or increasing. This would take into account the precision and accuracy of the data, as comparing the raw mean population densities is not how population trends are determined.</p> <p>Regarding the decline in reporting, as stated in the EIS, some collectors participate in a dive team. To avoid duplicate fish catch reporting, only a principal diver is required to report the catch and effort for the dive team (DAR, pers. comm., 2018). This process ensures that reported catch data are not duplicated in the State’s system. However, this reporting mechanism can lead to confusion by outside observers, as the total number of permit holders is higher than the number of permit holders reporting data, giving the appearance of under reporting. Analysis by the DAR (2019a) has shown that actual underreporting of catch is small, with a 3.5% difference between the number of animals reported caught and sold in 2010 and a 0.4% difference in 2014, which likely represent live releases and mortality.</p>
<p>ASU Center for Global Discovery and Conservation Science</p>	<p>III. Inaccurate estimates of aquarium fish populations Population estimates for target fish species in the DEIS are heavily flawed. Most conspicuously, the authors appear to use hardbottom habitat from the Island of Hawai’i, not O’ahu, to derive population estimates. The authors state that, “To facilitate analysis in this DEIS, estimated population size for each fish species for the island of O’ahu was calculated using CREP data by converting survey counts to abundance per unit area, and then multiplying by the estimated area of hard-bottom habitat in < 30 meters of water (16,840 Ha)” (pg. 37). These data are difficult to trace, as the CREP 2018 citation/link in the DEIS reference list is broken. However, the area cited – 16,840 ha – is identical to the area cited by the same authors in a recent EIS for West Hawai’i Island. In Heenan et al. (2017), hardbottom habitat for O’ahu is 25,119 ha of forereef, which suggests that the authors have been careless in estimating total fish populations. Overall, calculations used by the authors to derive foundational population estimates are not transparent, and show major errors.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>This was an error in the DEIS, the calculations were all based on 25,119 ha, which is the value provided by the PIFSC. The typo in the text has been corrected, and the calculations had been done correctly.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
<p>ASU Center for Global Discovery and Conservation Science</p>	<p>The above issues notwithstanding, the DEIS methods for estimating fish populations are nonscientific. As stated, the DEIS simplistically multiplies one year of CREP survey data by all possible hardbottom habitat < 30 m in depth. This method assumes that fish equally inhabit all hardbottom habitat area across O’ahu. Extrapolating based on hardbottom area ignores basic fish ecology, where fish show highly specific spatial distributions. For example, substantial differences occur between reef fish composition and abundances on patch reefs, where on average species are approximately 50% different to each other (Sale et al., 1994). Species diversity of coral reef fishes is significantly different between exposed and semiexposed habitats, where water depth and wave exposure affect the spatial distribution of many reef fish (Nanami et al., 2005). The assumption that the average of surveys from one year can be multiplied across the entire habitat a fish could occur in ignores a huge wealth of literature dedicated to determining spatial distributions of fish. It also ignores references within the DEIS itself: For example, a survey of 150 species by Kane and Tissot (2017), which demonstrated significant increases in abundance as depth decreases from 30 m to 3 m in Hawai’i, i.e., uneven distributions of fish. The flawed methods of the DEIS have likely resulted in incorrect baselines and overestimations of fish populations, which can misrepresent the effects of aquarium collection on O’ahu’s reef systems.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The population estimates were provided by the PIFSC, not calculated by the Applicant.</p>
<p>ASU Center for Global Discovery and Conservation Science</p>	<p>There are several additional errors in the DEIS’s evaluation of the most heavily impacted species: <i>Zebrasoma flavescens</i> (Yellow Tang) and <i>Cirrhilabrus jordani</i> (Flame Wrasse):</p> <ul style="list-style-type: none"> • After finding that Yellow Tang catch exceeds TAC under several Alternatives, the DEIS repeatedly claims that Yellow Tang populations are likely underestimated by CREP due to its SCUBA survey methods (pg. 79), and therefore multiplies Yellow Tang populations by 260% based on one publication’s estimate of observer bias in Guam (Lindfield et al., 2014). Simplistically inflating population estimates in this manner is not scientifically valid. In fact, it is more likely that the DEIS overestimates, rather than underestimates, fish populations, due to the erroneous use of hardbottom habitat mentioned above. • The EIS acknowledges that, under the Preferred Alternative, “the Flame Wrasse would be collected at a rate of 9.4-24.5% of the CREP population estimate”, but states that “Kane and Tissot (2017) found densities of Flame Wrasse to be up to 1,000 times greater at depths below the CREP survey limits.” This analysis ignores the fact that populations across multiple depths often subsidize one another, and depth-related niche partitioning may contribute to intraspecific diversity. A 9% collection rate up to 30 meters is therefore still likely to impact the population as a whole. • The DEIS also uses data from Kane and Tissot (2017) to show that species such as the Flame Wrasse and the Bandit Angelfish are not available from CREP data because they occur deeper than the survey depths. On the one hand, the DEIS claims that fish equally inhabit all the hardbottom habitat, but on the other hand, 	<p>Your comment has been forwarded to the decision makers.</p> <p>As stated in the FEIS, PIFSC-ESD calculated the population estimates using its data by converting survey counts to abundance per unit area, and then multiplying by the estimated area of hard-bottom habitat in <30 meters of water (16,840 Ha). The FEIS does not claim that fish equally inhabit all the hardbottom habitat, only provides the population estimates provided by PIFSC-ESD, which are based on a sampling of the hardbottom habitat.</p> <p>The EIS does include information on why and how the population estimates may be low for certain species, and provides calculations for reference for certain species (e.g., Yellow Tang and a potential 260% increase), but all impact analysis is based on the PIFSC estimates of population size, not on "inflated" population estimates.</p>

