

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

May 10, 2013

Board of Land
and Natural Resources
Honolulu, Hawaii

Request for Authorization and Approval to Issue a Papahānaumokuākea Marine National Monument Research Permit to Mr. Jacob Asher, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, for Access to State Waters to Conduct Videographic Surveys of Coral Reef Fishes Research Activities

The Division of Aquatic Resources (DAR) hereby submits a request for your authorization and approval for issuance of a Papahānaumokuākea Marine National Monument research permit to Jacob Asher, research supervisor, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, pursuant to § 187A-6, Hawaii Revised Statutes (HRS), chapter 13-60.5, Hawaii Administrative Rules (HAR), and all other applicable laws and regulations.

The research permit, as described below, would allow entry and activities to occur in Papahānaumokuākea Marine National Monument (Monument), including the NWHI State Marine Refuge and the waters (0-3 nautical miles) surrounding the following sites:

- Nihoa Island
- Necker Island
- French Frigate Shoals

The activities covered under this permit would occur between August 1, 2013 and July 31, 2014.

The applicant is new, but the proposed activities are largely a renewal of work previously permitted and conducted in the Monument.

INTENDED ACTIVITIES

The Applicant proposes to use baited remote underwater stereo-video systems (stereo-BRUVs) to generate diver-independent survey data of coral reef fishes from shallow water (0 m to 30 m) and deep water (30 m to 100 m) habitats. The applicant's research will provide Monument managers with information on: 1) assessments of abundance and size distribution of apex predators (primarily sharks and jacks) and coral reef fish independent of divers, and 2) assessments of coral reef fish communities in habitats of less than 100 m in the Monument. In

addition to the information collected on sharks and jacks, this project is expected to obtain assessments valuable for three species that are part of the Hawai'i Fisheries Local Action Strategy in the Main Hawaiian Islands: 'ōmilu or blue trevally (*Caranx melampygus*), uku or green jobfish (*Aprion virescens*), and kūmū or whitespot goatfish (*Parupeneus porphyreus*). This information will improve the understanding of key reef fish species found in both the Monument and the Main Hawaiian Islands, highlighting the importance of marine reserves.

The research project has the following specific goals and objectives;

1. Deploy stereo-BRUVs in a stratified random sampling design varied by depth and habitat. Videographic data is collected for one hour at each sampling station after which the stereo-BRUVs are retrieved by divers. Eight stereo-BRUVs will be used with an average of 15 to 20 deployments each day for 12 days, meaning each camera will be deployed at least twice per day.
2. Assess patterns in coral reef fish species' abundance and size distribution along depth and habitat gradients from 0 m to 100 m.
3. Evaluate the relative abundance of large predators in the Monument and compare to data from the Main Hawaiian Islands.
4. Compare data collected with past survey methods: divers vs. stereo-BRUVs. Assess the impact of divers on observed fish species abundance and assemblages.

The activities proposed by the Applicant directly support the Monument Management Plan's priority management needs 3.1 – Understanding and Interpreting the NWHI (through action plan 3.1.1 – Marine Conservation Science).

The activities described above may require the following regulated activities to occur in State waters:

- Removing, moving, taking, harvesting, possessing, injuring, disturbing, or damaging any living or nonliving monument resource
- Drilling into, dredging, or otherwise altering the submerged lands other than by anchoring a vessel; or constructing, placing, or abandoning any structure, material, or other matter on the submerged lands
- Touching coral, living or dead
- Attracting any living Monument resource

REVIEW PROCESS:

The permit application was sent out for review and comment to the following scientific and cultural entities: Hawaii Division of Aquatic Resources, Hawaii Division of Forestry and Wildlife, Papahānaumokuākea Marine National Monument (NOAA/NOS), NOAA Pacific Islands Regional Office (NOAA-PIRO), United States Fish and Wildlife Service Hawaiian and Pacific Islands National Wildlife Refuge Complex Office, and the Office of Hawaiian Affairs (OHA). In addition, the permit application has been posted on the Monument Web site since

March 13, 2013, giving the public an opportunity to comment. The application was posted within 40 days of its receipt, in accordance with the Monument's Public Notification Policy.

Comments received from the scientific community are summarized as follows:

Scientific reviews support the acceptance of this application.

The following concerns were raised. Applicant responses are noted below.

1. Stereo-BRUVS temporarily (1-hour deployments) rest directly on benthic substrate. The applicant acknowledges that impacts to the benthos are minimal but would vary depending upon: the weight of individual camera stations over live coral/algal cover; shifting of camera stations along the bottom due to currents and/or surface wave action; dragging of camera stations during recovery. Given the weight of the apparatus (~35 kg) and short deployment (~1 hour) it is unlikely it would drag after it has settled on the bottom, and that whatever damage might be done would be during the deployment/recovery. Do the cameras capture imagery of the benthos that would allow an assessment of the amount of movement/benthic disturbance (as well as reveal the local habitat, an additional valuable data point)? If not, can a third video camera be affixed to the framework to capture benthic imagery revealing habitat type and degree of disturbance from the activity? It would be informative to have a better understanding of the benthic "cost" of obtaining these fish data, and concrete evidence to back up statements about minimal damage.

The applicant states that the current configuration of stereo-BRUVs does not capture the frame base as it rests on the benthos (see diagrams from the permitting application), and does not capture the amount of movement to allow for an assessment of disturbance. However: if possible/required/given permission from NOAA PIFSC FBSAB for equipment use, a third camera (e.g. GoPro 2 with deep-water housing) could potentially be modified to a detachable mount placed on the bottom of one (or possibly more, depending on available equipment) of the stereo-BRUVs basebars to obtain additional information of potential impacts of the camera frame to the benthos.

2. Although the use of baited Stereo-BRUVs is advantageous in measuring fish population densities and species diversity, how does the use of baited Stereo-BRUVs influence fish behavior and is true fish behavior being recorded?

The applicant explains the primary research questions center on reef fish population densities across depth/habitat strata, and species diversity. The use of baited camera stations certainly provides an influence on reef fish behavior, depending on trophic level and type of attractant. Stereo-BRUVs not only record species attracted to the bait, but also species that are present in the field of view by chance, attracted to the stereo-BRUVs structure, or to the behavior of other fish (Harvey, Cappo et al. 2007; Dorman, Harvey et al. 2012). However: behavior towards stereo-BRUVs stations isn't a principal target question, as it takes disproportionate analysis time and highly subjective interpretation (concerns over consistency with modifications of true vs. native behavior outside of direct feeding on bait attractants) to glean behaviors in higher reef fish densities and diverse areas.

The applicant states, despite influences on reef fish behavior, there are distinct advantages in using baited vs. unbaited systems. Unlike non-baited stereo-BRUVs, the video 'capture' of any species attracted to bait is not left primarily to chance (Stobart, Garcia-Charton et al. 2007), thereby increasing both the relative abundance in baited stereo-BRUVs and the higher variability of fish assemblages recorded with non-baited stereo-BRUVs (Dorman, Harvey et al. 2012). Studies in Australia show stereo-BRUVs attract predators and scavengers, but without statistically significant differences in the numbers/diversity of herbivore or invertebrate/algae trophic groups when comparing baited vs. unbaited station data. Instead, stereo-BRUVs sampled more herbivorous species in temperate and tropical habitats and more individuals in tropical habitats than unbaited stereo-camera systems (Harvey, Cappo et al. 2007), with the attraction attributed more towards the activity around the video station vs. the actual bait itself. Power analyses showed that baited stations required fewer replicates than unbaited stations in order to detect a 25% change in the mean total number of individuals counted, and appeared to be the best technique for obtaining the highest number of species and individuals (Watson, Harvey et al. 2005) during baited/unbaited video station and diver stereo-video surveys of Hamelin Bay, WA regardless of reef type (Tukey's tests, $P < 0.05$). Similarly, stereo-BRUVs were found to be useful for measuring species richness and were more likely to pick up spatial and temporal changes because of greater similarities between baited replicates compared to unbaited replicates (Harvey, Cappo et al. 2007).

