

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
Division of Aquatic Resources
Honolulu, Hawaii 96813

September 12, 2014

Board of Land and Natural Resources
State of Hawaii
Honolulu, Hawaii

Subject: Enforcement Action against Mr. Elpie Valdez for engaging in illegal lay net activity at Kanaha Beach Park, Maui

Summary: This submittal requests the Board to find that Elpie Valdez violated Hawaii Administrative Rules §13-75-12.4 by engaging in illegal lay net activity at Kanaha Beach Park, Wailuku, Maui, and recommends that the Board assess an administrative fine of \$4,000 pursuant to Hawaii Revised Statutes section 187A-12.5.

Date of Incident: November 7, 2013

Against: Mr. Elpie Valdez
77 Eleu Pl.
Kihei, HI 96753

Location of Incident: Kanaha Beach Park, Wailuku, Maui County, Hawai'i

I. INTRODUCTION

On November 7, 2013, Respondent Mr. Elpie Valdez (“VALDEZ”) was issued two citations: one for engaging in illegal lay net activity in waters of the Island of Maui and another for using a lay net of illegal dimensions. VALDEZ’s illegal activity resulted in the take of 148 fish. Based on the analysis below, DAR staff recommends an administrative fine of \$4,000 to be levied against VALDEZ.

II. FACTUAL BACKGROUND

A. The November 7, 2013 incident

This case involves illegal lay netting activity on Maui. At least one member of the public and two DOCARE officers witnessed the unlawful activity. The incident and investigation are documented in the attached DOCARE report. See **Exhibit A**.

On Thursday, November 7, 2013, at approximately 7:05 a.m., Vernon Ikeda (“IKEDA”) arrived at Kanaha Beach Park in Wailuku on the Island of Maui and observed a man, later identified as Elpie Valdez (“VALDEZ”), engaging in lay net activity. IKEDA observed VALDEZ on an orange/yellow kayak retrieving numerous fish from a net in the water that was set parallel to the beach near some rocks. According to IKEDA’s statement, he observed VALDEZ gather fishes from the net, place them inside a white nylon bag, and then re-set the net in the water. As IKEDA continued to observe, VALDEZ paddled his kayak to retrieve a black plastic tub that was floating nearby and then continued collecting fishes from the net and resetting the net in a straight line parallel to the beach. IKEDA also observed another net inside a green mesh bag on the beach and a third net that was set in the water perpendicular to the beach. This third net was not connected to the net set parallel to the beach. IKEDA contacted DOCARE.

At one point, VALDEZ exited the water and walked back to the parking lot to his pickup truck to make a telephone call. IKEDA confronted VALDEZ and asked him why he was leaving his nets unattended and advised him that what he was doing was illegal. IKEDA related that VALDEZ nervously laughed then returned to his kayak and promptly began to retrieve the net.

Officer E. Vuong arrived on scene at approximately 8:05 a.m. and also observed VALDEZ engaging in lay net activity. Subject VALDEZ was on an orange/yellow kayak retrieving fishes from a net. The net began approximately 100 feet from the shoreline and extended in a crescent shape from the beach, out and towards the right (east). Officer Vuong also observed another net rolled up inside a green mesh bag, lying on the beach with numerous fishes inside the net.

At approximately 8:20 a.m., Field Supervisor Tamaye also arrived on scene. At this time, both Officer Vuong and Field Supervisor Tamaye observed a third unattended lay net set perpendicular to the beach, approximately 100 feet to the right of VALDEZ. Both officers continued to monitor VALDEZ while he retrieved the net that was parallel to the beach, pulling himself along in a West to East (left to right) direction as he did so.

VALDEZ returned to shore and, with the assistance of a bystander, unloaded the net and entangled fish from his kayak. (It was later determined that the bystander was only helping VALDEZ retrieve the nets on the promise that he would be given some fish in return.) During this time, the net set perpendicular to shore was left unattended in the water. After unloading his net and catch, VALDEZ returned to the water and retrieved the third net, which was set perpendicular to shore.

After VALDEZ retrieved the third net, Officer Vuong made contact with him, stated his purpose and intentions, and advised him that he was in violation of Hawaii Administrative Rules (“HAR”) §13-75-12.4 – It is unlawful for any person to use a lay net in the waters of the Island of Maui. VALDEZ stated that he was not conducting lay net and that he was surrounding the net and was in the process of collecting the fishes but due to the fact that the net and fishes were so heavy, he was concerned that the kayak might tip over so he was retrieving it in sections. He also related that he was aware of the lay net rules and believed that he was not in violation.

Upon inspection of the net, it was found that each net was approximately 330 feet in length and 13 feet in height. This was a violation of HAR §13-75-12.4(a)(2)(A) – It is unlawful for any person to possess or use a lay net which is longer than 125 feet in length and more than 7 feet in height.

Subject VALDEZ received two citations: one for violation of HAR §13-75-12.4 – unlawful use of a lay net in the waters of the Island of Maui; and one for violation of §13-75-12.4(a)(2)(A) – unlawful possession or use of a lay net exceeding 125 feet in length and 7 feet in height.

B. Assessment of biological resources removed

An inspection was conducted of all marine species taken. There were a total of 148 fishes caught inside all three of the nets: 131 ‘ama‘ama (*Mugil cephalus*), 9 nenu (*Kyphosus vaigiensis*), 7 lai (*Scomberoides lysan*), and 1 weke (*Mulloidichthys vanicolensis*). All fish were seized as evidence.

A team consisting of researchers from the Fisheries Ecology Research Lab at the University of Hawaii at Manoa and volunteers from Conservation International’s Hawaii Fish Trust took length and weight measurements of 130 total specimens: 113 ‘ama‘ama (230.56 lbs.), 10 nenu¹ (58.24 lbs.), 6 lai (5.29 lbs.), and 1 weke (1.06 lbs.). They also collected gonads from 22 ‘ama‘ama, 8 nenu, 3 lai, and 1 weke. The gonad samples were histologically assessed to determine reproductive status. The goal of the study was to quantify the impact of the illegal catch on the local fish populations. The reproductive potential of the illegally harvested samples was determined by calculating length-weight relationships, size at maturity, and fecundity. The report, entitled *Effects of Illegal Laynetting in Kanaha, Maui on the Reproductive Output of Important Food Fishes*, is attached as **Exhibit B**.

‘Ama‘ama are known to spawn in Hawaii during the winter months. They spawn sequential batches of eggs every month for 3-5 months during their spawning season. It was determined

¹ According to the DOCARE report there were only 9 nenu taken, so this number (10 nenu) is most likely an error. Correcting this error reduces the total number of measured specimens to 129.

that 21% of the ‘ama‘ama analyzed were large (> 45 cm), spawning females. The smaller females were not spawning capable at capture, but could have developed and spawned later during the season.

It is estimated that at least 7.2 million eggs would have been spawned from the larger size class of ‘ama‘ama females at the next spawning event, and as many as 36 million eggs may have been produced during the entire spawning season. The impact of this loss in reproductive output on the population is difficult to determine without an estimate of the ‘ama‘ama population abundance and size. If only one hundredth of one percent (0.01%) of these eggs hatched and survived to recruitment then there would have been an increase in fish abundance by 3,600 individuals. If one tenth of one percent (0.1%) survived then up to 36,000 individuals would have been added to the population. These numbers do not include potential recruits from the smaller females that likely would have spawned later in the season.

All captured nenu were sexually mature, and all six female nenu were not currently spawning. The six lai that were analyzed were not found to be spawning capable at the time of capture. They were likely immature. The single weke was a female with inactive gonads. It was likely mature based on the size and time of year, but it was not spawning at the time of capture.

III. LEGAL AUTHORITY FOR ENFORCEMENT

A. Hawaii Administrative Rules violated

HAR §13-75-12.4(f)(1) prohibits the use of lay nets in state waters out to 3 nautical miles around the Island of Maui.²

HAR §13-75-12.4(a)(2)(A) makes it “unlawful for any person within the jurisdiction of state waters to... possess or use a lay net which is longer than one hundred twenty-five feet in length when set end to end, and more than seven feet in stretched height.”³

As used in HAR chapter 13-75, a “lay net” is defined as “a gill net that is used in lay net fishing.”⁴ HAR §13-75-1 defines lay net fishing as “a technique of fishing where a person or persons engage in the act of or attempt to engage in the act of deploying a gill net in the water in a specific location, then retrieving the gill net from the same location, after a certain time period has passed to allow for the capture of aquatic life.... The lay net is most commonly deployed in a straight line or semi-circular configuration. The main characteristics of lay net fishing are the open net configuration, the stationary net, person or persons may chase the aquatic life into the net, and only aquatic life that becomes entangled in the net mesh are captured.”⁵

By contrast, HAR §13-75-1 defines “surround gill netting or surround gill net fishing method” as “a technique of fishing where a person or persons engage in the act of or attempt to engage in the

² HAW. ADMIN. R. §13-75-12.4(f)

³ HAW. ADMIN. R. §13-75-12.4(a)

⁴ HAW. ADMIN. R. §13-75-1

⁵ *Id.*

act of deploying a gill net in the water in such a manner as to completely encircle the aquatic life. The gill net primarily entangles aquatic life within the mesh of the net as the aquatic life swim or move into the surround gill net. The main characteristics of surround gill net fishing are the closed net configuration, the moving net, person or persons chase the aquatic life in to the net, and only the aquatic life that entangles in the net mesh are captured.”⁶

In this case, VALDEZ was cited for engaging in illegal lay net activity. The documented observations of IKEDA, Officer Vuong, and Field Supervisor Tamaye all support this position— VALDEZ was using at least two nets at the same time; the nets were stationary, unconnected, placed in specific locations, and deployed with open configurations. VALDEZ claims that he was surrounding the nets, which is allowed by law. Not only is it practically impossible for one person to actively operate more than one net at a time using the surround net method, but it is also inconsistent with the observations of IKEDA and the two DOCARE agents.