Commentor	Comment	Response
	<p>deeper species “are not observable” because they occur outside of the survey area. These claims are inconsistent, demonstrating DEIS bias.</p>	
<p>ASU Center for Global Discovery and Conservation Science</p>	<p>IV. Inaccurate use of Total Allowable Catch for aquarium fish</p> <p>The central reference with which the DEIS evaluates all Biological Impact is a manual from Ochavillo and Hodgson (2006), which lists Total Allowable Catch of 5-25% for reef species in the Philippines. According to the DEIS, this comparison is appropriate because published species “are similar to those found on O’ahu (e.g., tang, wrasse, butterflyfish, angelfish, triggerfish)” (pg. ii, 86). However, the DEIS uses these data in error:</p> <ul style="list-style-type: none"> • The DEIS considers 5-25% TAC as an acceptable limit for all species targeted by the aquarium industry, and does not distinguish between taxonomic groups. However, TAC varies across taxa. For example, the DEIS claims that a 9.4-24.5% take of Flame Wrasse under the Preferred Alternative is acceptable because it falls within 5 - 25% TAC range, but wrasse species in Ochavillo and Hodgson (2006) have only a 10% sustainable limit (Table 3) [see pdf page 10]. • Similarly, Yellow Tang would be harvested at a 7.7-13.7% rate under the Preferred Alternative (pg. 95). However, Yellow Tang is in the family Acanthuridae (e.g., surgeonfish, tangs, unicornfish), which is not represented in Ochavillo and Hodgson (2006). • More fundamentally, a 5-25% TAC does not represent the best available science for Hawaiian species. Ochavillo and Hodgson (2006) is a manual for evaluating TAC. Instead of borrowing this publication’s demonstration data from the Philippines, the DEIS should apply these methods to Hawaiian species. Without a 	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative would limit collection of any species on the Proposed White list to 4.5% or less of the estimated population, and limit collection to 31 species.</p>

Commentor	Comment	Response
	<p>statistical analysis of population growth, reproduction and mortality rates, TAC cannot be calculated and the impacts of aquarium fishing for O’ahu cannot be determined.</p>	
<p>ASU Center for Global Discovery and Conservation Science</p>	<p>Finally, the use of island-wide populations to evaluate aquarium catch is only appropriate if larval connectivity around the island is absolute, which is likely not the case. Percent catch should be calculated from the hydrodynamically bounded subpopulations that inhabit fished areas. This is especially important as fishers target certain locations consistently, and therefore disproportionately impact place-based populations. While these populations may be difficult to define, they are likely to be much smaller than island-wide populations, and realistic impacts may be more accurately approximated using annual trend data.</p>	<p>Your comment has been forwarded to the decision makers.</p>
<p>ASU Center for Global Discovery and Conservation Science</p>	<p>V. Biased Alternatives considered, and invalid dismissal of Alternatives One of the most fundamental shortcomings of this DEIS is that it does not consider a full suite of Alternatives. It does not consider a full moratorium on aquarium collection, which undermines its ability to fully evaluate impact. Importantly, the DEIS argues that its Preferred Alternative is low impact, simply because it has a lesser impact than other, more intensive harvest scenarios. The DEIS lists a moratorium under “alternatives dismissed from further consideration” because “it does not meet the Applicant’s need to continue commercial aquarium fishers’ livelihoods,” and because this Alternative extends beyond the applicant’s authority (pg. 18). The applicant’s desire to continue aquarium fishing is not a valid reason for dismissing this Alternative. Furthermore, the DEIS considers several scenarios that extend beyond applicant’s authority, such as expanding the Waikiki MLC. Therefore, this is not a limiting factor.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The FEIS includes a revised No Action Alternative that is a full moratorium on collection, reflecting changes to the use of CMLs that have occurred since publication of the DEIS.</p>