3. What type of bait would be used? Is it standardized? Can it have any potentially negative impacts to the monument?

*The applicant states that NOAA elected a standardized use of *Cololabis saira* (Pike Mackerel/Japanese Sanma; similar to *S. sagax*, which is used for stereo-BRUVs deployments in Australia but was not available for previous NOAA missions) for previous deployments in Guam/Rota/Tinian/ Saipan (2010), American Samoa/Tutuila (2012) and the Main Hawaiian Islands (2012). Bait is kept frozen, and allowed to thaw for 8 – 12 hours prior to deployment. No negative impacts are projected for use in the Monument.*

4. Why would there be a need to remove anything from the monument if only population densities and abundance, species behavior, and assessment of fish assemblage data will be collected?

The applicant explains that stereo-BRUVs are designed to collect only stereo-videographic data of reef fish. No additional resources (biological or otherwise) are to be removed from the PMNM during these activities.

5. What would be collected, how would it be collected and used? What type of cultural protocols would be used when extracting or removing the resources?

The applicant explains stereo-BRUVs are designed to collect only stereo-videographic data of reef fish. No additional resources (biological or otherwise) are to be removed from the PMNM.

At minimum, the stereo-BRUVs team would work to ensure careful deployment/recovery of equipment to/from the reef benthos to abate impacts. Any additional guidance on cultural protocols required to collect stereo-videographic data of reef fish using stereo-BRUVs in the PMNM would be greatly appreciated.

6. How will the information from this proposed activity be used? Certain fish species are being depleted in the Main Hawaiian Islands and the documentation of their specific locations in Papahānaumokuākea could lead to harmful impacts should this information fall into the wrong hands.

The applicant states that the results from these surveys will be presented to the Hawaii Fisheries LAS and to WestPac Council.

The applicant goes on to explain that, in addition, the information from this proposed activity will also be used to generate a series of manuscripts with the following goals:

- *Ecological:*
 - *Deep reef assemblages and shallow-deep linkages: patterns in species' abundance and size distribution along depth and habitat gradients from 0 – 100m;*
 - *Assessment of large predators in remote vs. populated areas: diver independent assessment of relative abundance of large roving predators (sharks/jacks) in the Hawaiian Archipelago, and a comparison of scale of apparent human impacts from diver and stereo BRUVs surveys.*

The applicant explains stereo-BRUVs analysis will be used to assess population and diversity dynamics of reef fishes across depth and habitat strata. While site-specific data will be collected, the study utilizes a stratified random survey design whose strengths lie in “pooling up” to 1.) the island or atoll level 2.) at “coarser” levels, e.g. trophic or taxonomic grouping level (Williams, Richards et al. 2011). Any “finer scale”, site-specific, or species-level comparative assessments (e.g. small subset of reef fish species of interest; sharks/jacks) would be reported similar to other material published in the recent past (DeMartini 2004; Dale, Stankus et al. 2011), where appropriate.

The applicant states that it should be noted that many documents and publications are already publicly available (including those generated from previous research activities) that contain documentation of PMNM species. Those submitting the permit will work with MMB Agencies to addressing potential specific/location concerns prior to submitting publication materials.

7. Who will own the video footage? Please clarify whether this information will be available to the general public.

The applicant states that the RAW videographic (est. at 9 – 15 terabytes total, given permitting approval and field sampling effort) footage would be owned by NOAA PIFSC CRED.

The applicant states that a copy of all videographic data/metadata will be made available to the Monument if requested, and can be provided in RAW form and/or in concatenated/converted form following processing.

The applicant further explains that videographic data would be made available to the public by request, and following review/signature of the NOAA PIFSC Policy on Shared Access to Reserved Data and signature of the Data User Agreement form.

The applicant states that standard Monument policies apply (The Monument's policy is as follows: The permittee retains ownership of any data (including, but not limited to, any photographic or video material), derivative analyses, or other work product, or other copyrightable works, but the Federal Government and the State of Hawai'i retain a lifetime, non-exclusive, worldwide, royalty-free license to use the same for government purposes, including copying and dissemination, and making derivative works).

8. The application offers no recognition of the cultural significance of Papahānaumokuākea or the resources that are the subject of this proposed activity. The cultural briefing referenced on page 8 is a requirement of all permittees prior to entering Papahānaumokuākea and the concepts the application might expect to be exposed to during the briefing should be acknowledged and recognized from the beginning and for the duration of the permit application process, not only at the end of it. The fundamental aspects of these concepts have been captured to varying degrees in a range of materials that exist and are readily available, we feel that this is a reasonable expectation for all permit applicants.

The applicant states that, as highlighted in <http://www.papahānaumokuākea.gov/heritage/>, Papahānaumokuākea is a sacred and protected place with a deep history, requiring kuleana from all those permitted to transit, subsist (when appropriate), and work/conduct research there. The permit applicants are aware of the historic cultural significance and importance Papahānaumokuākea represents, and are eager/open to learn at every stage of activity (duration of permitting process, pre-cruise briefing, during the cruise, and post-cruise). If possible, links to or citations of the references (online, printed) that exist and are readily available would be greatly appreciated!

9. Please provide additional information on the activities detailed in Section 5b (page 5) of the application and how they relate to the proposed activity.

The applicant states that Section 5b is applicable related activities proposed to be conducted in the Monument:

- *“Removing, moving, taking, harvesting, possessing, injuring, disturbing, or damaging any living or non-living Monument resource.” As described in the original permit submission, stereo-BRUVs are designed to rest on the benthos, collecting stereo-videographic data on reef fish. Mitigating steps are taken to avoid disturbance to biotic and abiotic resources during deployment and retrieval activities; however, despite their light weight, increased currents, wave action, surge, and/or improper deployments and retrievals could result in disturbance to resources. See section 7a for more information.*
- *“Touching coral, living or dead”. As described in the original permit submission, stereo-BRUVs are designed to rest on the benthos, collecting stereo-videographic data on reef fish. Direct contact with live/dead coral is likely.*

- *“Attracting any living Monument resource”. As described in the original permit submission, stereo-BRUVs use baited camera stations to attract reef fish.*

10. Please provide additional information on why and how this proposed activity will be “particularly valuable” to the three (3) species specifically identified on page 7 of the application: ‘ōmilu, uku and kūmū.

The applicant states that the project will generate diver-independent estimates of fishing mortality and relative abundance of Hawaii priority species (including ‘ōmilu, uku and kūmū) covering their full depth range across the Hawaiian Archipelago (CRCP Objective F1.4). For at least the three Hawaii priority species identified above, supplementary stereo-BRUVs data will either greatly improve assessments based only visual survey data from upper 30m, or will provide CRED and management partners with substantiation of assessments based only on RAMP visual survey data. By improving estimates of relative abundance, biomass, size, and mortality of priority species, the project will also support CRCP Objective F1.6, as well as HI Objective 2.1.

11. Please expand on the portion of the response in Section 7b (pages 9-10) that suggests that results from this proposed activity are ...expected to further highlight the conservation and management importance of PMNM as well as providing information which secondarily supports reef fish management in the MHI.

The applicant explains that because the project will generate robust estimates of apex predator relative abundance and potentially of differences between the NWHI and the MHI, it will provide information on charismatic and ecologically critical groups of fishes that are generally believed to exhibit among the clearest impacts of protection in large marine reserves such as the PMNM (CRCP Objective F2.5). Strengthened information on the status of large predator stocks in the NWHI and in different parts of the MHI will assist management agencies (CRCP objective F1.2 “prioritize key coral reef species...on which to focus management and monitoring activities”) by providing more defensible identification of species which may require management support, and because it will greatly increase understanding of the value and limitations of existing visual-survey based monitoring programs and data sets.

The applicant states this activity also addresses the stated goal of PMNM Management Plan Goal: MCS-1 (Continue and enhance research, characterization, and monitoring of marine ecosystems for the life of the plan, as appropriate) by increasing the understanding of the distributions and abundances of marine organisms in time and space. Specifically, this activity addresses MCS-1.2: Continue monitoring of shallow-water coral reef ecosystems to protect ecological integrity.