B. Administrative fines authorized for violations of HAR Title 13, Chapter 75

The applicable penalty provision for violations under HAR chapter 13-75 provides that a violator “shall be subject to administrative penalties as provided under chapter 187A, HRS, as amended, in addition to any other penalty as provided by law.”⁷

Hawaii Revised Statutes (“HRS”) §187A-12.5 authorizes the Board of Land and Natural Resources “to set, charge, and collect administrative fines and to recover administrative fees and costs, including attorney’s fees and costs, or bring legal action to recover administrative fines, fees, and costs, including attorney’s fees and costs, or payment for damages or for the cost to correct damages resulting from a violation of subtitle 5 of title 12 or any rule adopted thereunder.”⁸ For violations not involving threatened or endangered species, the fine shall be not more than \$1,000 for a first violation.⁹ In addition, a fine of up to \$1,000 may be levied for each specimen of aquatic life taken, killed, or injured in violation of subtitle 5 of title 12 or any rule adopted thereunder.¹⁰

HAR §13-75-12.4, which sets limits on lay net dimensions and prohibits the use of lay nets in Maui waters, was adopted under the authority of HRS §§187A-5 and 188-53, both of which are part of subtitle 5 of title 12, HRS. Thus, the penalty provisions of HRS §187A-12.5 apply.

IV. APPLICATION OF LAW AND RECOMMENDED FINE

A. Maximum fine authorized by statute

VALDEZ was cited for two separate lay net violations and may be fined up to \$1,000 per violation. In addition, VALDEZ’s illegal lay net activity resulted in the taking of 148 fish.

⁶ *Id.*

⁷ HAW. ADMIN. R. §13-75-2

⁸ HAW. REV. STAT. §187A-12.5(a)

⁹ HAW. REV. STAT. §187A-12.5(c)

¹⁰ HAW. REV. STAT. §187A-12.5(e)

Under HRS §187A-12.5, VALDEZ may be fined up to \$1,000 per specimen. Thus, the maximum fine VALDEZ may be liable for is \$150,000.¹¹

B. Factors to be considered in assessing fines

In 2009, the department adopted administrative rules implementing the Civil Resource Violations System (“CRVS”).¹² One of the rules, HAR §13-1-70, lays out a number of factors that the board may consider in assessing fines for resource violations processed through the CRVS. Although the instant administrative enforcement action is not proceeding under the CRVS, the Board may use the factors enumerated in the rule as guidance in assessing fines.

Factors listed in HAR §13-1-70 that may be relevant to this case include:

- “(1) Value of the natural or cultural resource that is damaged or the subject of theft, which may be measured by the market value of the resource damaged or taken and any other factor deemed appropriate by the board or its delegates, such as the loss of the resource to its natural habitat and environment and the cost of restoration or replacement;
...
- (4) Costs for the state to enforce against, investigate and monitor the violation and its damages;
- (5) Fees and costs for the state to prosecute or process the violation in any legal or administrative proceedings, including attorneys’ fees and costs;
- (6) Level of damages to the public for whom the state holds a public trust of the resource involved;
...
- (8) Concurrent civil resource violations when perpetrating the underlying violation;
...
- (10) Level of the respondent’s culpable intent...;
...
- (14) The respondent’s capability and resources in providing any redress and restitution; [and]
...
- (16) Any other factors that may be identified as constructive for the fair assessment of administrative sanctions.”¹³

1. Value of resources damaged or taken

The first factor to consider in assessing administrative sanctions is the value of the resources that were damaged or taken. There are a number of different ways to measure resource value, such as market value, ecosystem services value, cultural value, and intrinsic value, to list a few. In the case of the unlawful take of fisheries resources, market value is a relatively simple calculation.

¹¹ $(\$1,000/\text{violation})(2 \text{ violations}) + (\$1,000/\text{specimen})(148 \text{ specimens}) = \$150,000$

¹² HAW. ADMIN. R. §§13-1-51 to -72

¹³ HAW. ADMIN. R. §13-1-70

Based on the 130 specimens that were weighed and analyzed, at least 230.6 lbs. of 'ama'ama, 58.2 lbs. of nenu, 5.3 lbs. of lai, and 1.0 lb. of weke were taken. The total combined market value of these resources can be estimated by multiplying the total weight of each species by the average market price per pound.

DLNR collects wholesale market price information through monthly commercial marine dealer purchase reports. This represents the prices that marine dealers pay to commercial fishers for their catches. Data from January 1, 2013 to May 31, 2014 for fish sales on Maui indicate an average price of \$2.50/lb. for lai, \$2.56/lb. for nenu, and \$2.41/lb. for weke. Data for 'ama'ama sales on Maui from that time period were unavailable, but data from other islands indicate an average wholesale price around \$4.50/lb.

Using these figures, the estimated wholesale market value of the 130 fish that were measured and weighed was calculated at approximately \$1,202.35. This value would be higher if all 148 specimens were accounted for. Additionally, if the fish had been peddled or sold at retail, their market value would be significantly higher. While no published retail market value data exist, a recent 14-month long survey of Oahu fish market prices conducted by the Nature Conservancy indicates average retail prices of \$2.56/lb. for nenu, \$4.81/lb. for lai, \$5.64/lb. for weke, and \$6.45/lb. for 'ama'ama. Using these average retail prices, the retail market value of the 130 specimens comes out to \$1,667.49. **Table 1** shows the estimated wholesale and retail market values of the 130 fish weighed. If all 148 fish were included in the calculations, the total estimated retail market value of the catch would be closer to \$1,800.

Table 1. Estimated wholesale and retail market values of 130 fish weighed.

Species	Lbs. taken	Avg. price (wholesale)	Market value (wholesale)	Avg. price (retail)	Market value (retail)
'Ama'ama	230.6 lbs.	\$4.50/lb.	\$1,037.70	\$6.45/lb.	\$1,487.37
Nenu	58.2 lbs.	\$2.56/lb.	\$148.99	\$2.56/lb.	\$148.99
Lai	5.3 lbs.	\$2.50/lb.	\$13.25	\$4.81/lb.	\$25.49
Weke	1.0 lbs.	\$2.41/lb.	\$2.41	\$5.64/lb.	\$5.64
TOTAL	295.1 lbs.		\$1,202.35		\$1,667.49

It is considerably more difficult to calculate the value of indirect loss resulting from the violation. The biological assessment determined that the large spawning-capable female 'ama'ama (21% of the 'ama'ama caught), would have produced between 7.2 and 36 million eggs. However, because of the difficulty in estimating how many of those eggs would have hatched and survived to maturity, there would be considerable speculation in placing a value on indirect losses.

Likewise, because of the lack of sufficient ecological and population data for 'ama'ama, nenu, lai, and weke, DAR is unable to quantify the overall impact of the loss in terms of lost ecosystem services and the cost of restoration or replacement. Nevertheless, there is certainly *some* loss in ecosystem services, which would warrant increasing the fine beyond the mere market value of the resources taken.

2. *Recovery of costs*

The rule also allows the Board to consider the cost of enforcement, investigation, monitoring, and prosecution in establishing fines. In this case, the enforcement, investigation and administrative prosecution were conducted by DLNR officers and agents in their normal course of work. No additional costs have been incurred to date. Because of the nature of the violation, DAR staff does not anticipate any additional monitoring costs.

3. *Other factors*

Other factors that the Board may consider include the level of damages to the public as a result of the violation; concurrent violations committed in the same underlying violation; level of culpable intent; the respondent's capability and resources to provide redress and restitution; and any other factor that may be constructive for the fair assessment of sanctions. These other factors may be difficult to quantify, but tend to either increase or decrease the fine.

Damage to the public can include lost ecosystem services as well as lost recreational, cultural, and subsistence opportunities. Although this value may not be readily quantifiable, the unlawful taking of 148 fish is an undeniable loss to the public, which should increase the amount of sanctions imposed on VALDEZ.

VALDEZ was cited for two different violations in the same underlying activity: use of a lay net of illegal dimensions and use of a lay net in state waters surrounding the island of Maui. Based on the eyewitness statements of IKEDA, Officer Vuong, and Field Supervisor Tamaye, it is clear that VALDEZ could have received those identical citations for each of his three nets, bringing the total to six citations. VALDEZ was also in violation of HAR §13-75-12.4(a)(5), which prohibits fishing with more than one lay net at a time. In light of this, the two citations VALDEZ received for the illegal lay net activity was not excessive.

While ignorance of the law does not excuse a violation, the Board may consider the Respondent's level of culpable intent in its assessment of fines. In this case, VALDEZ did not claim ignorance of state law. Rather, he indicated that he was aware of the lay net prohibition, but claimed that he was engaging in surround netting. Either VALDEZ honestly did not understand the difference between the practices of "lay netting" and "surround gill netting" as defined in HAR §13-75-1, or he was attempting to exploit a legal loophole to justify his unlawful activity.

Consideration of the Respondent's capability and resources to provide redress and restitution gives the Board some latitude in imposing fines based on the circumstances of the Respondent. Unless and until more information is provided by Respondent, the Board need not speculate as to VALDEZ's ability to provide redress and restitution.

4. *Proposed CRVS Administrative Sanctions Schedule*

If the instant enforcement action was proceeding under the CRVS, the Board would also be required to consider its Administrative Sanctions Schedule ("Schedule") in assessing fines for a

violation. The purpose of this Schedule is to provide guidance and promote consistency in the assessment of administrative sanctions. DAR's current Schedule is very limited in scope; it only provides penalties for violations involving the failure to submit commercial fishing catch reports. Lay net violations are not covered under the current Schedule, but DAR has been drafting proposed amendments that would expand the scope of the Schedule to include all aquatic resource violations. Although the proposed Schedule has not yet been adopted, the Board may still find it useful to provide guidance in the assessment of administrative fines.

Under the proposed amended Schedule, the fine for unlawful lay net activity is \$200 per violation for a first violation. VALDEZ was cited for two violations: using a lay net in Maui waters and using a lay net of illegal dimensions. The proposed Schedule also provides an additional fine of \$200 per specimen of regulated aquatic life¹⁴ and \$100 per specimen of unregulated aquatic life¹⁵ taken as a result of the unlawful activity. VALDEZ's unlawful lay net activity resulted in the take of 131 'ama'ama, 9 nenuue, 7 lai, and 1 weke. 'Ama'ama (*Mugil cephalus*) is a regulated species under state law and thus subject to a fine of \$200 per specimen.¹⁶ Nenuue (*Kyphosus vaigiensis*), lai (*Scomberoides lysan*), and red weke (*Mulloidichthys vanicolensis*) are not regulated under state law and therefore subject to fines of \$100 per specimen. **Table 2** shows the total fine amount based solely on the proposed Schedule.