Appendix C
Applicant Responses to Comments Received on the RDEIS

Commentor	Comment	Response
ASU Center for Global Discovery and Conservation Science	<p>This biased Alternative selection influences the DEIS’s biological assessment. Specifically, the DEIS’s support for the Preferred Alternative (limited permit issuance) rests largely on its lower impact relative to the No Action Alternative. For example, by the DEIS’s estimate, Yellow Tang would be harvested at a rate of 12.6-27.5% under the No Action alternative, compared to 7.7-13.7% under the Preferred Alternative, with similar discrepancies across other species. This is largely due to the fact that, “under the No Action Alternative, the size and daily bag limits under HAR §13-77 would not apply (see Section 1.2.3), including regulations related to Yellow Tang, Kole, Potter’s Angelfish, Orangespine Unicornfish, and Moorish Idol” (pg. 78). This is a fundamental flaw in the DEIS analysis: the impacts of limited permits cannot be evaluated, since the DEIS confounds the absence of fine mesh nets with other regulatory changes, i.e., relaxed bag limits and looser species restrictions. Instead, aquarium collection methods should be evaluated against a moratorium, or similar.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The FEIS includes a revised No Action Alternative that is a full moratorium on collection, reflecting changes to the use of CMLs that have occurred since publication of the DEIS.</p>
ASU Center for Global Discovery and Conservation Science	<p>Several viable Alternatives were dismissed from consideration by the DEIS (pg. 18):</p> <ul style="list-style-type: none"> • “Creation of Species-specific bag limits”: This Alternative was dismissed because the DEIS considered this option unnecessary, given aquarium catch estimates are below 2.5% of target species populations. As noted, the DEIS’s population estimates are flawed by (1) scientifically incorrect methods extrapolating CREP surveys across all hardbottom habitat, and (2) inattention to area-specific subpopulations. Therefore, a 2.5% estimate is likely incorrect. • “Moratorium on species experiencing population declines”: The DEIS claims that it is unknown if species are declining, as population trend data is not available. In fact, CREP data is available from 2010, and can be downloaded from Heenan et al. (2017). Figure 1 [see pdf page 7] presents this data, which shows that the majority of aquarium species are declining across O’ahu. <p>Both Alternatives, and a complete Moratorium, therefore deserve proper consideration.</p>	<p>Your comment has been forwarded to the decision makers.</p> <p>The new Preferred Alternative includes creation of a White List consisting of 31 species for which aquarium catch would be allowed and individual catch quotas for all 31 species on the proposed White List. See responses to previous comments regarding the CREP data population estimates and population trends.</p>

APPENDIX D

Distribution List for the FEIS

Distribution List for the FEIS

GOVERNMENT OF THE STATE OF HAWAII(S)