12. Quarantine procedures should be followed between locations to avoid cross contamination.

The applicant states that all camera stations (frames, underwater housings, bait bags and arms, weights, deployment line, surface floats) will be subjected to a diluted bleach wash down between locations in the Monument.

13. RECOMMENDED SPECIAL CONDITIONS:

Use caution when handling the stereo-BRUVS in order to minimize the breakage of and/or damage to corals, rocks, or algae.

The number of occurrences of “damage” or “breakage” should be recorded and submitted to the PMNM review board. For future reference and to determine if the cumulative deployments of the equipment are damaging enough resources that a take permit may be required. The damage may be minimal, but the documentation would be there to back up that claim.

The applicant states that there is no current/existing documentation of occurrences of “damage” or “breakage” available from previous stereo-BRUVs deployments (Guam/Rota/Tinian/Saipan 2010; American Samoa/Tutuila 2012; Main Hawaiian Islands 2012). An informal visual survey of several shallow sites previously surveyed using stereo-BRUVs in Tutuila found no visible signs of impact (Dr. Benjamin Richards, Chief Scientist SE-1202, NOAA FBSAB; American Samoa National Park Service, pers. comm.).

The applicant further explains that however: 1.) any video-footage from the forward facing cameras that document “damage” or “breakage” will be documented and archived for review of the PMNM 2.) if possible (see Question 1), 2.) the permit applicants will attempt to modify one (or more) stereo-BRUVs base bars to mount a GoPro2 camera to document movement of the camera base during survey activities and/or recovery.

Comments received from the Native Hawaiian community are summarized as follows:

Cultural reviews support the acceptance of this application.

Comments received from the public are summarized as follows:

No comments were received from the public on this application.

Additional reviews and permit history:

Are there other relevant/necessary permits or environmental reviews that have or will be issued with regard to this project? (e.g. MMPA, ESA, EA) Yes No

If so, please list or explain:

- The proposed activities are in compliance with the National Environmental Policy Act.
- Coordination and consultation pursuant to ESA Section 7 will occur prior to issuance of this permit.
- The Department has made an exemption determination for this permit in accordance chapter 343, HRS, and Chapter 11-200, HAR. See Attachment (“DECLARATION OF EXEMPTION FROM THE PREPARATION OF AN ENVIRONMENTAL ASSESSMENT UNDER THE AUTHORITY OF CHAPTER 343, HRS AND CHAPTER 11-200 HAR, FOR PAPAĀNAUMOKUĀKEA MARINE NATIONAL MONUMENT RESEARCH PERMIT TO MR. JACOB ASHER, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, NATIONAL

MARINE FISHERIES SERVICE, FOR ACCESS TO STATE WATERS TO CONDUCT VIDEOGRAPHIC SURVEYS OF CORAL REEF FISHES RESEARCH ACTIVITIES UNDER PERMIT PMNM-2013-018")

Has Applicant been granted a permit from the State in the past? Yes No
If so, please summarize past permits:

Have there been any a) violations: Yes No
b) Late/incomplete post-activity reports: Yes No

Are there any other relevant concerns from previous permits? Yes No

STAFF OPINION:

DAR staff is of the opinion that Applicant has properly demonstrated valid justifications for his application and should be allowed to enter the NWHI State waters and to conduct the activities therein as specified in the application with certain special instructions and conditions, which are in addition to the Papahānaumokuākea Marine National Monument Research Permit General Conditions. All suggested special conditions have been vetted through the legal counsel of the Co-Trustee agencies (see Recommendation section).

MONUMENT MANAGEMENT BOARD OPINION:

The MMB is of the opinion that the Applicant has met the findings of Presidential Proclamation 8031 and this activity may be conducted subject to completion of all compliance requirements. The MMB concurs with the special conditions recommended by DAR staff.

RECOMMENDATION:

Based on the attached proposed declaration of exemption prepared by the department after consultation with and advice of those having jurisdiction and expertise for the proposed permit actions:

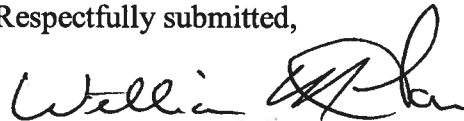
1. That the Board declare that the actions which are anticipated to be undertaken under this permit will have little or no significant effect on the environment and is therefore exempt from the preparation of an environmental assessment.

2. Upon the finding and adoption of the department's analysis by the Board, that the Board delegate and authorize the Chairperson to sign the declaration of exemption for purposes of recordkeeping requirements of chapter 343, HRS, and chapter 11-200, HAR.

3. That the Board authorize and approve a Research Permit to Mr. Jacob Asher, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, with the following special conditions:

- a. This permit is not to be used for nor does it authorize the sale of collected organisms. Under this permit, the authorized activities must be for noncommercial purposes not involving the use or sale of any organism, by-products, or materials collected within the Monument for obtaining patent or intellectual property rights.
- b. The permittee may not convey, transfer, or distribute, in any fashion (including, but not limited to, selling, trading, giving, or loaning) any coral, live rock, or organism collected under this permit without the express written permission of the Co-Trustees.
- c. To prevent introduction of disease or the unintended transport of live organisms, the permittee must comply with the disease and transport protocol attached to this permit.
- d. Tenders and small vessels must be equipped with engines that meet EPA emissions requirements.
- e. Refueling of tenders and all small vessels must be done at the support ships and outside the confines of lagoons or near-shore waters in the State Marine Refuge.

Respectfully submitted,



Administrator

APPROVED FOR SUBMITTAL



William J. Aila, Jr.
Chairperson

Papahānaumokuākea Marine National Monument
RESEARCH Permit Application

NOTE: *This Permit Application (and associated Instructions) are to propose activities to be conducted in the Papahānaumokuākea Marine National Monument. The Co-Trustees are required to determine that issuing the requested permit is compatible with the findings of Presidential Proclamation 8031. Within this Application, provide all information that you believe will assist the Co-Trustees in determining how your proposed activities are compatible with the conservation and management of the natural, historic, and cultural resources of the Papahānaumokuākea Marine National Monument (Monument).*

ADDITIONAL IMPORTANT INFORMATION:

- Any or all of the information within this application may be posted to the Monument website informing the public on projects proposed to occur in the Monument.
- In addition to the permit application, the Applicant must either download the Monument Compliance Information Sheet from the Monument website OR request a hard copy from the Monument Permit Coordinator (contact information below). The Monument Compliance Information Sheet must be submitted to the Monument Permit Coordinator after initial application consultation.
- Issuance of a Monument permit is dependent upon the completion and review of the application and Compliance Information Sheet.

INCOMPLETE APPLICATIONS WILL NOT BE CONSIDERED

Send Permit Applications to:

Papahānaumokuākea Marine National Monument Permit Coordinator

6600 Kalaniana'ole Hwy. # 300

Honolulu, HI 96825

nwhipermit@noaa.gov

PHONE: (808) 397-2660 FAX: (808) 397-2662

SUBMITTAL VIA ELECTRONIC MAIL IS PREFERRED BUT NOT REQUIRED. FOR ADDITIONAL SUBMITTAL INSTRUCTIONS, SEE THE LAST PAGE.

Papahānaumokuākea Marine National Monument Permit Application Cover Sheet

This Permit Application Cover Sheet is intended to provide summary information and status to the public on permit applications for activities proposed to be conducted in the Papahānaumokuākea Marine National Monument. While a permit application has been received, it has not been fully reviewed nor approved by the Monument Management Board to date. The Monument permit process also ensures that all environmental reviews are conducted prior to the issuance of a Monument permit.