Table 2. Proposed administrative fines based on proposed amendments to the CRVS Administrative Sanctions Schedule.

Violation	# Violations	Fine per violation	Total Fine
Use of lay net in Maui waters	1	\$200	\$200
Lay net of illegal dimensions	1	\$200	\$200
Species	# Specimens taken	Fine per specimen	Total Fine
'Ama'ama	131	\$200	\$26,200
Nenuue	9	\$100	\$900
Lai	7	\$100	\$700
Weke	1	\$100	\$100
TOTAL	148		\$28,300

Under the CRVS, the Schedule serves as a guide for issuing citations. When issuing a civil citation, DLNR officers and agents do not have discretion to modify the fine from the amount prescribed by the Schedule. Per-specimen fines must be uniformly applied without regard to the size or value of the specimen. For example the unlawful take of a 100-lb ulua would result in the same fine as the unlawful take of a 4-inch manini.¹⁷ For this reason, per-specimen fines are intentionally set on the higher end to ensure that fines are sufficiently high. At the same time, in

¹⁴ Regulated aquatic life refers to all aquatic life regulated under Title 12, Subtitle 5, HAW. REV. STAT. or Title 13, Subtitle 4, HAW. ADMIN. R.

¹⁵ Unregulated aquatic life includes all other aquatic life not regulated under Title 12, Subtitle 5, HAW. REV. STAT. or Title 13, Subtitle 4, HAW. ADMIN. R.

¹⁶ HAW. ADMIN. R. §13-95-8 sets minimum size limits and seasonal closures for 'ama'ama or mullet.

¹⁷ Both violations would carry a fine of \$200 per specimen (both are regulated species), even though the ulua is much larger and has a greater market value compared to the manini.

order to ensure that fines are not grossly disproportionate to the violation, the CRVS procedure allows the Respondent to request mitigation of the fine. When a mitigation request is made, the Administrative Hearings Officer may reduce the fine based on the circumstances of the violation and the value of the resources taken. This determination is made in consultation with the appropriate DLNR Division with expertise in the area.

C. Recommended penalty

An appropriate penalty is one that creates sufficient deterrence of future violations and accounts for the value of the resources taken. DAR recommends utilizing the \$200 per violation fine established by the proposed Schedule. This fine would provide consistency in the assessment of fines for unlawful fishing gear and help to deter future unlawful activity. To account for the value of lost resources and provide additional deterrence, DAR recommends an additional fine of \$3,600. This value represents twice the estimated retail market value of the marine life taken. DAR believes that this amount is sufficient to account for the resources directly taken, as well as the loss of recreational, cultural, and subsistence opportunities for the public; loss of ecosystem services; and other indirect losses. In sum, DAR recommends a total penalty of \$4,000 (\$400 for the 2 violations and \$3,600 for the take of 148 fish).

V. RECOMMENDATIONS

1. That the Board find that Mr. Elpie Valdez violated Hawaii Administrative Rules §13-75-12.4 by engaging in illegal lay net activity at Kanaha Beach Park, Wailuku, Maui;
2. That the Board assess an administrative fine of \$4,000 against Mr. Elpie Valdez, to be paid within 60 days of the date of this submittal.

Respectfully Submitted,



Frazer McGilvray, Administrator
Division of Aquatic Resources

APPROVED FOR SUBMITTAL:



WILLIAM J. AILA, JR., Chairperson
Department of Land and Natural Resources

Exhibit A

NEIL ABERCROMBIE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

May 15, 2014

TO: Skippy Hau, Aquatic Biologist - DAR
Russel Sparks, Aquatic Biologist - DAR

FROM: Clarence M. Yamamoto, Maui Branch Chief - DOCARE *Clarence M. Yamamoto*

SUBJECT: Request for Administrative Action

I am forwarding a case involving prohibited lay net activity that occurred offshore Kanaha Beach Park on November 7, 2013.

Maui County Prosecutors vigorously pursued this case however, during a March 21, 2014 trial the defendant was found not guilty by per diem Judge Richard Berman.

I request the Division of Aquatic Resources pursue administrative penalties for this violation through the Board of Land and Natural Resources.

Should you have any questions please contact me at 873-3990.

c: Randy AWO, Enforcement Chief

WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

JESSE K. SOUKI
FIRST DEPUTY

WILLIAM M. TAM
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

STATE OF HAWAII
INVESTIGATION REPORT

Dept. DLNR
Div. DOCARE

1. REPORT NUMBER MAF-14-026	
2. INVESTIGATOR VUONG, ERIK	
3. ISLAND MAUI	
4. DISTRICT WAILUKU	
5. CLASSIFICATION FISHERIES RESOURCES MGMT - ILLEGAL LAY NET	
6. COMPLAINT (Firm Name, if Business) VERNON IKEDA	
6. SEX M	7. D.O.B. N/A
RACE HAW	8. OCCUPATION N/A
9. ADDRESS [REDACTED]	10. SCHOOL EMPLOYED/SCHOOL ATTENDING N/A
11. LOCATION OF OFFENSE AND CLOSEST INTERSECTING STREET KANAHA BEACH PARK	12. DATE/TIME/DAY OCCURRED 11/07/2013 0700 THUR
13. DATE/TIME REPORTED 11/07/2013 0745	14. DESCRIBE LOCATION OF OFFENSE OR TYPE OF PREMISES WATER / SHORELINE FRONTING KANAHA BEACH PARK - FIRST ENTRANCE
15. HOW REPORTED TELEPHONE	

6. VEHICLE INVOLVED	Year	Make	Model	Color(s)	License No.	I.D. Characteristics
7. BOAT INVOLVED	Length	Make	Model	Color(s)	Name	HA No. I.D. Characteristics
8. REGISTERED OWNER		Address				Res. Phone

CODE: W = Witness S = Suspect (Fill in Composite Description) R = Reporting Person O = Other

9. NAME	Age	Sex	Code	Address	Res. Phone	Bus. Phone		
VALDEZ, ELPIE CORTEZ	56	M	S	[REDACTED]	[REDACTED]			
IKEDA, VERNON		M	W	[REDACTED]	[REDACTED]			
		M						
10. SEX Composite Description Race	Age	Wt.	Build	Hair	Eyes	Complex	Date of Birth	Driver License/SS#
PHILIPINO MALE ADULT	56	160	MED	BLK	BRN	TAN	[REDACTED]	[REDACTED]
JAPANESE/HAWAIIAN MALE ADULT			MED	BLK	BRN	TAN	N/A	

11. INVESTIGATION: 1. Insert a synopsis of the crime or incident. 2. Summarize details of the crime or incident. 3. Denote persons from whom statements taken and who took them. 4. Identify additional suspects and witnesses. 5. Identify additional investigators. 6. Use opposite side for continuation of report, if necessary.

Synopsis
On 11/07/2013 at approximately 0830 hours, Subject VALDEZ was observed by Complainant IKEDA and DOCARE Officers to be engaging in lay net activity at Kanaha Beach Park, which is within the waters of the Island of Maui. Subject VALDEZ received citations for violation of section HAR 13-75-12.4(a) - It is unlawful for any person to use a lay net in the waters off the Island of Maui and for violation of section HAR 13-75-12.4(2)(A) - Lay net exceeding 125 feet in length and 7 feet in height.

REFER TO THE ATTACHED CITATION REPORT.

REPORT# MAF-14-026

E. VUONG 241

CITATIONS: 066501LNR / 066502LNR

11/07/2013

PROHIBITED LAY NET

PAGE 1 OF 4

SYNOPSIS:

On 11/07/2013 Subject VALDEZ was observed by Complainant IKEDA and DOCARE Officers engaging in lay net activity within the waters of the Island of Maui. Subject VALDEZ received two citations for violation of section 13-75-12.4(a) HAR – It is unlawful for any person to use a lay net in the waters of the Island of Maui and 13-75-12.4(2)(A) HAR – Lay net exceeding 125 feet in length and 7 feet in height.

ASSIGNMENT:

I am presently assigned to the Department of Land and Natural Resource (DLNR), Division of Conservation and Resources Enforcement (DOCARE), Maui Division, on the County of Maui. On 11/07/2013 at approximately 0750 hours, I was assigned to investigate a complaint by Field Supervisor Brooks Tamaye regarding an illegal lay net activity at Kanaha Beach Park.

SCENE:

The scene in this case is located in the census of Wailuku in the County of Maui. The violation occurred in the ocean fronting Kanaha Beach Park. The observed violation was approximately 100 feet from the shoreline of Kanaha Beach Park.

COMPLAINANT/WITNESS:

IKEDA, Vernon

[REDACTED]

REPORT# MAF-14-026

E. VUONG 241

CITATIONS: 066501LNR / 066502LNR

11/07/2013

PROHIBITED LAY NET

PAGE 2 OF 4

COMPLAINT STATEMENT:

Complainant IKEDA related that he arrived at Kanaha Beach Park just after 7am to observe a solo male subject engaging in lay net activity. He observed the male subject on an orange/yellow kayak retrieving numerous fishes from a net near some rocks. He observed another net inside a green mesh bag sitting on the beach. He advised that the male subject gathered up the fishes from the net, placed it inside a white nylon bag, and then re-set the net in the water. Complainant IKEDA observed a black rectangular plastic tub that was floating nearby with some additional nets inside. He observed the male subject paddle the kayak out to the tub and continued collecting the fishes from the net and re-setting the net in a straight line parallel to the beach. He advised that there was also a third net that was set perpendicular from the beach. At one point, the male subject exited the water and walked back to the parking lot to his pickup truck to make a telephone call. Complainant IKEDA confronted the male subject and asked him why he was leaving his nets unattended and advised him that what he was doing was illegal. He related that the male subject nervously laughed then returned to his kayak and promptly began to retrieve the net. Complainant IKEDA advised that the net that was parallel from the beach was not connected to the net that was perpendicular to the beach.