Agency	Mailing Address	Electronic Mail or Internet Address	Telephone
State of Hawai'i Department of Agriculture	1428 S. King Str. Honolulu, HI 96814	hdoa.info@hawaii.gov	(808) 973-9550
State of Hawai'i Department of Accounting and General Services	P.O. Box 119 Honolulu, HI 96810	dags@hawaii.gov	(808) 586-0400
State of Hawai'i Department of Business, Economic Development and Tourism	P.O. Box 2359 Honolulu, HI 96804	dbedt.director@hawaii.gov	(808) 586-2355
State of Hawai'i Department of Business, Economic Development and Tourism, Research Division Library	No. 1, Capitol District Bldg. 250 S. Hotel Street, Ste. 435 Honolulu, HI 96813	Joseph.A.Roos@dbedt.hawaii.gov Tammy.Lam@hawaii.gov	(808) 586-2481
State of Hawai'i Department of Business, Economic Development and Tourism, Strategic Industries Division	235 S. Beretania St., 5 th flr. Honolulu, HI 96813	dbedt.energyoffice@hawaii.gov	(808) 587-3812
State of Hawai'i Department of Business, Economic Development and Tourism, Office of Planning Attn: Mary Alice Evans, Director	235 S. Beretania St., 6th Floor Honolulu, HI 96813	http://hawaii.gov/dbedt/op/ maryalice.evans@hawaii.gov	(808) 587-2846
State of Hawai'i Department of Defense	3949 Diamond Head Road Honolulu, HI 96816	hi.dod.pa@icloud.com	(808) 733-4258
State of Hawai'i, Department of Education, Hawaii State Library, Hawai'i Documents Center	478 S. King Street Honolulu, HI 96813	https://www.librarieshawaii.org/locations/index.htm	(808) 586-3555
State of Hawai'i Department of Hawaiian Home Lands	P.O. Box 1879 Honolulu, HI 96805	dhhl.icro@hawaii.gov	(808) 620-9501
State of Hawai'i, Department of Health, Environmental Health Administration	P.O. Box 3378 Honolulu, HI 96801	webmail@doh.hawaii.gov	(808) 586-4424
State of Hawai'i, Department of Land and Natural Resources	P.O. Box 621, Honolulu, HI 96809	dlnr@hawaii.gov	(808) 587-0400
State of Hawai'i Department of Land and Natural Resources State Historic Preservation Division	601 Kamokila Blvd., Rm. 555 Kapolei, HI 96707	Alan.S.Downer@hawaii.gov	(808) 692-8015
State of Hawai'i Department of Transportation	869 Punchbowl Street Honolulu, HI 96813	dotpao@hawaii.gov	(808) 587-2160
University of Hawai'i Water Resources Research Center	2540 Dole Street, Room 283 Honolulu, HI 96822	thomas@hawaii.edu	(808) 956-7847
University of Hawai'i Environmental Center Patricia Hirakawa	2500 Dole Street Krauss Annex 19 Honolulu, HI 96822	hirakawa@hawaii.edu	(808) 956-7362
University of Hawai'i Thomas H. Hamilton Library	2550 McCarthy Mall Honolulu, HI 96822	uhmlib@hawaii.edu	(808) 956-8264
University of Hawai'i at Hilo Edwin H. Mo'okini Library	200 W. Kawili Street Hilo, HI 96720	mookini@hawaii.edu	(808) 974-7346
University of Hawai'i Maui College Library	310 Ka'ahumanu Avenue Kahului, HI 96732	uhmclib@hawaii.edu	(808) 984-3233
University of Hawai'i Kaua'i Community College Library	3-1901 Kaumuali'i Highway Lihu'e, HI 96766	kauailib@hawaii.edu	(808) 245-8233

Distribution List for the FEIS

Office of Hawaiian Affairs	711 Kapi'olani Blvd., Suite 500 Honolulu, HI 96813	info@oha.org	(808) 594-1835
Legislative Reference Bureau Library	State Capitol 415 S. Beretania St., Rm. 005 Honolulu, HI 96813	lrb@capitol.hawaii.gov	(808) 587-0690

GOVERNMENT OF THE CITY AND COUNTY OF
HONOLULU (O)

Agency	Mailing Address	Electronic Mail or Internet Address	Telephone
City and County of Honolulu Board of Water Supply	630 S. Beretania Street Honolulu, HI 96813	http://www.hbws.org/cssweb/display.cfm?sid=1181	(808) 748-5000
City and County of Honolulu Department of Customer Services Municipal Library	558 S. King Street City Hall Annex Honolulu, HI 96813-3006	http://www1.honolulu.gov/csd/lrmb/references.htm	(808)768-3757
City and County of Honolulu Department of Design and Construction	650 S. King St., 11th Floor Honolulu, HI 96813	http://www1.honolulu.gov/ddc/aboutus.htm	(808) 768-8480
City and County of Honolulu Department of Environmental Services	1000 'Ulu'ohi'a St., Ste. 308 Kapolei, HI 96707	http://envhonolulu.org/	(808) 768-3486
City and County of Honolulu Department of Facility Maintenance	1000 'Ulu'ohi'a St., Ste. 308 Kapolei, HI 96707	http://www1.honolulu.gov/dfm/	(808) 768-3343
City and County of Honolulu Department of Planning and Permitting	650 S. King St., 7th Floor Honolulu, HI 96813	http://www.honoluludpp.org/	(808) 768-8000
City and County of Honolulu Department of Parks and Recreation	1000 'Ulu'ohi'a St., Ste. 308 Kapolei, HI 96707	http://www1.honolulu.gov/parks/	(808) 768-3001
City and County of Honolulu Department of Transportation Services	650 S. King St., 3rd Floor Honolulu, HI 96813	http://www1.honolulu.gov/dts/	(808) 768-8303

GOVERNMENT OF THE UNITED STATES OF
AMERICA (USA)

Federal Agency	Mailing Address	Electronic Mail or Internet Address	Telephone
Department of the Interior, Geological Survey, Pacific Islands Water Science Center	677 Ala Moana Boulevard, Ste. 415, Honolulu, HI 96813	santhony@usgs.gov	(808) 587-2400
Department of the Interior Fish and Wildlife Service	300 Ala Moana Boulevard, Rm. 3-122, Honolulu, HI 96850-0056	pifwo_admin@fws.gov	(808) 792-9400
Department of Commerce National Marine Fisheries Service	Pacific Islands Regional Office 1611 Kapi'olani Boulevard, Suite 1110 Honolulu, HI 96814	pirohonolulu@noaa.gov	(808) 944-2200
Department of the Interior National Parks Service	Pacific Islands Support Office 300 Ala Moana Boulevard, Rm. 6-226 Honolulu, HI 96850	melia_lane-kamahele@nps.gov	(808) 541-2693