Summary Information

Applicant Name: Jacob Marcus Asher

Affiliation: NOAA PIFSC Coral Reef Ecosystem Division

Permit Category: Research

Proposed Activity Dates: August/September/October 2013

Proposed Method of Entry (Vessel/Plane): R/V Searcher

Proposed Locations: Nihoa Island, Necker Island (Mokumanamana), French Frigate Shoals

Estimated number of individuals (including Applicant) to be covered under this permit: 3

Estimated number of days in the Monument: 12

Description of proposed activities: (complete these sentences):

a.) The proposed activity would...

collect shallow water (0-30m) and deeper water (30-100m) videographic surveys of coral reef fishes using baited remote underwater stereo-video systems (stereo-BRUVs).

b.) To accomplish this activity we would

use a stratified random sampling approach (two levels: depth and habitat) to deploy multiple stereo-BRUVs units. Data generated would include relative abundance, biomass, and size of priority species using the BRUV.

c.) This activity would help the Monument by ...

providing diver-independent and deep-water survey data on abundance and size distribution of reef fishes species including apex predators. Such information will complement the visual survey data gathered from SCUBA-accessible depths (0-30m) and provide a means to test for impacts of diver presence on estimated apex predator densities in the PMNM. Similar surveys (already

conducted and additional ones planned) in the Main Hawaiian Islands will allow for meaningful comparative analysis of PMNM and NWHI apex predator densities.

Other information or background:

An ESA Section 7 consultation has not yet been completed for this proposed project.

Section A - Applicant Information

1. Applicant

Name (last, first, middle initial):

1.) Asher, Jacob M. and 2.) Williams, Ivor D.

Title:

1.) Marine Ecosystem Research Supervisor and PhD Candidate at the University of Western Australia 2.) Reef Fish Researcher & Fish Team Lead

1a. Intended field Principal Investigator (See instructions for more information):

Jacob Asher

2. Mailing address (street/P.O. box, city, state, country, zip):

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

For students, major professor's name, telephone and email address:

3. Affiliation (institution/agency/organization directly related to the proposed project):

NOAA PIFSC CRED

4. Additional persons to be covered by permit. List all personnel roles and names (if known at time of application) here (e.g. John Doe, Research Diver; Jane Doe, Field Technician):

Kaitlin Baird, Field Technician; Emily Crigler, Field Technician

Section B: Project Information

5a. Project location(s):

- | | | | |
|--|-------------------------------------|---|--|
| <input checked="" type="checkbox"/> Nihoa Island | <input type="checkbox"/> Land-based | <input checked="" type="checkbox"/> Shallow water | <input checked="" type="checkbox"/> Deep water |
| <input checked="" type="checkbox"/> Necker Island (Mokumanamana) | <input type="checkbox"/> Land-based | <input checked="" type="checkbox"/> Shallow water | <input checked="" type="checkbox"/> Deep water |
| <input checked="" type="checkbox"/> French Frigate Shoals | <input type="checkbox"/> Land-based | <input checked="" type="checkbox"/> Shallow water | <input checked="" type="checkbox"/> Deep water |
| <input type="checkbox"/> Gardner Pinnacles | <input type="checkbox"/> Land-based | <input type="checkbox"/> Shallow water | <input type="checkbox"/> Deep water |
| <input type="checkbox"/> Maro Reef | | | |
| <input type="checkbox"/> Laysan Island | <input type="checkbox"/> Land-based | <input type="checkbox"/> Shallow water | <input type="checkbox"/> Deep water |
| <input type="checkbox"/> Lisianski Island, Neva Shoal | <input type="checkbox"/> Land-based | <input type="checkbox"/> Shallow water | <input type="checkbox"/> Deep water |
| <input type="checkbox"/> Pearl and Hermes Atoll | <input type="checkbox"/> Land-based | <input type="checkbox"/> Shallow water | <input type="checkbox"/> Deep water |
| <input type="checkbox"/> Midway Atoll | <input type="checkbox"/> Land-based | <input type="checkbox"/> Shallow water | <input type="checkbox"/> Deep water |
| <input type="checkbox"/> Kure Atoll | <input type="checkbox"/> Land-based | <input type="checkbox"/> Shallow water | <input type="checkbox"/> Deep water |
| <input type="checkbox"/> Other | | | |

Ocean Based

Remaining ashore on any island or atoll (with the exception of Midway & Kure Atolls and Field Camp staff on other islands/atolls) between sunset and sunrise.

NOTE: There is a fee schedule for people visiting Midway Atoll National Wildlife Refuge via vessel and aircraft.

Location Description:

Stereo-BRUVS deployments will follow a two-level stratified random sampling design (depth/habitat):

- 1.) Open-circuit diver depths: Shallow (0 – 6m), moderate (6 – 18m), deep (18 – 30m);
- 2.) Mesophotic reefs: Shallow (30 – 53m), moderate (53 – 76m), deep (76 – 100m);
- 3.) Habitat strata: Aggregated reef, pavement, spur and groove.

5b. Check all applicable regulated activities proposed to be conducted in the Monument:

- Removing, moving, taking, harvesting, possessing, injuring, disturbing, or damaging any living or nonliving Monument resource
- Drilling into, dredging, or otherwise altering the submerged lands other than by anchoring a vessel; or constructing, placing, or abandoning any structure, material, or other matter on the submerged lands
- Anchoring a vessel
- Deserting a vessel aground, at anchor, or adrift
- Discharging or depositing any material or matter into the Monument
- Touching coral, living or dead
- Possessing fishing gear except when stowed and not available for immediate use during passage without interruption through the Monument
- Attracting any living Monument resource

- Sustenance fishing (Federal waters only, outside of Special Preservation Areas, Ecological Reserves and Special Management Areas)
- Subsistence fishing (State waters only)
- Swimming, snorkeling, or closed or open circuit SCUBA diving within any Special Preservation Area or Midway Atoll Special Management Area

6. Purpose/Need/Scope *State purpose of proposed activities:*

Over the last decade or more there have been abundant studies showing remarkable differences in abundance and size-distributions of targeted between the PMNM and populated islands in the MHI. The great bulk of that data has come from visual survey programs, including the PMNM's own monitoring surveys, as well as the NWHI & MHI RAMP surveys conducted by NOAA CRED and partners. That data has had great scientific and other value and plays a role in demonstrating the vital importance of preserving and managing remote reef areas such as are located within the PMNM.

Strengths of those visual survey programs include that data is gathered across large areas using consistent methodology, survey design, and personnel, and that randomized sampling across <30m hard bottom means that data are credibly representative of a large portion of coral reef habitat. However, as with any survey method, there are potential weaknesses to visual survey data gathered by divers on SCUBA, particularly: (i) possible differences in fish behavior among areas, e.g. avoidance of divers in locations where fishing occurs or attraction where fishing is prohibited, which could bias abundance and mortality estimates; and (ii) safety considerations, which preclude large-scale SCUBA-based visual survey operations beyond ~30m water depth. As some reef fish species can be abundant in deeper habitats, the depth limitation for standard SCUBA surveys means CRED RAMP data are potentially not representative of species' status across their entire depth distributions.

We propose to utilize baited remote underwater stereo-video (stereo-BRUVs) surveys to generate diver-independent data from 0-100m habitats. Stereo-BRUVs can generate extremely accurate size distributions, which allow us to apply length-based models that we are currently implementing to determine status of Hawaii priority species. The project will assess all target species (i.e. preferred targets in the MHI) and apex predators encountered, however because of their wide depth-range, and relative scarcity in shallow habitats around populated areas, it is expected that the project will be particularly valuable for 3 Hawaii Fisheries Local Action Strategy priority species: the blue trevally (*Caranx melampygus*), the green jobfish (*Aprion virescens*), and the whitespot goatfish (*Parupeneus porphyreus*) and for several apex predator species (sharks and large jacks). Because results from this project will greatly increase the value and defensibility of data on targeted species and particularly roving predators from other visual survey programs in the Pacific, the project will contribute to management activities in other jurisdictions as well.

A recently published study based on NOAA PIFSC CRED RAMP data estimated that reef sharks abundance around populated areas is depleted by 93-97% of original baseline levels. That work has attracted considerable attention from US management agencies, science communities, and public/news media outlets. Continued stereo-BRUVs assessments of sharks and jacks in the Hawaiian Archipelago would be timely and particularly valuable for those taxa, generating robust estimates of apex predator relative abundances and potentially of differences between the remote NWHI and the MHI. It will provide information on an ecologically critical group of

fishes that are generally believed to exhibit among the clearest impacts of protection in large marine reserves such as the PMNM.