OBSERVATIONS:

I arrived on scene at approximately 0805 hours to observe a solo male subject on an orange/yellow kayak retrieving fishes from a net. I noticed that the net (approximately 100 feet from the shoreline) extended in a crescent shape from the beach, out and towards the right (east). I also observed another net rolled up inside a green mesh bag, lying on the beach with numerous fishes inside the net. At this time, Field Supervisor Tamaye also arrived on scene and we observed a third unattended lay net floating perpendicular from the beach, approximately 100 feet to the right of the male subject. We monitored the male subject for approximately 40 -50 minutes while he retrieved the second net, traveling in an easterly direction. He then re-entered the water on his kayak and subsequently retrieved the third unattended lay net. There was another male subject waiting on the beach who was assisting with carrying the nets onto the beach but it was later determined that he was promised to be given some fishes if he helped the male subject with the retrieval of the nets. (Refer to Field Supervisor Tamaye Supplemental Report)

REPORT# MAF-14-026

E. VUONG 241

CITATIONS: 066501LNR / 066502LNR

11/07/2013

PROHIBITED LAY NET

PAGE 3 OF 4

CONTACT:

I made contact with the male subject on the beach and identified my purpose and intentions. I advised the male subject that he was in violation of section 13-75-12.4(a) HAR – It is unlawful for any person to use a lay net in the waters of the Island of Maui

RESPONSIBLE IDENTIFIED:

VALDEZ, Elpie Cortez

(Identified by Hawaii Driver License # [REDACTED])

ADDRESS: [REDACTED]

Filipino Male Adult/ 5-07/ 160LBS/ Hair: BLK/ Eyes: BRN

SSN: [REDACTED]

STATEMENT:

After advising Subject VALDEZ of the violation, he stated that he was not conducting lay net and that he was surrounding the net and was in the process of collecting the fishes but due to the fact that the net and fishes was so heavy, he was concerned that the kayak might tip over so he was retrieving it in sections. Subject VALDEZ also stated that the other male subject was only helping him retrieve the nets on the promise that he was give him some fish for his help. He related that he is aware of the lay net rules and believed that he was not in violation of the lay net rule.

INSPECTIONS:

An inspection was conducted on all the marine species and of the nets. There were a total of 148 fishes caught inside all three of the nets. Each net was measure at approximately 330 feet in length and 13 feet in height, this was a violation of section 13-75-12.4(2)(A) – Lay net exceeding 125 feet in length and 7 feet in height.

REPORT# MAF-14-026

E. VUONG 241

CITATIONS: 066501LNR / 066502LNR

11/07/2013

PROHIBITED LAY NET

PAGE 4 OF 4

CITATIONS:

Subject VALDEZ received a citation (066501 LNR) for violation of section 13-75-12.4(a) HAR – It is unlawful for any person to use a lay net in the waters of the Island of Maui and another citation (066502 LNR) for violation of section 13-75-12.4(2)(A) HAR – Lay net exceeding 125 feet in length and 7 feet in height. Subject VALDEZ acknowledge the citations by signing and receiving copies of the citations.

EVIDENCE:

I seized all the fishes and equipment that was used in the commission of these violations. Refer to the attached DOCARE Form 9 for further detail.

PHOTOGRAPHIC REPORT:

Refer to the attached photo report.

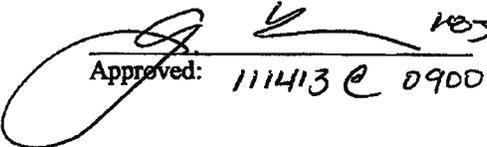
INVESTIGATIONS:

On 11/07/2013 at approximately 0705 hours Subject VALDEZ was observed by Complainant IKEDA to be engaging in lay net activity. Complainant IKEDA contacted DOCARE and when officers arrived on scene, officers also observed Subject VALDEZ engaging in lay net activity. The violation of section 13-75-12.4(a) HAR was based on Subject IKEDA's statement, the method and configurations of the nets and the extended amount of time when Subject VALDEZ left the nets unattended. The violations of section 13-75-12.4(2)(A) HAR was based on the inspection of the net, thus revealing the net had exceeded the maximum length and height.

DISPOSITION:

Pending Wailuku District Court

Court date set for Tuesday December 10th, 2013 @ 0830 hours

Approved:  111413 @ 0900


Officer Erik Vuong 179
Dept. of Land & Natural Resources
November 7, 2013 

SUPPLEMENTAL REPORT : Citation # 066501LNR & 066502LNR

DEFENDANT: VALDEZ, Elpie

CLASSIFICATION: Laynets Generally

OFFICER: B. TAMAYE #23



DATE: 11-08-13 / 1700 hrs.

ASSIGNMENT / ARRIVAL:

On 11/07/13, I responded to a complaint of illegal lay netting offshore Kanaha Beach Park. I arrived at approximately 0820 hrs at the first gated parking area East of Ka'a Pt. Officer E. VUONG was already on scene.

OFFICER OBSERVATIONS:

I observed a green colored mesh bag on the beach with a gill net with numerous mullet and enenue contained within. I further observed an orange and yellow colored kayak approximately 100 feet offshore with a person, later identified by Officer VUONG as Elpie VALDEZ aboard. VALDEZ was retrieving a gillnet from the water pulling himself along as he did so. He appeared to be moving in a West to East direction.

VALDEZ returned to shore and with the assistance of another person, unloaded the net and entangled fish from his kayak.

A net set perpendicular to shore and slightly curving around a rock jetty was observed to be left unattended in the water at this point. After unloading his net and catch, VALDEZ returned to the water and retrieved this net starting on the Western end and moving in an Easterly direction.

DEPARTURE:

I departed the area at approximately 0930 hrs. without incident.

Refer to Officer E. VUONG's key citation report for details.

DLNR / DOCARE PHOTOGRAPH REPORT

CASE NUMBER: MAF-14-026

CLASSIFICATION: FISHERIES RESOURCES MGMT – ILLEGAL LAY NET

SCENE: Kanaha Beach / DOCARE office, Kahului, Maui

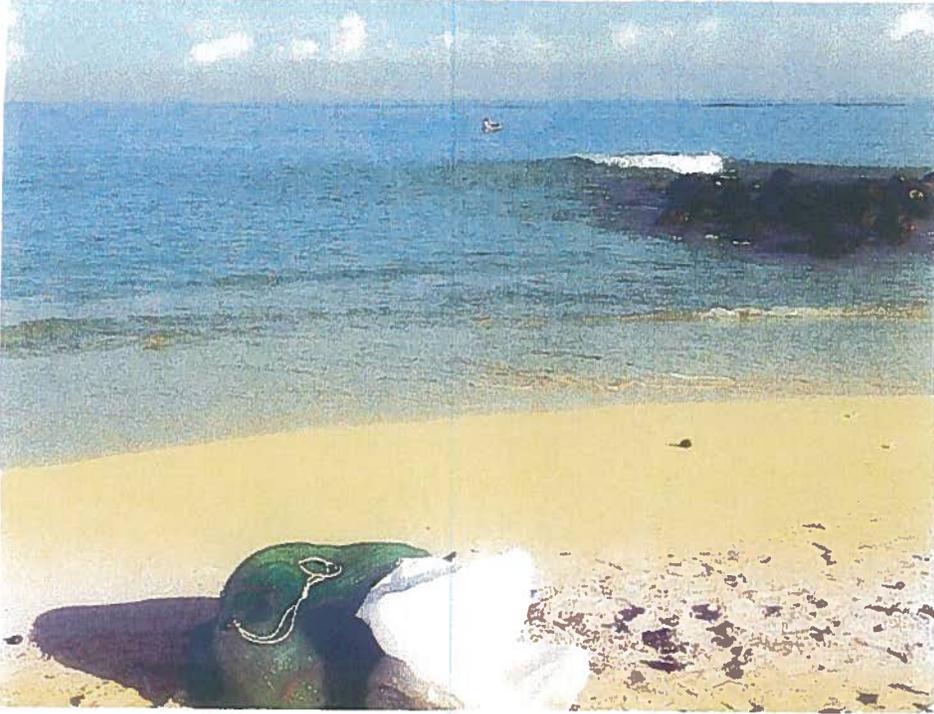
DATE/TIME TAKEN: 11/07/13 0800 – 1400 HRS

PHOTO TAKEN BY: Officer E. Vuong 179

DESCRIPTION OF PHOTOS:

- (1) Photo of Subject VALDEZ on the kayak retrieving the 2nd lay net. The first lay net is on the beach in the green mesh bag.
- (2) A close up photo of the net inside the green mesh bag containing numerous fishes.
- (3) Photo of Subject VALDEZ fronting the rocky point still retrieving the 2nd lay net.
- (4) A closer photo of Subject VALDEZ pulling in the second lay net.
- (5) Photo of Subject VALDEZ (white tank top) being assisted by a passerby, removing the 2nd lay net from the black plastic tub and placed inside another green mesh bag.
- (6) Photo of Subject VALDEZ returning to retrieve the 3rd unattended lay net.
- (7) Photo of Subject VALDEZ (white tank top) returning with the 3rd lay net being assisted by passerbies.
- (8) Photo of the evidence seized from Subject VALDEZ consisting of the kayak and nets along with the numerous fishes that were caught inside the lay net.
- (9) Photo of the nets as it is laid out length-wise in the parking lot at the DOCARE office. The nets had to be laid over lapping each other due to its extreme length. Each net was measured at 330 feet in length and 13 feet in height.