Distribution List for the FEIS

Department of Agriculture National Resources Conservation Service	Pacific Islands Area Office PO Box 50004 Honolulu, HI 96850	travis.thomason@usda.gov	(808) 541-2600
Department of Transportation Federal Aviation Administration	300 Ala Moana Boulevard, Rm. 7-128 Honolulu, HI 96850-7128	kevin.h.nishimura@faa.gov	(808) 312-6030
Department of Transportation Federal Transit Administration	90 7th Street, Suite 15-300 San Francisco, CA 94103	ted.matley@dot.gov	(415) 734-9490
Department of Homeland Security Coast Guard	Commander, 14th Coast Guard District, 300 Ala Moana Boulevard, Room 9-204, Honolulu, HI 96850-4982	julia.i.mundy@uscg.mil	(808) 535-3325

LIBRARIES AND DEPOSITORIES (LD)

Library or Depository	Mailing Address	Electronic Mail or Internet Address	Telephone
Wahiawa Public Library	820 California Ave. Wahiawa, HI 96786	http://www.librarieshawaii.org/locations/index.htm	(808) 622-6345
Kapolei Public Library	1020 Manawai St. Kapolei, HI 96707	http://www.librarieshawaii.org/locations/index.htm	(808) 693-7050
Pearl City Public Library	1138 Waimano Home Rd. Pearl City, HI 96782	http://www.librarieshawaii.org/locations/index.htm	(808) 453-6566
Kailua Public Library	239 Kuulei Rd Kailua, HI 96734	http://www.librarieshawaii.org/locations/index.htm	(808) 266-9911

NEWS MEDIA (NM)

Organization	Mailing Address	Electronic Mail or Internet Address	Telephone
Honolulu Star Advertiser	Restaurant Row 7, Waterfront Plaza, Suite 210, 500 Ala Moana Boulevard, Honolulu, HI 96813	citydesk@staradvertiser.com	(808) 529-4747
Hawai'i Tribune Herald David Bock, Publisher and Editor	P.O. Box 767 Hilo, HI 96721	dbock@hawaiitribune-herald.com	(808) 930-7323
West Hawai'i Today Tom Hasslinger, Editor	P.O. Box 789, Kailua-Kona, HI 96745-0789	cjensen@westhawaii.com	(808) 329-9311
The Garden Island	P.O. Box 231, Lihu'e, HI 96766	jelse@thegardenisland.com	(808) 245-3681
Maui News	100 Mahalani Street, Wailuku, HI 96793	citydesk@mauinews.com	(808) 244-3981
Moloka'i Dispatch	P.O. Box 482219, Kaunakakai, HI 96748	editor@themolokaidispatch.com	(808) 552-2781

ELECTED AND OTHER OFFICIALS (EO)

Official	Mailing Address	Electronic Mail or Internet Address	Telephone
U.S. Senator - Mazie Hirono	300 Ala Moana Blvd., Rm 3-106 Honolulu, HI 96850	hawaiioffice@hirono.senate.gov	(808) 522-8970
U.S. Senator - Brian Schatz	300 Ala Moana Blvd., Rm 7-212 Honolulu, HI 96850	brian_schatz@schatz.senate.gov	(808) 523-2061