In summary, the information obtained will a.) assess populations of apex predators (primarily sharks/jacks) against predator populations captured in diver independent stereo-BRUVS video in the Main Hawaiian Islands (primary goal) b.) assess shallow water and mesophotic coral reef fish communities in the NWHI.

The intent of the permit is for research purposes. Ultimately, the information collected could be used by Conservation and Management agencies (as with many marine research outcomes) in the future.

*Considering the purpose of the proposed activities, do you intend to film / photograph federally protected species? Yes No

For a list of terrestrial species protected under the Endangered Species Act visit:

<http://www.fws.gov/angered/>

For a list of marine species protected under the Endangered Species Act visit:

<http://www.nmfs.noaa.gov/pr/species/esa/>

For information about species protected under the Marine Mammal Protection Act visit:

<http://www.nmfs.noaa.gov/pr/laws/mmpa/>

7. Answer the Findings below by providing information that you believe will assist the Co-Trustees in determining how your proposed activities are compatible with the conservation and management of the natural, historic, and cultural resources of the Monument:

The Findings are as follows:

a. How can the activity be conducted with adequate safeguards for the cultural, natural and historic resources and ecological integrity of the Monument?

The stereo-BRUVS team members will conduct reef fish surveys with care and anticipate no greater than minimal adverse impacts to the natural resources of the Monument. The team members will not step foot on any of the terrestrial habitats in the Monument. The research does not propose collecting or extracting any materials from the Monument (observational/ videographic research only). The research does not propose permanently discharging any materials in the Monument. The scientific objectives are to observe apex predators and reef fish within their natural habitat with minimal disturbance and to only come in contact with resources in limited occurrences to further comprehensive understanding and research in the Monument. In addition, team members will attend a Hawaiian Cultural Briefing before entering the Monument waters. This education instills the awareness of the natural, cultural and historical values the Monument holds. Informative cultural literature provided by the Office of Hawaiian Affairs

(OHA) and the Monument for personnel seeking further knowledge or who may not be able to attend the briefings will also be reviewed.

All management regulations pertaining to the Monument are strictly adhered to when conducting operations within the Monument (such as disease mitigation regulations) and in Special Preservation Areas. All activities proposed provide critical data that will greatly enhance the Monument managers' ability to characterize and understand the ecosystems and apex predator/reef fish populations within the Monument. As stated, all scientific methods to be used on this cruise are designed to avoid and minimize negative effects on the environment. The uniformed goals of conservation and management are of utmost importance to the intended research and no work outside of permitted activities shall be considered.

Stereo-BRUVs are simple in construction, composed of an open, lightweight galvanized (60 - 70 lb.) steel frame, Sony CX-7 or CX-12 cameras and stereo-camera housings mounted onto a base bar, and PVC bait arm with a wire mesh basket which holds approximately 1 kg. bait. Historically, these systems were deployed from the fantail of the Oscar Elton Sette, or from small motorized vessels (PIFSC Safeboats).

Stereo-BRUVs deployments are done with a high degree of sensitivity in minimizing impacts to benthic coral reef ecosystem communities. Steps to ensure effective deployments include: 1.) evolving evaluations (GAR assessments) of sea states (winds, tides, currents, wave heights) 2.) clear and easily identifiable surface floats to mark location of units 3.) assessment of bottom bathymetry based on fathometer readings and potential for hang-ups 4.) controlled lowering of stereo-BRUVs from support vessels (i.e. wrapping surface lines around rail cleats, and limiting descent speed to avoid "free fall").

Recoveries are planned using the same steps listed above (e.g. evolving surface condition GAR and surface line positioning assessments), along with the retrieval of slack line prior to initiating winch-powered recovery. Coxswains and deck crew get as close to being above BRUVs stations as possible, initiating high speed powered retrieval once line tension/unit weight is noted to avoid unit drags or hang-ups along the bottom.

b. How will the activity be conducted in a manner compatible with the management direction of this proclamation, considering the extent to which the conduct of the activity may diminish or enhance Monument cultural, natural and historic resources, qualities, and ecological integrity, any indirect, secondary, or cumulative effects of the activity, and the duration of such effects?

Data from the program will improve understanding of the status of key reef fish species in the PMNM and information from this project along and in combination with comparable data from the MHI will provide greatly improved assessments of relative status of targeted and keystone reef species in the PMNM and MHI. Such data is fed into management decision making in the MHI and beyond, e.g. through NOAA CRED's partnerships with Hawaii DAR, NOAA PIRO, and with the Western Pacific Regional Fisheries Management Council. Project results are therefore expected to further highlight the conservation and management importance of the

PMNM as well as providing information which secondarily supports reef fish management in the MHI.

c. Is there a practicable alternative to conducting the activity within the Monument? If not, explain why your activities must be conducted in the Monument.

The critical need to conduct this work in the PMNM is that the primary goal is to determine status (number and size distribution) of reef fish species that are generally believed to be depleted around human population centers. Surveys within the PMNM therefore provide the only means of assessing intact populations of those species within the Hawaiian archipelago, and hence the only means to provide a reference point against which populations in the MHI can be compared.

d. How does the end value of the activity outweigh its adverse impacts on Monument cultural, natural and historic resources, qualities, and ecological integrity?

Stereo-BRUVs deployments in the NWHI would provide natural resource managers with greatly improved information on reef fish populations that are independent of potential bias caused by presence of divers and which are truly representative of populations spanning depth ranges down to 100m. Those deeper (>30m deep) habitats remain relatively underexplored. Outputs from this project will therefore greatly improve information on status of key reef fish species in the PMNM, and will allow for meaningful assessment of the extent to which the main current data source on reef fish status (visual surveys by divers on SCUBA in <30m) are representative of broader status of reef fish assemblages within the monument. We believe those positive effects will greatly outweigh the minimal adverse effects - deployments are relatively short, the BRUV units are recovered in their entirety, and divers do not need to even enter the water during these survey operations.

e. Explain how the duration of the activity is no longer than necessary to achieve its stated purpose.

Stereo-BRUVs deployment soak times are set at one hour per station. This is a standard soak time broadly used for this technology, including for exsiting surveys in the MHI which we wish to compare PMNM data with. The value of the resulting data is therefore very dependent on maintaining that methodological consistency.

f. Provide information demonstrating that you are qualified to conduct and complete the activity and mitigate any potential impacts resulting from its conduct.

Stereo-BRUVs methodology is a well established tool for reef fish surveys - and is currently used in numerous research programs around the Pacific.

The permit applicant and NOAA CRED have extensive previous experience conducting surveys using BRUV. For example, the applicant led operations including 385 deployments and recoveries during a March - April 2012 research cruise to American Samoa/Tutuila, which was a

joint effort between NOAA PIFSC CRED and the PIFSC Fisheries Biology and Stock Assessment Branch (FBSAB). That operation also involved participation of staff from the University of Western Australia, which has led the push to expand use of BRUV for coral reef fish surveys in recent years. In a similar arrangement, the applicant also conducted BRUV surveys of 191 sites in the MHI during cruises in September 2012, and previously assisted with BRUV operations in the Mariana Archipelago in 2010.

Our division - the NOAA PIFSC CRED - has over a decade of experience of running survey programs in the PMNM and elsewhere, and the permit applicant has previously taken part in 3 extended survey operations in the PMNM. We value our partnership with the PMNM and take seriously the responsibilities that come with the privilege of being able to conduct work in the PMNM.

g. Provide information demonstrating that you have adequate financial resources available to conduct and complete the activity and mitigate any potential impacts resulting from its conduct.

Applicant is a member of staff of the NOAA PIFSC CRED. In addition to core division resources, work on BRUV surveys in the Hawaiian Archipelago is supported by a grant from the NOAA Coral Reef Conservation Program (Project 381 "Improving status and mortality assessments of Hawaii priority reef fish species and apex predators using remote video-surveys").

h. Explain how your methods and procedures are appropriate to achieve the proposed activity's goals in relation to their impacts to Monument cultural, natural and historic resources, qualities, and ecological integrity.