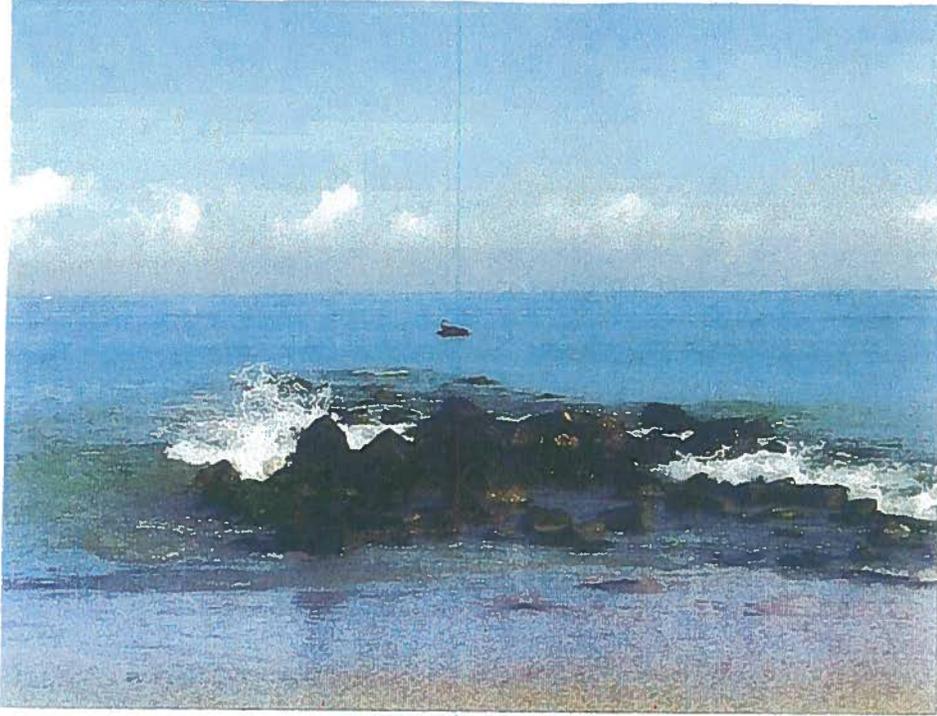
(1)



(2)



(3)



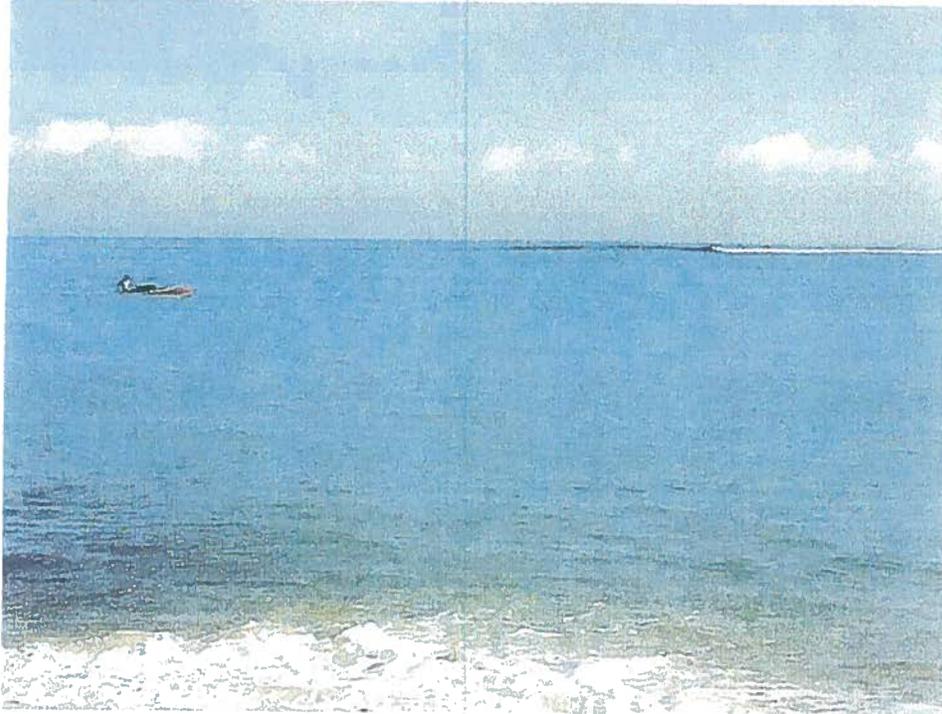
(4)



(5)



(6)



(7)



(8)



(9)



NEIL ABERCROMBIE
GOVERNOR OF HAWAII



WILLIAM J. AJLA, JR.
CHAIRPERSON

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
Division of Conservation & Resources Enforcement
54 South High Street, #101
Wailuku, Hawaii 96793

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
COMMISSION ON WATER RESOURCE
MANAGEMENT
CONSERVATION AND RESOURCES
ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE
COMMISSION
LAND
STATE PARKS

TO : PROSECUTOR'S OFFICE
VIA : Clarence YAMAMOTO, BRANCH CHIEF, MAUI DOCARE
FROM : Jeffrey KINORES #183, EVIDENCE CUSTODIAN
SUBJECT: MOTION TO DISPOSE EVIDENCE
DATE : 110713

Defendant's Name: Elpie C. VALDEZ
Date of Offense: 110713
Citation Number(s): 066501 LNR, 066502LNR
Evidence in custody:

- | | |
|----|---|
| 1 | 1 Orange/yellow kayak w/ blue/white paddle |
| 2 | 3 Monofilament type lay nets each approx. 330 ft in length, 13 ft in height |
| 3 | 2 Green nylon mesh bags |
| 4 | 1 Blue nylon mesh bag |
| 5 | 2 Tabs (pair) |
| 6 | 1 Wood measuring stick |
| 7 | 1 Knife w/sheath |
| 8 | 1 Snorkeling mask |
| 9 | 1 Circular metal weight w/ orange spool w/line |
| 10 | 3 Nylon sacks |
| 11 | 1 Black plastic rectangular tub |
| 12 | 131 Mullet |
| 13 | 9 Nenue |
| 14 | 7 Lai |
| 15 | 1 Weke |
| 16 | |
| 17 | |

Upon conclusion of this case, request that a written motion to dispose of evidence be made. Order to dispose can be written on the court calendar or the Gold copy of the citation that is returned to DOCARE.

Department of Land and Natural Resources
Division of Conservation and Resources Enforcement
175 S. Pūnene Avenue
Kahului, Hawaii

FOLLOW UP BY EVIDENCE CUSTODIAN

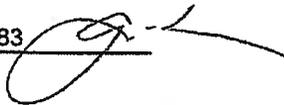
State of Hawaii vs. Elpie C. VALDEZ

Evidence recovered by:

Officer: E. VUONG
Date: 11/7/2013
Time: 1500 hours
Citation / Case #: MAF-14-026

Items recovered:

- 1 1 Orange/yellow kayak w/ blue/white paddle
- 2 3 Monofilament type lay nets each approx. 330-ft in length, 13 ft in height
- 3 2 Green nylon mesh bags
- 4 1 Blue nylon mesh bag
- 5 2 Tabs (pair)
- 6 1 Wood measuring stick
- 7 1 Knife w/sheath
- 8 1 Snorkeling mask
- 9 1 Circular metal weight w/ orange spool w/line
- 10 3 Nylon sacks
- 11 1 Black plastic rectangular tub
- 12 131 Mullet
- 13 9 Nenua
- 14 7 Lai
- 15 1 Weke
- 16
- 17
- 18
- 19
- 20
- 21
- 22
- 23
- 24

Evidence Recovered by: Jeffrey KINORES #183
Evidence Custodian 

Date Received: 11/7/2013
Time Received: 1500 hours

Evidence Secured Within:

Evidence Room	<input checked="" type="checkbox"/>
DOCARE Freezer	<input checked="" type="checkbox"/>
Gun Safe	<input type="checkbox"/>

DOCARE COMPLAINT & SUMMONS

In the DISTRICT/FAMILY COURT of the 2ND JUDICIAL CIRCUIT, STATE OF HAWAII STATE JUVENILE

LNR 066501
Dvr lic / SS# [REDACTED]
NAME VALDEZ
ELPIE CORTEZ
Current/Mailing Address [REDACTED]
City, State, Zip [REDACTED]

Hgt 5-07 Wt 160 Sex M Date of Birth [REDACTED] Age 56 Complexion TAN
Place of Employment School or Branch of Service KEA LANI HOTEL
Job Title, Yr. in school or Military Rank

Parent's name if juvenile or Registered owner of vehicle/vessel: [REDACTED]

Phone number (Days) [REDACTED] (Eves): [REDACTED]

Did on/about this 7 day of NOV Yr 13 at about 8:30 AM PM

did operate/command Vehicle/Vessel#: [REDACTED]
Vehicle/Vessel Make/Name Type Color Yr.
at (location): KANAHA BEACH PARK
and did commit the offense of: LAY NET, GENERAL

SECTION: 13-75-12.4

EVIDENCE TAKEN: Yes No
DESCRIPTION OF EVIDENCE

KAYAK NETS, VARIOUS FISHES
(REFER TO PROPERTY REPORT)

Receipt of this citation is acknowledged (Your signature is not an admission of guilt)

X [Signature]
The undersigned alleges that the person named above committed the offense herein set forth, contrary to law.

Date of issue 11/07/13 Time 9:05 Hrs.

OFF E. VUONG
Print Rank, First Initial & Last Name

Complainant's Signature [Signature] Badge/ID No. 179

Ball Forfeiture by Mail Permitted: Yes No

A Postmarked BEFORE court date Payment Amount CRT B Postmarked ON court date Payment Amount CRT

SUMMONS

Your court appearance date is:

DATE: 12/10/13 TIME: 8:30 AM COURTROOM: 3D

District Court Family Court of WAILOKU

OFFICER

DOCARE COMPLAINT & SUMMONS

In the DISTRICT/FAMILY COURT of the 2ND JUDICIAL CIRCUIT, STATE OF HAWAII STATE JUVENILE

LNR 066502
Dvr lic / SS# [REDACTED]
NAME VALDEZ
ELPIE CORTEZ
Current/Mailing Address [REDACTED]
City, State, Zip [REDACTED]

Hgt 5-07 Wt 160 Sex M Date of Birth [REDACTED] Age 56 Complexion TAN
Place of Employment School or Branch of Service KEA LANI HOTEL
Job Title, Yr. in school or Military Rank

Parent's name if juvenile or Registered owner of vehicle/vessel: [REDACTED]

Phone number (Days) [REDACTED] (Eves): [REDACTED]

Did on/about this 7 day of NOV Yr 13 at about 8:30 AM PM

did operate/command Vehicle/Vessel#: [REDACTED]
Vehicle/Vessel Make/Name Type Color Yr.
at (location): KANAHA BEACH PARK
and did commit the offense of: LAY NET - EXCEEDING 125 FT

(LENGTH) & 7 FT (HEIGHT)

SECTION: 13-75-12.4 (2)(A)

EVIDENCE TAKEN: Yes No
DESCRIPTION OF EVIDENCE

3 LAY NET (330 FT EACH)

13 FEET TALL

Receipt of this citation is acknowledged (Your signature is not an admission of guilt)

X [Signature]
The undersigned alleges that the person named above committed the offense herein set forth, contrary to law.