Distribution List for the FEIS

U.S. Representative - Ed Case	2443 Rayburn House Office Building Washington, DC 20515	ed.case@mail.house.gov	(202) 225-2726
U.S. Representative - Kaiali'i Kahele	1205 Longworth House Office Building Washington, DC 20515	kai.kahele@mail.house.gov	(202)225-4906
State Senator - Stanley Chang Senate District 9	Hawaii State Capitol, Rm. 226	senchang@Capitol.hawaii.gov	(808) 586-8420
State Senator - Donovan M. Dela Cruz Senate District 22	Hawaii State Capitol, Rm. 208	sendelacruz@capitol.hawaii.gov	(808) 586-6090
State Senator - Kurt Fevella Senate District 19	Hawaii State Capitol, Rm 217	senfevella@capitol.hawaii.gov	(808) 586-6360
State Senator - Mike Gabbard Senate District 20	Hawaii State Capitol, Rm 201	sengabbard@capitol.hawaii.gov	(808) 586-6830
State Senator -Bennette E. Misalucha Senate District 16	Hawaii State Capitol, Rm. 215	senmisalucha@Capitol.hawaii.gov	(808) 586-6230
State Senator - Les Ihara Jr. Senate District 10	Hawaii State Capitol, Rm. 220	senihara@capitol.hawaii.gov	(808) 586-6250
State Senator - Jarrett Keohokalole Senate District 24	Hawaii State Capitol, Rm 203	senkeohokalole@capitol.hawaii.gov	(808) 587-7215
State Senator - Michelle N. Kidani Senate District 18	Hawaii State Capitol, Rm 228	senkidani@capitol.hawaii.gov	(808) 586-7100
State Senator - Donna Mercado Kim Senate District 14	Hawaii State Capitol, Rm. 218	senkim@Capitol.hawaii.gov	(808) 587-7200
State Senator - Sharon Y. Moriwaki Senate District 12	Hawaii State Capitol, Rm. 223	senmoriwaki@capitol.hawaii.gov	(808) 586-6740
State Senator - Clarence K. Nishihara Senate District 17	Hawaii State Capitol, Rm 214	sennishihara@capitol.hawaii.gov	(808) 586-6970
State Senator - Karl Rhoads Senate District 13	Hawaii State Capitol, Rm 204	senrhoads@capitol.hawaii.gov	(808) 586-6130
State Senator - Gil Riviere Senate District 23	Hawaii State Capitol, Rm. 202	senriviere@Capitol.hawaii.gov	(808) 586-7330
State Senator - Maile S.L. Shimabukuro Senate District 21	Hawaii State Capitol, Rm. 222	senshimabukuro@capitol.hawaii.gov	(808) 586-7793
State Senator - Brian T. Taniguchi Senate District 11	Hawaii State Capitol, Rm 219	sentaniguchi@capitol.hawaii.gov	(808) 586-6460
State Senator - Chris Lee Senate District 25	Hawaii State Capitol, Rm 216	senlee@capitol.hawaii.gov	(808) 587-8388
State Senator -Glenn Wakai Senate District 15	Hawaii State Capitol, Rm 407	senwakai@capitol.hawaii.gov	(808) 586-8585
State Representative - Ryan Yamane House District 37	Hawaii State Capitol, Rm. 420	repyamane@capitol.hawaii.gov	(808) 586-6150
State Representative - Henry J.C. Aquino House District 38	Hawaii State Capitol, Rm. 419	repaquino@capitol.hawaii.gov	(808) 586-6520
State Representative - Della Au Belatti House District 24	Hawaii State Capitol, Rm. 439	repbelatti@Capitol.hawaii.gov	(808) 586-9425
State Representative- Adrian K. Tam House District 22	Hawaii State Capitol, Rm. 317	reptam@Capitol.hawaii.gov	(808) 586-8520
State Representative - Matthew LoPresti House District 41	Hawaii State Capitol, Rm. 333	replopresti@capitol.hawaii.gov	(808) 586-6080