Stereo-BRUVs are low-cost, low-weight, effective, technologically simple, and easy to deploy and retrieve, being able to sample reef fish populations over multiple depth and habitat strata. Limited soak times and well-developed and workable deployment/retrieval methods are designed to minimize impacts to reef fish and associated benthic habitats.

i. Has your vessel been outfitted with a mobile transceiver unit approved by OLE and complies with the requirements of Presidential Proclamation 8031?

Yes (work to be completed on the R/V Searcher)

j. Demonstrate that there are no other factors that would make the issuance of a permit for the activity inappropriate.

We are not aware of any other such factors.

8. Procedures/Methods:

As described above, deployments will follow the model used for stereo-BRUV survey operations completed in Tutuila, American Samoa from March – April 2012 and in Oahu, Lanai, Molokai, and Maui in the Main Hawaiian Islands in September 2012 as part of an existing NOAA fisheries methods-calibration program.

Stereo-BRUVs, as designed by UWA and AIMS, are termed 'remote' because the systems are deployed on the seafloor independent from an operator or observer. Each system uses two "off-the-shelf" HD SONY CX-7 or CX-12 NTSC video cameras mounted 0.7 m apart on a base bar that is inwardly converged at 8 degrees to gain an optimized field of view, with a maximum visibility range of 10 m. Each stereo-BRUVs is typically baited with 1 kg of pilchards (*Sardinops sagax*) or close analog (*Cololabis saira*; Japanese Sanma), which is placed in a plastic-coated wire basket and suspended on a bait arm 1.2 m in front of the unit.

Several of the camera frames (four out of eight) are of a lighter design, and have the option of adding ballast (5 – 7.5 kg.) in areas of high currents/surge/waves directly to the frame (pins). Ballast would be added on a case-by-case deployment basis, depending on site, bathymetry, and sea-state (wave/current conditions/depth strata). Ballast will remain attached to the individual stereo-BRUVS frame pins during deployment/survey/recovery operations, will not make intentional contact with benthic substrate, and will not be intentionally released.

Each remote underwater video station weighs ~ 35kg, and is deployed by a surface vessel at preselected GPS locations with a polypropylene rope and surface floats attached, with the descent controlled by taking tension on the deployment line (wrapping it around a deck cleat to avoid instrumentation "free fall"). BRUV units are retrieved by grappling surface floats and hauling lines with high speed electric winch or pot-hauler. Existing GIS maps and stratified random sampling designs are used to allocate video station sites along pre-defined depth/habitat strata as follows:

- 1.) Depth strata: Shallow (0 – 6m), moderate (6 – 18m), deep (18 – 30m) diver depths;
- 2.) Additional stratified random sites allocated to deeper, mesophotic reefs outside of standard, open-circuit dive depths: Shallow (30 – 53m), moderate (53 – 76m), deep (76 – 100m);
- 3.) Habitat strata: Aggregated reef, pavement, spur and groove.

Stereo-BRUVS temporarily rest directly on benthic substrate. The footprint of the stereo-BRUVS is approximately 0.05 square meters (a 12 mm diameter galvanized steel pipe in a rectangular shape 1.26 meters long by 0.86 meters wide). While steps to mitigate impacts are highlighted in the previous paragraph (i.e., controlled descent and recovery steps), there is the possibility that corals, algae, or rocks could be broken when the stereo-BRUVS frame comes in contact with the substrate (i.e., injuring, disturbing, or damaging any living or nonliving Monument resource). Given the very small footprint of the stereo-BRUVS and the short duration of the proposed research, these impacts would be limited to the immediate area but would vary depending upon:

- The weight of individual camera stations over live coral/algae cover;
- Shifting of camera stations along the bottom due to currents and/or surface wave action;
- Dragging of camera stations during recovery.

A sampling grid resolution of 500 m-square cells was chosen to reduce the likelihood of fish moving between sample sites within the sampling period (based on the estimated swimming

speeds of common reef fish species and the distances they typically travel over a sampling period) to maintain independence among samples.

Use of multiple BRUV systems allows for efficient sampling, with a small boat able to complete an average of ~15-20 combined camera station deployments and retrievals per day.

Video footage is stored on flash memory cards, which are downloaded and backed-up for later concatenation, conversion, and analysis. Commercially available SeaGIS software packages are used to analyze stereo BRUVs and measure fish sizes (EventMeasure) (www.seagis.com). The software package CalMeasure, designed by SeaGIS, is used to calculate and standardize the field of view and provide accurate measures of fish length from the stereo-images. Stereo-camera calibrations are a vital component for this mission, with two series completed (pre-cruise/post-cruise). These calibration values between camera stereo-systems are integral in obtaining length data for all species examined in stereo BRUVs video.

NOTE: If land or marine archeological activities are involved, contact the Monument Permit Coordinator at the address on the general application form before proceeding, as a customized application will be needed. For more information, contact the Monument office on the first page of this application.

9a. Collection of specimens - collecting activities (would apply to any activity): organisms or objects (List of species, if applicable, attach additional sheets if necessary):

Common name:
Not applicable

Scientific name:

& size of specimens:

Collection location:

Whole Organism Partial Organism

9b. What will be done with the specimens after the project has ended?

9c. Will the organisms be kept alive after collection? Yes No

• General site/location for collections:

- Is it an open or closed system? Open Closed

- Is there an outfall? Yes No

- Will these organisms be housed with other organisms? If so, what are the other organisms?

- Will organisms be released?

10. If applicable, how will the collected samples or specimens be transported out of the Monument?

Video sampling only

11. Describe collaborative activities to share samples, reduce duplicative sampling, or duplicative research:

Underwater stereo-camera surveys to assess coral reef fish populations in the US and US Pacific Territories remain limited and BRUV or other remote stereo-video units have not been used previously to survey coral reef fishes in the PMNM. And, as noted above, there have been few surveys at all to date of reef fish populations beyond 30m deep. The proposed surveys which would be conducted for this project will therefore gather new information that is not currently available from other sources or in other forms.

As with all data gathered by NOAA CRED, data are made available to the scientific and management community and to the public at large. NOAA CRED is currently developing a web-based interface to make all CRED-gathered data available by direct download. While that site is in development, as needed thereafter, CRED data is available by request from CRED information services team and from other CRED scientists.

12a. List all specialized gear and materials to be used in this activity:

- 1.) Stereo-BRUVs frames, base bars, camera synchronizing diodes, underwater housings, PVC bait arms, plastic-coated wire baskets
- 2.) Sony CX-7 and/or CX-12 video cameras
- 3.) Bait (*Cololabis saira*)
- 4.) Portable winch, davit arm

12b. List all Hazardous Materials you propose to take to and use within the Monument:

Prolong Calcium Sulfonate Grease (for portable winch maintenance, if needed)

13. Describe any fixed installations and instrumentation proposed to be set in the Monument:

All stereo-BRUVs deployments are temporary, with deployment times of one hour. Following the completion of deployments, units are completely recovered using a high-speed winch. Photograph and schematic diagram of a single stereo-BRUVs unit are attached.

14. Provide a time line for sample analysis, data analysis, write-up and publication of information:

Time line from raw videographic data collection to generating publishable material is estimated at 24 months.

15. List all Applicants' publications directly related to the proposed project:

With knowledge of the penalties for false or incomplete statements, as provided by 18 U.S.C. 1001, and for perjury, as provided by 18 U.S.C. 1621, I hereby certify to the best of my abilities under penalty of perjury of that the information I have provided on this application form is true and correct. I agree that the Co-Trustees may post this application in its entirety on the Internet. I understand that the Co-Trustees will consider deleting all information that I have identified as "confidential" prior to posting the application.

Signature

Date

**SEND ONE SIGNED APPLICATION VIA MAIL TO THE MONUMENT OFFICE
BELOW:**

Papahānaumokuākea Marine National Monument Permit Coordinator
6600 Kalaniana'ole Hwy. # 300
Honolulu, HI 96825
FAX: (808) 397-2662

DID YOU INCLUDE THESE?