Date of issue 11/07/13 Time 3:00 PM

OFF E. VUONG
Print Rank, First Initial & Last Name

Complainant's Signature [Signature] Badge/ID No. 179

Ball Forfeiture by Mail Permitted: Yes No

A Postmarked BEFORE court date Payment Amount CRT B Postmarked ON court date Payment Amount CRT

SUMMONS

Your court appearance date is:

DATE: 12/10/13 TIME: 8:30 AM COURTROOM: 3D

District Court Family Court of WAILOKU

OFFICER

Exhibit B

**EFFECTS OF ILLEGAL LAYNETTING IN KANAHA, MAUI ON THE
REPRODUCTIVE OUTPUT OF IMPORTANT FOOD FISHES**

Eva Schemmel*, Makani Gregg, Luka Mossman**, Jason Philibotte**, Erin Zanre,
Ricardo Zanre**, and Alan Friedlander*

*Fisheries Ecology Research Lab, University of Hawaii, Manoa

**Conservational International Hawaii Fish Trust



photo curtesy of Jason Philibotte

Exhibit B

SUMMARY

On November 7th, 2013, 130 fish totaling just under 300 lbs were illegally captured using a laynet in Kanaha, Maui. The majority of the catch was comprised of 'ama 'ama (*Mugil cephalus*) with 113 individuals, followed by nenu (*Kyphosus vaigiensis*), lai (*Scomberoides lysan*), and weke (*Mulloidichthys vanicolensis*). To quantify the impact on the local 'ama 'ama population, we determined the reproductive potential of the illegally harvested samples by calculating length-weight relationships, size at maturity, and fecundity. We found that 'ama 'ama > 45 cm fork length (about 18 inches) were all spawning capable females. 'Ama 'ama below 18 inches were not spawning capable but could have developed and spawned later in this spawning season.

'Ama 'ama are batch spawners and spawn each sequential batch of eggs every month for three or four months. We determined that at least 7.2 million eggs would have been spawned from the larger size class of 'ama 'ama females at the next spawning event and as many as 36 million eggs may have been produced during the entire spawning season. The impact of this loss in reproductive output on the population is unknown without an estimate of the 'ama 'ama population abundance and size. However, we used this opportunity to collect valuable life history information on growth and reproduction of 'ama 'ama, nenu, lai, and weke from Wailuku, Maui. This information will contribute to ongoing community-led spawning season monitoring for the Wailuku Community Marine Management Area (CMMMA) and ongoing management efforts.

OVERVIEW

Local management of marine resources has been shown to have a positive influence on the abundance and biomass of local fish populations (Friedlander et al. 2013). Local communities are working towards sustainable fisheries and food security through local community marine management areas. These CMMAs often have fisheries regulations that include closed seasons, bag limits, and gear restrictions. These restrictions are established to meet local management needs and help improve the health of marine resources. One of the restrictions on Maui is a laynet ban.

An important consideration for local fisheries management is the spawning seasons of reef fishes. Traditional seasonal closures were based on these sensitive times, with these closures ensuring future recruits through protecting these spawning populations (Friedlander et al. 2002; Poepoe et al. 2007). Many reef fishes aggregate in large schools during spawning, and because these aggregations are easily targeted, it is of particular importance that they be protected (Domeier and Colin 1997; Choat 2012).

Effective fisheries management also requires information on fish size at maturity. A minimum legal size limit placed on the fishery is based on size at maturity to ensure that fish have a chance to spawn before being removed from the population. Without this information at the population level, management measures may be ineffective for sustaining a fishery.

Exhibit B

The purpose of this report is to assess the potential impact of an illegal catch in Kanaha on November 7th, 2013 and to collect life history information to further our understanding of the local fish populations for informed management for Wailuku, Maui.

METHODS



Photo: Measuring the fork length of a nenuke.

All fish from the laynet catch were identified to species, measured (fork length), weighed, and assigned gender based on visual inspection of gonads. Gonads were collected from a subsample of each species across size classes to determine size at maturity and reproductive status. Standard histological techniques were used to determine reproductive status.

LENGTH AND WEIGHT RELATIONSHIP

We used the allometric equation for weight at length (Le Cren 1951):

$$W = aL^b$$

where W is weight in grams and L is length in cm, a and b are fitting parameters. The equation is commonly calculated in logarithmic form as:

$$\log W = \log a + b \log L$$

Models were fit to the log-form with standard least-squares regression for both 'ama 'ama and nenuke.

Exhibit B

REPRODUCTIVE STATUS

We collected gonads from 22 'ama 'ama 8 nenu, 3 lai, and 1 weke, which were histologically assessed to determine reproductive status.

Gonads were classified based on a schema from Selman and Wallace (1989). Females with vitellogenic or hydrated oocytes considered mature. Females with atresic oocytes were categorized as mature, since atresic oocytes are indicators of past spawning events. Males were classified as mature by the presence of spermatozoa.

We categorized females that lacked vitellogenic oocytes as non-spawning capable. Non-spawning capable fish may also be immature (virgin), but without continued monitoring throughout the spawning season, we are unable to discern spawning class. We therefore report the proportion spawning capable as the size at which a regression (3-parameter, sigmoidal) of percent spawning capable fish versus fork length indicates 50% of individuals are spawning capable.

The proportion of spawning capable females is a function (Lowerre-Barbieri, Henderson et al. 2009) where

$$P = \frac{1}{1 + e^{(-a(L-L_{50\text{spawning}})}}$$

P = proportion spawning capable females at length L

a = slope of the curve

$L_{50\text{spawning}}$ = the length at 50% spawning capable

FECUNDITY

Instantaneous fecundity was measured for seven females ranging in fork length from 47-56 cm (~18-22 in). Fecundity was estimated using standard gravimetric techniques (Bushnell, Claisse et al. 2010). One ovarian lobe per individual was subsampled, weighing a minimum of 10% of the gonad lobe. The gonad subsample was weighed and the largest mature oocyte size class was removed from the gonad lumen and counted. Instantaneous fecundity was estimated with the following equation:

$$F = N(M_G)M_{\text{SUB}}^{-1}$$

Where

N = number of eggs counted in subsample

M_G = total mass of the gonads

M_{SUB}^{-1} = mass of subsample

Exhibit B

Fecundity and length relationships were determined by regression analyses. Two classic fecundity models were tested, the exponential and linear relationships between fork length and fecundity.

Exponential:

$$F=aL^b$$

Where F is fecundity, L is fork length, and *a* and *b* are fitting parameters.

Linear:

$$F=a+Lb$$

Using AIC values we determined that linear model was a better fit for our data and was used to estimate the total fecundity by summing the estimated individual fecundity of each mature female assessed from the calculated L_{50} and applied to the fecundity model.

RESULTS & DISCUSSION

LENGTH AND WEIGHT

A total of 130 fish weighing 134 kg (295.15 lbs) were removed from Kanaha, Maui on 7 November 2013. The majority of these fish were 'ama 'ama (86%, 230.6 lbs), followed by nenu (*Kyphosus vaigiensis*; 7.7%, 58.2 lbs), lai (*Scomberoides lysan*; 4.6%, 5.3 lbs), and weke (*Mulloidichthys vanicolensis*; 1%, 1.0 lbs) (Table 1).

The length-weight relationship for 'ama 'ama showed allometric growth ($b = 3.16$), meaning that for any unit increase in body length there is a proportionally larger increase in weight (Fig. 1). The slope parameter (*b*) can also be used to determine fish condition or health (Le Cren 1951). This information has not yet been reported for 'ama 'ama in Hawaii. The nenu length-weight regression also showed allometric growth ($b = 3.08$) (Fig. 2). This information is useful for calculations of fish biomass and assessing the health of fish populations.

Exhibit B

Table 1. Species composition, number, and weight of caught fish.

Hawaiian Name	Scientific Name	Fork Length (cm)		Weight (kg)		#	Total kg	Total lbs		
		mean±SD	Minimum	Maximum	mean±SD				Minimum	Maximum
'ama 'ama	<i>Mugil cephalus</i>	41.1±6.3	31.8	57.0	0.93±0.50	0.28	2.44	113	104.58	230.56
nenu	<i>Kyphosus vaigiensis</i>	50.1±3.6	44.5	55.5	2.64±0.66	1.82	3.76	10	26.42	58.24
lai	<i>Scomberoides lysan</i>	36.2±2.6	33.5	40.6	0.40±0.09	0.32	0.58	6	2.40	5.29
weke	<i>Mulloidichthys vanicolensis</i>	-	-	-	-	-	-	1	0.48	1.06
total								130	133.88	295.15