Distribution List for the FEIS

State Representative - Sonny Ganaden House District 30	Hawaii State Capitol, Rm. 330	repganaden@capitol.hawaii.gov	(808) 586-6010
State Representative - Ty J.K. Cullen House District 39	Hawaii State Capitol, Rm. 316	repcullen@capitol.hawaii.gov	(808) 586-8490
State Representative - Stacelynn K.M. Eli House District 43	Hawaii State Capitol, Rm. 324	repeli@Capitol.hawaii.gov	(808) 586-8465
State Representative- Cedric Asuega Gates House District 44	Hawaii State Capitol, Rm. 311	repgates@Capitol.hawaii.gov	(808) 586-8460
State Representative - Sharon E. Har House District 42	Hawaii State Capitol, Rm. 318	rephar@capitol.hawaii.gov	(808) 586-8500
State Representative - Mark J. Hashem House District 18	Hawaii State Capitol, Rm. 424	rephashem@capitol.hawaii.gov	(808) 586-6510
State Representative - Daniel Holt House District 29	Hawaii State Capitol, Rm. 333	repholt@Capitol.hawaii.gov	(808) 586-6180
State Representative- Linda Ichiyama House District 32	Hawaii State Capitol, Rm. 426	repichiyama@Capitol.hawaii.gov	(808) 586-6220
State Representative - Aaron Ling Johanson House District 31	Hawaii State Capitol, Rm. 436	repjohanson@capitol.hawaii.gov	(808) 586-9470
State Representative - Lisa Kitagawa House District 48	Hawaii State Capitol, Rm. 310	repkitagawa@capitol.hawaii.gov	(808) 586-8540
State Representative - Bertrand Kobayashi House District 19	Hawaii State Capitol, Rm. 403	repkobayashi@Capitol.hawaii.gov	(808) 586-6310
State Representative- Dale T. Kobayashi House District 23	Hawaii State Capitol, Rm. 326	repdkobayashi@Capitol.hawaii.gov	(808) 586-8475
State Representative - Sam Satoru Kong House District 33	Hawaii State Capitol, Rm. 313	repkong@capitol.hawaii.gov	(808) 586-8455
State Representative - Lisa Marten House District 51	Hawaii State Capitol, Rm. 311	repmarten@Capitol.hawaii.gov	(808) 586-9450
State Representative- Sylvia Luke House District 25	Hawaii State Capitol, Rm. 306	repluke@Capitol.hawaii.gov	(808) 586-6200
State Representative - Scot Z. Matayoshi House District 49	Hawaii State Capitol, Rm. 331	repmatayoshi@capitol.hawaii.gov	(808) 586-8470
State Representative - Lauren Matsumoto House District 45	Hawaii State Capitol, Rm. 315	repmatsumoto@capitol.hawaii.gov	(808) 586-9490
State Representative - Bob McDermott House District 40	Hawaii State Capitol, Rm. 330	repmcdermott@Capitol.hawaii.gov	(808) 586-9730
State Representative - John M. Mizuno House District 28	Hawaii State Capitol, Rm. 402	repmizuno@capitol.hawaii.gov	(808) 586-6050
State Representative - Scott Y. Nishimoto House District 21	Hawaii State Capitol, Rm. 421	repnishimoto@Capitol.hawaii.gov	(808) 586-8515
State Representative- Takashi Ohno House District 27	Hawaii State Capitol, Rm. 435	repohno@Capitol.hawaii.gov	(808) 586-9415
State Representative - Val Okimoto House District 36	Hawaii State Capitol, Rm. 319	repokimoto@capitol.hawaii.gov	(808) 586-9460
State Representative - Amy A. Perruso House District 46	Hawaii State Capitol, Rm. 303	repperruso@capitol.hawaii.gov	(808) 586-6700
State Representative - Sean Quinlan House District 47	Hawaii State Capitol, Rm. 304	repquinlan@Capitol.hawaii.gov	(808) 586-6380

Distribution List for the FEIS

State Representative- Scott K. Saiki House District 26	Hawaii State Capitol, Rm. 431	repsaiki@Capitol.hawaii.gov	(808) 586-6100
State Representative - Jackson D. Sayama House District 20	Hawaii State Capitol, Rm. 324	repsayama@capitol.hawaii.gov	(808) 586-6900
State Representative - Gregg Takayama House District 34	Hawaii State Capitol, Rm. 323	reptakayama@Capitol.hawaii.gov	(808) 586-6340
State Representative- Roy M. Takumi House District 35	Hawaii State Capitol, Rm. 320	reptakumi@Capitol.hawaii.gov	(808) 586-6170
State Representative - Patrick Pihana Branco House District 50	Hawaii State Capitol, Rm. 328	repbranco@capitol.hawaii.gov	(808) 586-6480
State Representative- Gene Ward House District 17	Hawaii State Capitol, Rm. 302	repward@Capitol.hawaii.gov	(808) 586-6420
Honolulu City and County Council Chair and Presiding Officer - Tommy Waters	530 South King St., Rm 202 Honolulu, HI 96813	tommy.waters@honolulu.gov	(808) 768-5004
Mayor Rick Blangiardi	530 South King St., Rm 300 Honolulu, HI 96813	honolulu.gov/mayor	(808) 768-4141

CONSULTED PARTIES AND COMMENTERS UNDER
SECTION 11-200-15, HAR(CP)

Name	Mailing Address	Electronic Mail or Internet Address	Telephone
Keith Dane, Hawai'i Policy Advisor, The Humane Society of the United States	67-1185 Mamalahoa Hwy. D-104 PMB:259 Kamuela, HI 96743	kdane@humanesociety.org	
Laura Smythe, Litigation Fellow, Animal Protection Litigation, The Humane Society of the United States	1255 23rd Street NW, Suite 450 Washington, DC 20037	lsmythe@humanesociety.org	
Inga Gibson, Policy Director, Pono Advocacy, LLC		ponoadvocacy@gmail.com	
Mike Nakachi, President, Moana Ohana	PO Box 4454 Kailua-Kona, HI 96745	mike@moanaohana.com	
Kealoha Pisciotta, Mauna Kea Anaina Hou and Kai Palaoa	PO Box 5864 Hilo, HI 96720	keomaivg@gmail.com	
Miyoko Sakashita, Oceans Director, Senior Counsel, Center for Biological Diversity	1212 Broadway, Suite 800 Oakland, CA 94612	miyoko@biologicaldiversity.org	
Rene Umberger, Executive Director, For the Fishes	PO Box 1894 Kihei, HI 96753	rene@forthefishes.org	
Teresa E. Kaneakua, 'Aho Hui Kia'i Kanawai Lead Compliance Specialist, Office of Hawaiian Affairs	560 N. Nimitz Hwy., Suite 200 Honolulu, HI 96817	info@oha.org	(808) 594-1835
Robert Flatt		robert@fishes.com	
Alton Miyasaka		amiyasaka7@cs.com	
Mark Tang		dancingcloudrefuge@gmail.com	
Jojo Tanimoto, Aha Moku Island Council		guavaland622@gmail.com	