- Applicant CV/Resume/Biography
- Intended field Principal Investigator CV/Resume/Biography
- Electronic and Hard Copy of Application with Signature
- Statement of information you wish to be kept confidential
- Material Safety Data Sheets for Hazardous Materials

Papahānaumokuākea Marine National Monument Compliance Information Sheet

- 1. Updated list of personnel to be covered by permit. List all personnel names and their roles here (e.g. John Doe, Diver; Jane Doe, Field Technician, Jerry Doe, Medical Assistant):**

Jacob M. Asher (stereo-BRUVs Team Lead); Emily Crigler (stereo-BRUVs volunteer field technician); Kaitlin Baird (stereo-BRUVs volunteer field technician); Tim Noyes (alternate stereo-BRUVs volunteer field technician)

- 2. Specific Site Location(s): (Attach copies of specific collection locations):**

Nihoa, Necker Island (Mokumanamana), French Frigate Shoals (Mokupapapa)

- 3. Other permits (list and attach documentation of all other related Federal or State permits):**

This permit is fully supported by the NOAA Pacific Islands Fisheries Science (Jacob Asher /NOAA-NMFS-PIFSC/PMNM-2013-018).

- 3a. For each of the permits listed, identify any permit violations or any permit that was suspended, amended, modified or revoked for cause. Explain the circumstances surrounding the violation or permit suspension, amendment, modification or revocation.**

Not applicable

- 4. Funding sources (Attach copies of your budget, specific to proposed activities under this permit and include funding sources. See instructions for more information):**

Funding for permit applicants and associated equipment is primarily supported NOAA Pacific Islands Fisheries Science Center (NOAA PIFSC). Funding for volunteer field technician participation comes from respective agencies (NOAA PIRO, Bermuda Institute of Ocean Sciences).

5. Time frame:

Activity start: 12 September 2013
Activity completion: Ongoing

Dates actively inside the Monument:
From: 12 September 2013
To: 25 September 2013.

Note: dates may change, depending on evolving sequestration outcomes.

Describe any limiting factors in declaring specific dates of the proposed activity at the time of application: See above

Personnel schedule in the Monument:

A complete itinerary is forthcoming. The project is aiming to spend 1 – 3 days at each of the previously mentioned sites (Nihoa, Mokumanamana, Mokupapapa) depending on weather conditions.

6. Indicate (with attached documentation) what insurance policies, bonding coverage, and/or financial resources are in place to pay for or reimburse the Monument trustees for the necessary search and rescue, evacuation, and/or removal of any or all persons covered by the permit from the Monument:

The Federal Government is self-insured. In addition, the cruise participants will carry emergency evacuation insurance (e.g. DAN insurance of something comparable).

7. Check the appropriate box to indicate how personnel will enter the Monument:

- Vessel
 Aircraft

Provide Vessel and Aircraft information: SEARCHER

8. The certifications/inspections (below) must be completed prior to departure for vessels (and associated tenders) entering the Monument. Fill in scheduled date (attach documentation):

- Rodent free, Date: TBD
 Tender vessel, Date: TBD
 Ballast water, Date: TBD
 Gear/equipment, Date: TBD
 Hull inspection, Date: TBD

9. Vessel information (NOTE: if you are traveling aboard a National Oceanic and Atmospheric Administration vessel, skip this question):

Vessel name: SEARCHER

Vessel owner: The Medical Foundation for the Study of the Environment

Captain's name: Jonathan Littenberg

IMO#:192

Vessel ID#:United States Coast Guard 1103056

Flag: US

Vessel type: Steel Hull

Call sign: WDA 6100

Embarkation port: Honolulu

Last port vessel will have been at prior to this embarkation: Honolulu

Length: LOA 96 ft/Registered 78.1 ft

Gross tonnage: 197

Total ballast water capacity volume (m3): n/a

Total number of ballast water tanks on ship: n/a

Total fuel capacity: 9600 gallons

Total number of fuel tanks on ship: 6

Marine Sanitation Device: Yes

Type: II

Explain in detail how you will comply with the regulations regarding discharge in the Monument. Describe in detail. If applicable, attach schematics of the vessel's discharge and treatment systems:

All materials and fluids shall be properly stored in holding tanks while the vessel is in Monument waters and will be properly disposed of upon our exit from the Monument.

Other fuel/hazardous materials to be carried on board and amounts:

Approximately 30 gallons of unleaded fuel in jerry cans for use in the skiffs.

Provide proof of a National Oceanic and Atmospheric Administration (NOAA) Office of Law Enforcement-approved Vessel Monitoring System (VMS). Provide the name and contact information of the contractor responsible for installing the VMS system. Also describe VMS unit name and type:

Vessel Monitoring System – Thrane & Thrane Sailor TT-3606XP

VMS Email: 436998398@c12.stratoemobile.net

Inmarsat ID#: 4TT072E62B15

Contact: Jonathan Littenberg (808-225-8982) or Barbara Littenberg (808-221-6156)

* Individuals MUST ENSURE that a type-approved VMS unit is installed and that its automatic position reports are being properly received by the NOAA OLE system prior to

the issuance of a permit. To make sure your VMS is properly configured for the NOAA OLE system, please contact NOAA OLE at (808) 203-2503 or (808) 203-2500.

*** PERMITS WILL NOT BE ISSUED TO INDIVIDUALS ENTERING THE MONUMENT VIA VESSEL UNTIL NOAA OLE HAS CONTACTED THE MONUMENT PERMIT COORDINATOR WITH A 'POSITIVE CHECK' READING.**

10. Tender information:

On what workboats (tenders) will personnel, gear and materials be transported within the Monument? List the number of tenders/skiffs aboard and specific types of motors:

One 16 foot RHIB Zodiac with Yamaha 4 stroke engine and one 16 foot inflatable Avon with Yamaha 4 stroke tiller engine.

Additional Information for Land Based Operations

11. Proposed movement of personnel, gear, materials, and, if applicable, samples:

Not applicable

12. Room and board requirements on island:

Not applicable

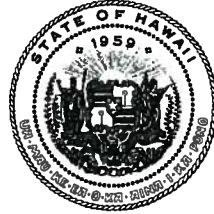
13. Work space needs:

Not applicable

DID YOU INCLUDE THESE?

- Map(s) or GPS point(s) of Project Location(s), if applicable
- Funding Proposal(s)
- Funding and Award Documentation, if already received
- Documentation of Insurance, if already received
- Documentation of Inspections
- Documentation of all required Federal and State Permits or applications for permits

NEIL ABERCROMBIE
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

May 10, 2013

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

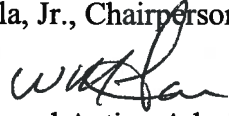
ESTHER KIA'AINA
FIRST DEPUTY

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

TO: Division of Aquatic Resources File

THROUGH: William J. Aila, Jr., Chairperson

FROM: William Tam 
Water Deputy and Acting Administrator, Division of Aquatic Resources

SUBJECT:

DECLARATION OF EXEMPTION FROM THE PREPARATION OF AN ENVIRONMENTAL ASSESSMENT
UNDER THE AUTHORITY OF CHAPTER 343, HRS AND CHAPTER 11-200 HAR, FOR
PAPAHĀNAUMOKUĀKEA MARINE NATIONAL MONUMENT RESEARCH PERMIT TO MR. JACOB
ASHER, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, NATIONAL MARINE FISHERIES
SERVICE, FOR ACCESS TO STATE WATERS TO CONDUCT VIDEOGRAPHIC SURVEYS OF CORAL REEF
FISHES RESEARCH ACTIVITIES UNDER PERMIT PMNM-2013-018.

The following permitted activities are found to be exempted from preparation of an
environmental assessment under the authority of Chapter 343, HRS and Chapter 11-200, HAR:

Project Title:

Papahānaumokuākea Marine National Monument Research Permit to Mr. Jacob Asher, National
Oceanic and Atmospheric Administration, National Marine Fisheries Service, for Access to State
Waters to Conduct Videographic Surveys of Coral Reef Fishes Research Activities

Permit Number: PMNM-2013-018

Project Description:

The research permit application, as described below, would allow entry and activities to occur in
Papahānaumokuākea Marine National Monument (Monument), including the NWHI State
waters from August 1, 2013 to July 31, 2014.