Exhibit B

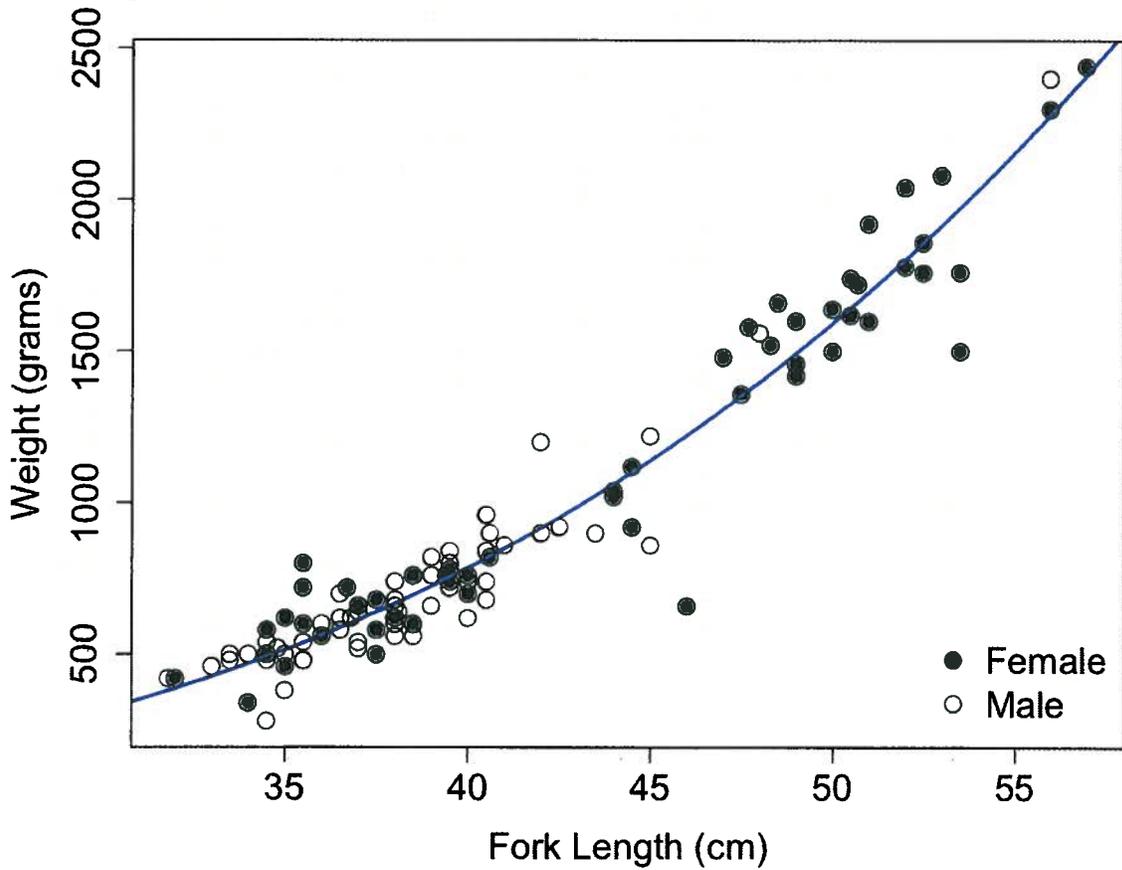


Figure 1. The weight-length relationship for 'ama 'ama from Kanaha, Maui ($W = 0.007FL^{3.165}$, $P < 0.01$, $r^2 = 0.91$). Females and males have a similar relationship, however there were a greater number of larger females compared to males.

Exhibit B

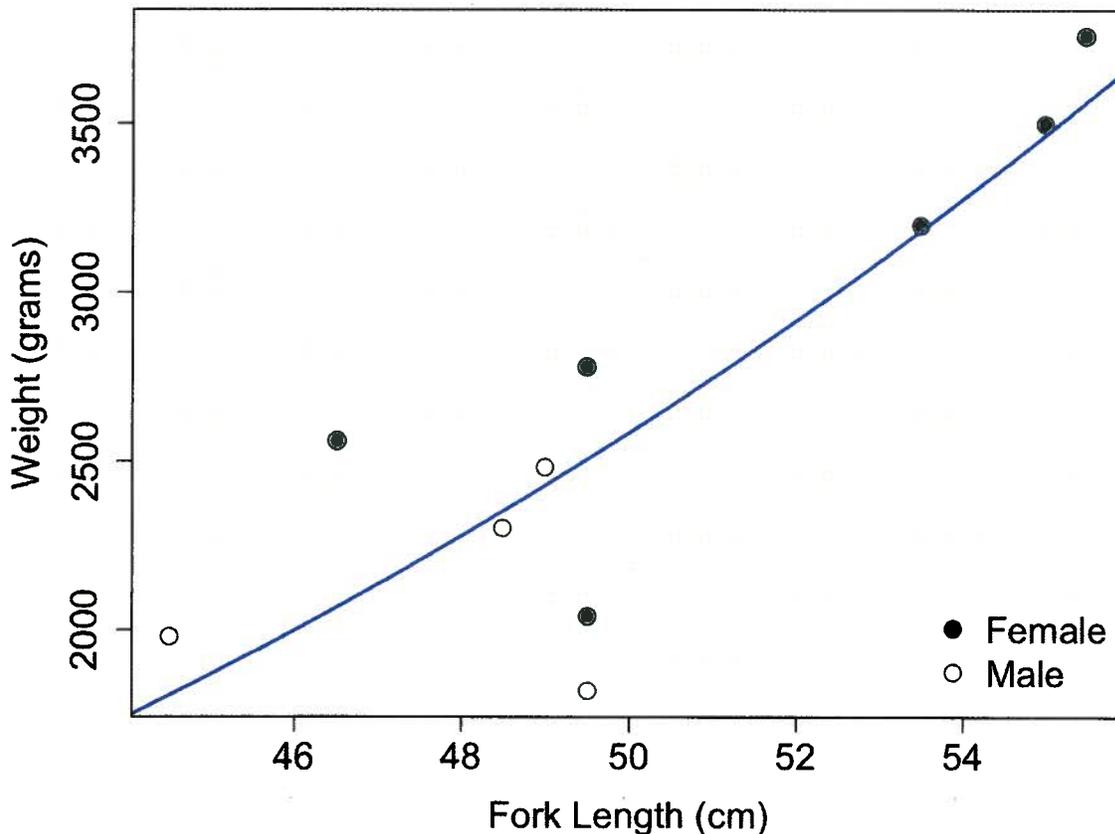


Figure 2. The weight-length relationship for nenue from Kanaha, Maui ($W = 0.015FL^{3.080}$, $P < 0.01$, $r^2=0.62$). Females and males have a similar relationship, however there were a greater number of females than males.

REPRODUCTION

'Ama 'ama spawn in Hawaii during the winter months. The DLNR closed season runs from December 1, 2013 to March 2014 in order to protect the peak spawning time for this species. The fish caught on November 7th included a spawning school of 'ama 'ama (~230 lbs), with 21% of the school consisting of large, spawning females. Females > 45 cm had late stage oocytes and were spawning capable (Fig. 3 and 4). Females smaller than 45 cm were not spawning capable but could have developed and spawned this season.

From the gonads subsampled from seven spawning-capable 'ama 'ama, instantaneous fecundity counts showed a linear increase in fecundity from these individuals (size range 47-56 cm fork length; Fig. 5). This is not consistent with previous studies that have found an exponential increase in fecundity with size for 'ama 'ama (for review see Whitfield et al 2012).

Exhibit B

These fish were removed before they had a chance to spawn, reducing the population production by an estimated 7.2 million eggs at the next spawning event. This estimated instantaneous fecundity is likely much lower than the annual fecundity as 'ama 'ama are capable of spawning multiple times over the season. For example, if these captured fish were able to spawn across the season they would have spawned approximately three to five times and would have produced between 21.6 and 36 million eggs. If only one hundredth of one percent (0.01%) of these eggs hatched and survived to recruitment than there would have been an increase in fish abundance by 2,160-3,600 individuals. If one tenth of one percent (0.1%) survived then up to 36,000 individuals would have been added to the population.

Larger females also contribute significantly more future recruits than smaller females (Berkeley et al. 2004). We found that the smaller females (< 45 cm) had an inactive gonad which may mean that these fish are either immature (virgins), or that the gonad development is slower than the larger females. Previous studies on this species from other regions has found that females mature (L_{50}) around 25-35 cm, however the size at maturity varies widely across regions (for review see Whitfield et al. 2012). The size range reported by Whitfield and colleagues is substantially smaller than our estimated 45.5 cm size at maturity. The large size difference and the thick ovarian wall of the gonad of these fish suggest prior spawning. We therefore believe that these fish were mature females that would have spawned this season. If reproductive development of the smaller size classes would have occurred this year, it would suggest that smaller females spawn later in the season, over a shorter spawning period, and may spawn fewer times during the spawning season compared to larger females.

All captured nenu were sexually mature and all six female nenu were not currently spawning. The gonads contained evidence of previous spawning with numerous atresic oocytes (Fig. 6). The six lai and one weke were not found to be spawning capable at the time of capture. The lai were all < 41 cm and had inactive gonads. These fish are likely immature as previously reported size at maturity (L_{50}) for this species is around 55 cm (Thulasitha and Sivashanthini 2013). The single weke was a female with inactive gonads, but due to its size and the time of year we believe it to be mature but not captured during the spawning season.

Exhibit B

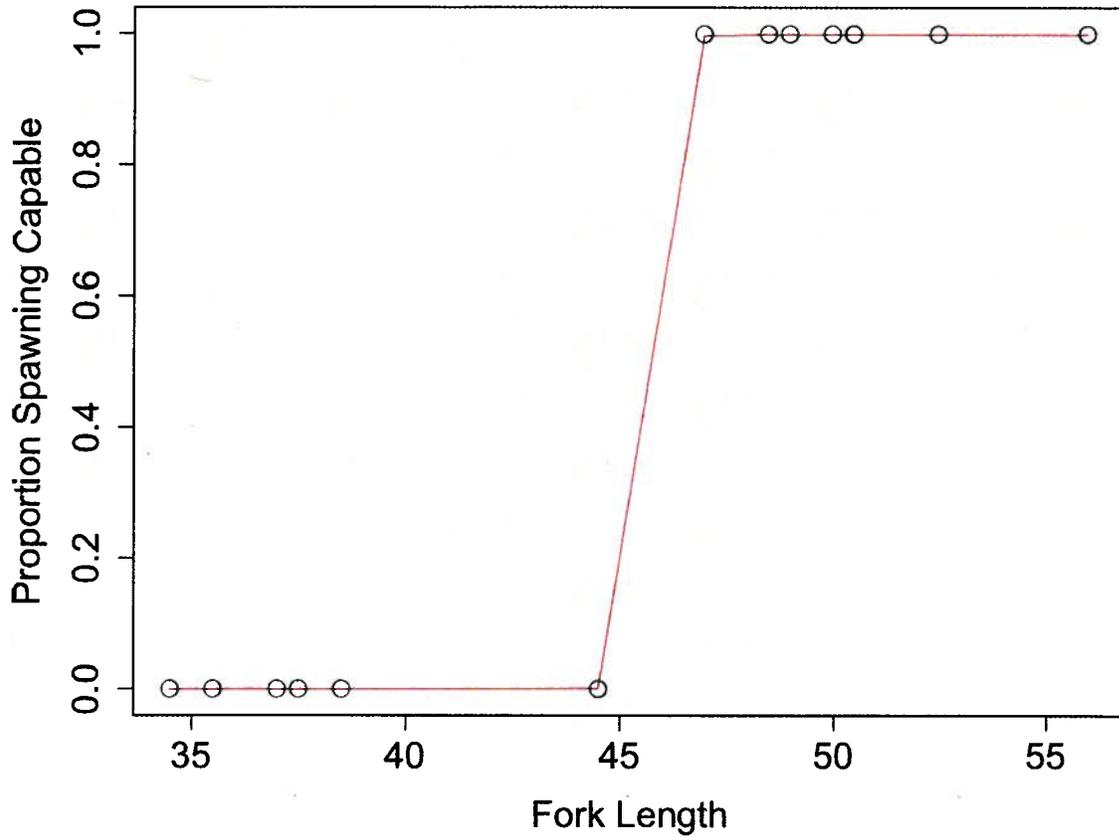


Figure 3. Proportion of of 'ama 'ama captured in laynets from Wailuku that were spawning capable based on size classes. The spawning capable size class is > 45.5 cm fork length although the smaller size classes are likely part of the spawning school and part may have spawned later in the season.