Distribution List for the FEIS

OTHER INTERESTED PARTIES

Name	Mailing Address	Electronic Mail or Internet Address	Telephone
Makani Christensen		makani.christensen@gmail.com	
William Aila		william.j.ailajr@hawaii.gov	
Roz Dias		roz@thepaf.org	
Noelani Puniwai		npuniwai@hawaii.edu	
Dean Crowell		dcrowell@hawaii.edu	
Chris Cramer		ccramer@maunaluafishpondheritage.org	

APPENDIX E

Changes Made to the DEIS and Incorporated Into the FEIS

APPENDIX E –CHANGES MADE TO THE DEIS AND INCORPORATED INTO THE FEIS

Revisions made to the DEIS, which are reflected in this FEIS, are summarized below:

- Addition of appendices
 - Appendix E – Changes Made to the DEIS and Incorporated into the FEIS
- General edits throughout document:
 - Change draft to final or DEIS to FEIS
 - Corrected grammatical or spelling errors as appropriate
 - Updated species population estimates to account for updated population estimates from PIFSC-ESD (2020; formerly CREP); this change was also made in all relevant figures and tables throughout the document
 - Updated the proposed action from issuance of 20 Commercial Aquarium Permits to Establishment of a White List and Limited Collection (Preferred) Alternative. Change made throughout document.
 - Updated date of document on title page
 - Updated Section, Table, and Figure references where relevant
 - Updated results throughout to reflect the new Preferred Alternative
 - Added language clarifying that the DLNR and/or BLNR has the authority to impose specific permit conditions or alter the proposed White List or catch quotas, as appropriate
 - Clarified that CMLs for aquarium collection now require HEPA review
 - Updated scientific name for Bandit Angelfish
 - Added fish species on the proposed White List to analysis as needed (i.e., species on the proposed White List that weren't previously analyzed were added)
 - Added clarification to table headings related to which alternative(s) data is applicable to.
- Applicant Publication Form
 - Updated contact information for applicant
 - Updated submittal status from DEIS to FEIS
 - Updated project summary to account for new proposed action
- Executive Summary
 - Added information related to the January 2021 court ruling related to CMLs
 - Updated proposed action to reflect new preferred alternative, this also resulted in changes to the summary of impacts
- Chapter 1.0 Introduction
 - Added language clarifying that the 15 fishers may file individual permit applications with the DLNR if this FEIS is accepted.
 - Added Section 1.1.2 Status of Commercial Marine Licenses
 - Added in paragraph about DEIS to Section 1.1.3
 - Added Section 1.2.2 Hawai'i Revised Statute (HRS) 189-2,3 [Commercial Marine Licenses; CMLs]
- Chapter 3.0 Alternatives
 - Added language to the opening paragraphs outlining changes made to this section
 - Moved Section 3.5 Alternatives Considered but Dismissed to Section 3.7
 - Added new Section 3.2 CML-only Alternative (previous No Action)

- Updated No Action Alternative to reflect changes in CML issuance since the DEIS
- Added new Section 3.5 Establishment of a White List and Limited Collection (Preferred) Alternative
- Added new alternative to Table 3-1 and updated this table to include information on CMLs
- Updated Section 3.6 Alternatives Considered but Dismissed with additional reasons for rejecting the dismissed alternatives, including removing the mortarium alternative (which is now the No Action) and adding a captive breeding alternative
- Chapter 4.0 Affected Environment
 - Added Cesar et al. (2003) citation to Section 4.1
 - Added additional details on gear types
 - Added additional species for analysis, and added details on diet by species
- Chapter 5.0 Environmental Consequences
 - Changes include new 2019 population estimates (PIFSC-ESD 2020), as well as the addition of the new Creation of a White List and Limited Collection Alternative and a new No Action Alternative reflecting the changes in CML-issuance which have occurred since publication of the DEIS. Additional details have also been added to some analyses in response to public comments
 - Added clarification to each resource explaining how impacts are calculated by alternative, including tables summarizing this.
 - Clarified that all action alternatives would include a cultural impact
 - Added additional details and citations on herbivory and climate change
 - Removed significance conclusions
 - Added data on resiliency of species
 - Updated conclusions and evaluation of HEPA significance criteria