This project will use baited remote underwater stereo-video systems (stereo-BRUVs) to generate
diver-independent survey data of coral reef fishes from shallow water (0 m to 30 m) and deep
water (30 m to 100 m) habitats within the Monument. The purpose of the research is to provide
Monument managers with information on abundance and size distribution of apex predators
(sharks and jacks) and coral reef species independent of divers in habitats of less than 100 m.
Additionally, assessments of 'ōmilu or blue trevally (*Caranx melampygus*), uku or green jobfish

ITEM F-2c

(*Aprion virescens*), and kūmū or whitespot goatfish (*Parupeneus porphyreus*), found in both the Monument and Main Hawaiian Islands and included in the Hawai'i Fisheries Local Action Strategy, will be obtained. Information obtained from surveys within the Monument will improve the understanding of key reef fish species found in both the Monument and Main Hawaiian Islands. Activities include deploying stereo-BRUVs in a stratified random sampling design that is varied by depth and habitat. Videographic data is collected for one hour at each sampling location after which the stereo-BRUVs are retrieved by divers. Eight stereo-BRUVs will be used with an average of 15 to 20 deployments each day for 12 days, meaning each stereo-BRUV could be deployed at least two times per day. Minimal damage to the bottom substrate is expected. The footprint of each stereo-BRUV will be approximately 0.05 square meters. Some damage may occur due to the weight of the stereo-BRUV, shifting currents at the sampling stations, and/or dragging during recovery.

The proposed activities are in direct support of the Monument Management Plan's priority management need 3.1 – Understanding and Interpreting the NWHI (through action plan 3.1.1 – Marine Conservation Science). This action plan calls for “qualitative surveys of...fish...using methods comparable to or intercalibrated with those of existing historical data sets,” and “monitoring of deep-water reefs, banks, and associated communities to meet management information needs”. Activities such as those to be carried out by the permittee, are also addressed in the Monument Management Plan Environmental Assessment (December 2008) which resulted in a FONSI. Videographic images, such as those proposed, would enhance knowledge of top predators.

Consulted Parties:

The permit application was sent out for review and comment to the following scientific and cultural entities: Hawaii Division of Aquatic Resources, Hawaii Division of Forestry and Wildlife, Papahānaumokuākea Marine National Monument (NOAA/NOS), NOAA Pacific Islands Regional Office (NOAA-PIRO), United States Fish and Wildlife Service Hawaiian and Pacific Islands National Wildlife Refuge Complex Office, and the Office of Hawaiian Affairs (OHA). In addition, the permit application has been posted on the Monument Web site since March 13, 2013, giving the public an opportunity to comment. The application was posted within 40 days of its receipt, in accordance with the Monument's Public Notification Policy.

Exemption Determination:

After reviewing HAR § 11-200-(8), including the criteria used to determine significance under HAR § 11-200-12, DLNR has concluded that the activities under this permit would have minimal or no significant effect on the environment and that issuance of the permit is categorically exempt from the requirement to prepare an environmental assessment based on the following analysis:

1. All activities associated with this permit, including the recovery and redeployment of underwater stereo-BRUVs, have been evaluated as a single action. As a preliminary matter, multiple or phased actions, such as when a group of actions are part of a larger undertaking, or when an individual project is precedent to or represents a commitment to a larger project, must be grouped together and evaluated as a single action. HAR § 11-200-7. This permit does not involve an activity that is precedent to a later activity.

2. The Exemption Class for Scientific Research with no Serious or Major Environmental Disturbance Appears to Apply. Chapter 343, HRS, and section 11-200-8, HAR, provide for a list of classes of actions exempt from environmental assessment requirements. HAR §11-200-8.A.5. exempts the class of actions which involve “basic data collection, research, experimental management, and resource evaluation activities, which do not result in a serious or major disturbance to an environmental resource.” This exemption class has been interpreted to include activities such as those being proposed. Additionally, Exemption Class #5, Exempt Item #2 includes game and non-game wildlife surveys, photographing, and placing recording devices in the field to determine animal movement. DEPARTMENT OF LAND & NATURAL RESOURCES, EXEMPTION LIST FOR THE DIVISION OF FORESTRY AND WILDLIFE (June 12, 2008).

The proposed fish monitoring and abundance study activities here appear to fall squarely under the exemption class identified under HAR § 11-200-8.A.5., and are succinctly described under the former Fish and Game Division exemption list published in 1976. As discussed below, no significant disturbance to any environmental resource is anticipated in either the deployment or recovery of instrumentation used to monitor fish and predator movements. Thus, so long as the below considerations are met, an exemption class should include the action now contemplated.

3. Cumulative Impacts of Actions in the Same Place and Impacts with Respect to the Potentially Particularly Sensitive Environment Will Not be Significant. Even where a categorical exemption appears to include a proposed action, the action cannot be declared exempt if “the cumulative impact of planned successive actions in the same place, over time, is significant, or when an action that is normally insignificant in its impact on the environment may be significant in a particularly sensitive environment.” HAR § 11-200-8.B. To gauge whether a significant impact or effect is probable, an exempting agency must consider every phase of a proposed action, any expected primary and secondary consequences, the long-term and short-term effects of the action, the overall and cumulative effect of the action, and the sum effects of an action on the quality of the environment. HAR § 11-200-12. Examples of actions which commonly have a significant effect on the environment are listed under HAR § 11-200-12.

This study involves deployment, staging, and recovery of videographic equipment (stereo-BRUVs) to generate diver-independent coral reef fish survey data in shallow and deep water habitats. Minimal impact to the benthic substrate where the stereo-BRUVs are staged is expected. With this in mind, significant cumulative impacts are not anticipated as a result of this activity, and numerous safeguards further ensure that the potentially sensitive environment of the project area will not be significantly affected. All activities will be conducted in a manner compatible with the management direction of the Monument Proclamation in that the activities do not diminish monument resources, qualities, and ecological integrity, or have any indirect, secondary, cultural, or cumulative effects. The joint permit review process did not reveal any anticipated indirect or cumulative impacts, nor did it raise any cultural concerns, that would occur as a result of these activities.

The activities would be conducted from the NOAA Ship SEARCHER (PMNM-2013-001) during its August cruise.

These activities will be conducted from a small boat deployed from the M/V SEARCHER around Nihoa Island, Mokumanamana (Necker Island), and French Frigate Shoals (FFS). Interactions with sharks at FFS are also anticipated, for the purpose of shark tagging, by Carl

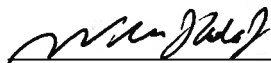
Meyer (2012 permit no. PMNM-2012-050). Meyer's permit is effective through August 24, 2013 and depending on logistics, could be conducted in the area throughout the summer season. In the past, Meyer has spent less than seven days a season at FFS. Proposed targeted removal of Galapagos sharks at FFS for Hawaiian monk seal recovery could occur between June 1, 2013 through May 31, 2014 by Frank Parrish and Alecia Van Atta (2013 permit pending BLNR approval no. PMNM-2013-017). These activities would be conducted from the seasonal monk seal field camp based on FFS. The operation of the field camp, and associated monitoring activities, are covered under the Manager's permit PMNM-2013-001. There is no seafloor monitoring in either project therefore no interaction of activities in anticipated and the culmination of these permits is not anticipated to have significant cumulative impacts.

Since no significant cumulative impacts or significant impacts with respect to any particularly sensitive aspect of the project area are anticipated, the categorical exemptions identified above should remain applicable.

4. Overall Impacts will Probably be Minimal and Insignificant.

Again, any foreseeable impacts from the proposed activity will probably be minimal, and further mitigated by general and specific conditions attached to the permit. Specifically, all research activities covered by this permit will be carried out with strict safeguards for the natural, historic, and cultural resources of the Monument as required by Presidential Proclamation 8031, other applicable law and agency policies and standard operating procedures.

Conclusion. Upon consideration of the permit to be approved by the Board of Land and Natural Resources, the potential effects of the above listed project as provided by Chapter 343, HRS and Chapter 11-200 HAR, have been determined to be of probable minimal or no significant effect on the environment and exempt from the preparation of an environmental assessment.



William J. Aila, Jr.
Chairperson, Board of Land and Natural Resources



Date