Exhibit B

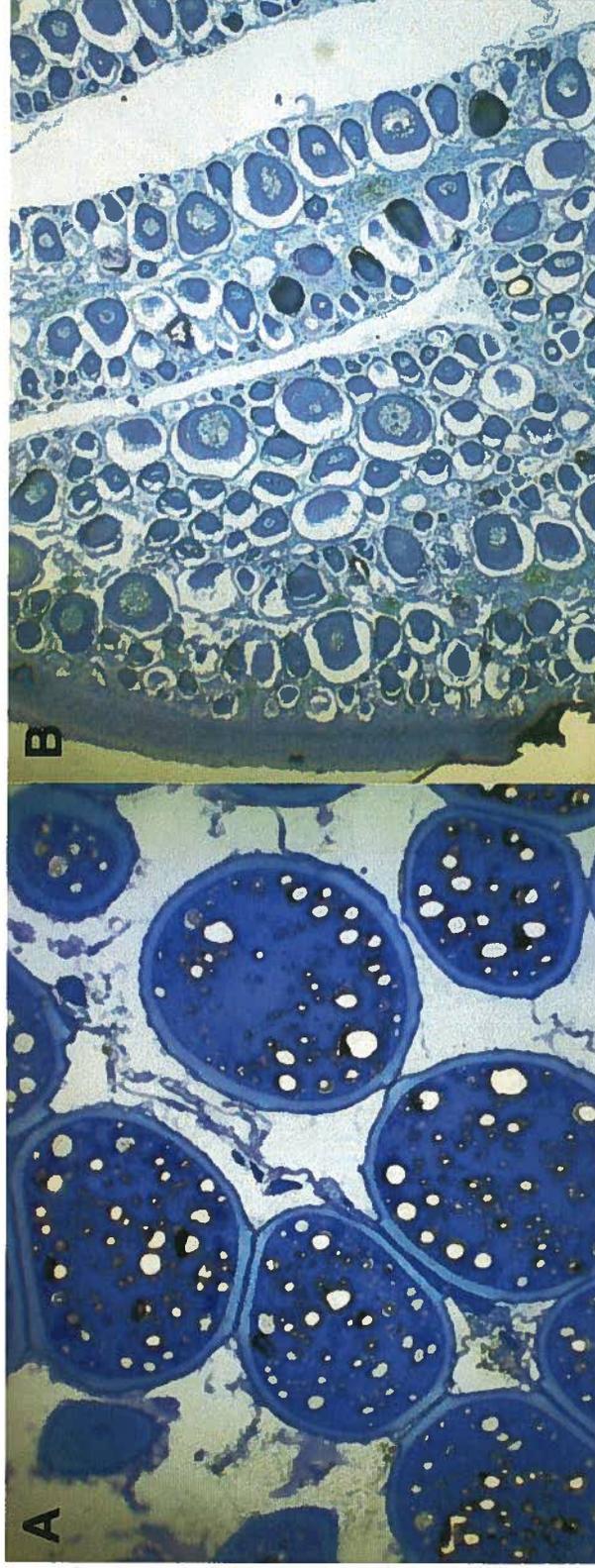


Figure 4. (A) Spawning capable 'ama 'ama from the larger size class (FL=50.5, Weight=1.74) Oocytes are in late stage vitellogenesis. (B) Female 'ama 'ama from smaller size class (FL=35.5, Weight=0.72). Gonad is dominated by primary oocytes and is not spawning capable.

Exhibit B

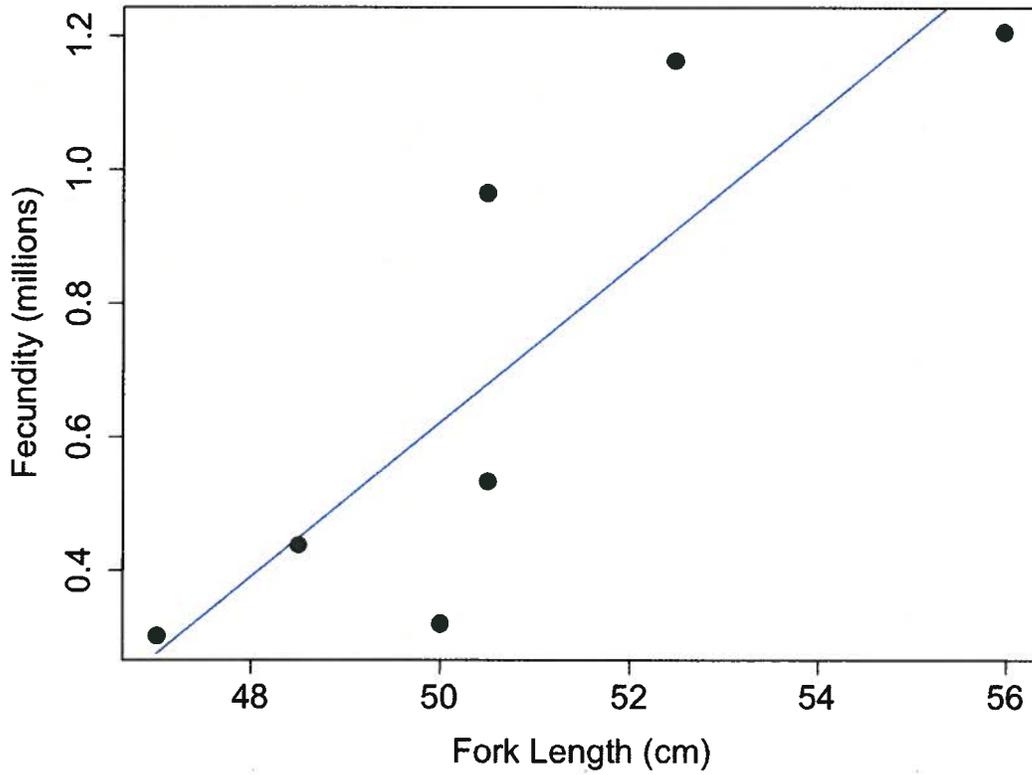


Figure 5. Instantaneous fecundity (millions) for 'ama 'ama calculated from seven spawning capable female gonads subsampled from the laynet catch ($y = -5.14 + x(0.12)$, $P = 0.02$, $R^2 = 0.71$).

Exhibit B

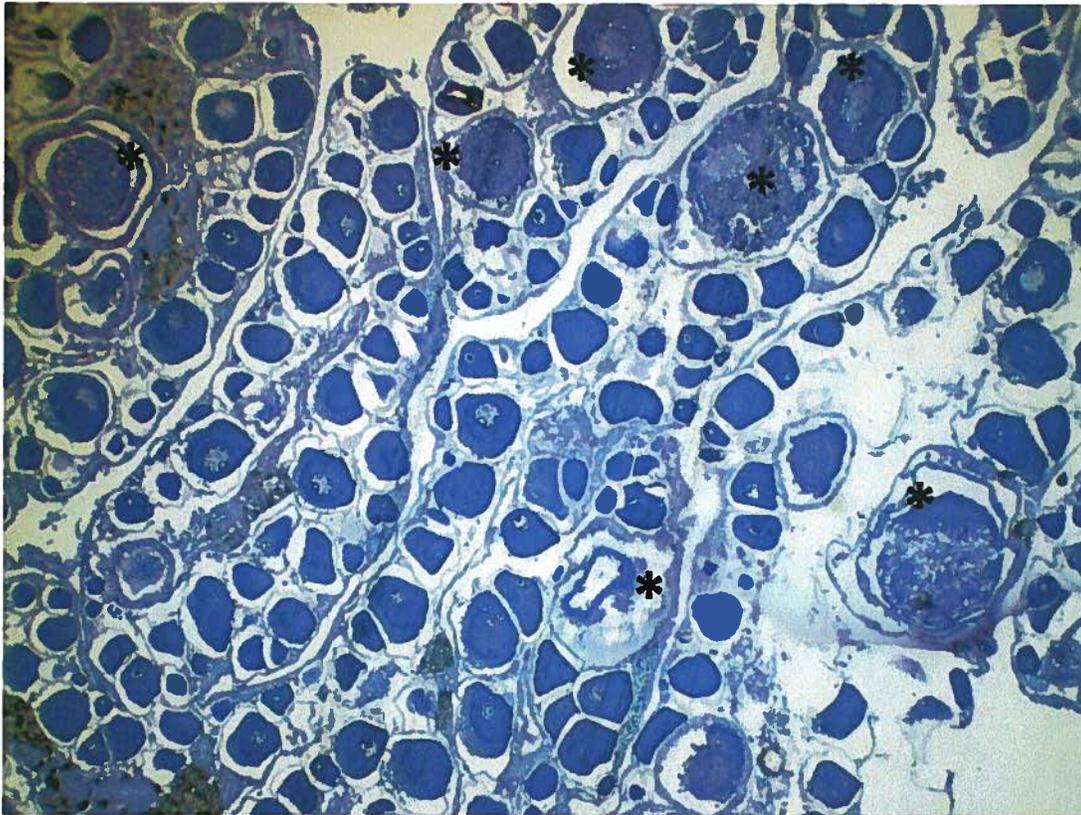


Figure 6. Female nenu (FL=35.5, Weight=0.72) gonad showing atresic (*) and primary oocytes indicating regressed or non-spawning status.

CONCLUSIONS

For fisheries management to be effective in replenishing local populations we must provide biological information that is relevant to that area. We have used this opportunity to acquire important biological information needed for local management including, length-weight relationships, reproductive size classes, spawning status, and fecundity of important food fish in Wailuku, Maui.

From this study, we found that the spawning season of 'ama 'ama may begin as early as November for larger females (> 45 cm). These large females likely spawn over a longer time period than smaller females and contribute disproportionately more to future production. These larger females also ensure population resilience due to a longer spawning season and therefore may be more resilient to temporal changes in ocean conditions.

Exhibit B

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