

State of Hawai‘i  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
Division of Aquatic Resources  
Honolulu, Hawai‘i 96813

June 26, 2020

Board of Land and Natural Resources  
Honolulu, Hawai‘i

Request for Authorization and Approval to Issue a Papahānaumokuākea Marine National Monument Conservation and Management Permit to Ms. Michelle Lino, NOAA Fisheries, Pacific Islands Fisheries Science Center, for Access to State Waters to Conduct Hawaiian Monk Seal Management and recovery actions, inclusive of the removal of individual sharks at FFS displaying predatory behavior towards pups

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 Ms. Michelle Lino, Hawaiian Monk Seal Research Program, NOAA, pursuant to § 187A-6, Hawai‘i Revised Statutes (HRS), Chapter 13-60.5, Hawai‘i Administrative Rules (HAR), and all other applicable laws and regulations.

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

- Nihoa Island
- Mokumanamana Island
- French Frigate Shoals
- Gardner Pinnacles
- Maro Reef
- Laysan Island
- Lisianski Island
- Pearl and Hermes Atoll
- Midway Atoll
- Kure Atoll

The activities covered under this permit would occur between July 1, 2020 and June 30, 2021. The proposed activities are a renewal of work previously permitted and conducted in the Monument.

#### INTENDED ACTIVITIES

Michelle Lino (applicant) proposes to continue conservation and management activities by NOAA NMFS Pacific Islands Fisheries Science Center (PIFSC) Hawaiian Monk Seal Research Program (HMSRP) for monitoring and recovery of the Hawaiian monk seal (*Neomonachus schauinslandi*) in Papahānaumokuākea. Proposed activities would be conducted by up to 25 individuals between July

2020 – June 2021. One new activity includes deployment of acoustic recording devices to capture underwater vocalizations of Hawaiian monk seals. All HMSRP activities are listed below:

- i. Population monitoring
  - a. Conducting seal assessments by visually identifying animals, and marking and tagging animals;
  - b. Deploying field staff at French Frigate Shoals, Laysan Island, Lisianski Island, Pearl and Hermes Atoll, Kure Atoll and Midway Atoll;
  - c. Instrumentation of seals including but not limited to mounted cameras and telemetry tags.
- ii. Disentangling monk seals from marine debris;
- iii. Conducting health response, including but not limited to cutting umbilical cords, lancing abscesses, administering antibiotics, vaccinating animals, responding to disease outbreaks, and necropsy;
- iv. Conducting antihelminthic treatment ('deworming') by field staff, which may include monitoring to detect improvement in body condition of treated seals versus control seals. Antihelminthic medications may include various cestodocides and nematocides (e.g. praziquantel, fenbendazole, ivermectin, emodepside) applied via various routes (e.g. oral, injectable, topical);
- v. Translocating Hawaiian monk seals, consisting of the following types:
  - a. *Intra-atoll*: These translocation will include moving seals from areas of high risk where threats are imminent to safer areas, and moving pups to promote maternal fostering when necessary. Field staff will perform these movements; greater resources (e.g. veterinarian care) will not typically be necessary;
  - b. *Inter-atoll*: These translocations will include transport of weaned female pups from atolls/islands of low survival to those of higher survival;
  - c. *MHI-NWHI*: These translocations will include transport of main Hawaiian Island (MHI) seals that are considered a threat to themselves or humans because they have demonstrated a pattern of interacting with humans;
  - d. *NWHI-captive care*: Seals may be taken into temporary captivity for treatment at appropriate, federally permitted rehabilitation facilities in the MHI for release back in the NWHI (i.e. permitted for captive care of injured, ill or prematurely weaned seals) (see below);
  - e. Aggressive male seal translocation to areas with no pups or juveniles (see below).
- vi. Reuniting nursing mothers and pups, when separated (includes instances of pup switches);
- vii. Mitigating male aggression towards pups and juveniles (individual and multiple male-based aggression), including utilizing all federally permitted techniques (including, but not limited to, poles, rocks, slingshots, and air horns). Mitigation tools shall be applied as appropriate for the given context (i.e. the intensity, severity and frequency of aggression and the location, with regard to other species in the area such as birds). Mitigation may include temporarily separating males from juveniles by placing either in temporary shore-pens (see below). Mitigation also may include removal of the male(s) from the area by:
  - a. Translocation to a location where no pups or juveniles will be harmed;

- b. Placement in an appropriate, federally permitted facility that is agreeable and permitted to care for a male indefinitely; or
  - c. Lethal removal; this type of removal will only be applied when the above two options are not feasible, possible or exhausted. The preferred technique for euthanasia will be via physical means (e.g. firearm, captive bolt, etc.), in order for the carcass to remain in PMNM and for culturally appropriate and environmentally proper disposal to occur. When necessary, chemical euthanasia and removal of the carcass from PMNM will be allowed.
- viii. Conducting captive care of compromised seals to administer veterinary care and/or food supplementation. Captive care may include the capture and transport of seals to shore-pens (in the NWHI) or facilities in the MHI. NWHI seals under care in the MHI may be returned to the NWHI when a licensed veterinarian deems them rehabilitated and transport is feasible. The seals will then be released to the NWHI site deemed most appropriate for their subsequent survival (determined on the basis of such factors as the intensity and severity of imminent threats to the seals and recent survival trends at each atoll/island);
- ix. Monitoring shark activity at French Frigate Shoals. Monitoring may include camping on islets with shark incidents on nursing pups and recording shark activity and shark-seal interactions via hand-held or mounted cameras (cameras will be mounted on a pole 15' or less with no guy wires to be used only during the field season and attended daily by field staff);
- x. Placing temporary shore pens at select NWHI breeding sites to facilitate monk seal recovery activities described here within (e.g. translocations, captive care, or male aggression mitigation);
- xi. Establishing field staff residence at all monk seal breeding sites to perform the monk seal activities described here within;
- xii. Removing marine debris;
- xiii. Removing up to 14 Galapagos sharks (tail length of 200 cm or greater) at French Frigate Shoals within 700 meters of select pupping sites using hand lines, hand-held harpoon, drum line and/or small 10-hook bottomset (NOTE: no new removal methods are proposed and applicant's activities are a renewal of activities approved in permit # PMNM-2019-012);
- xiv. Operating unmanned aircraft systems (APH-22 hexacopter and Mavic Pro) to assist in monitoring Hawaiian monk seal population;
- xv. Operating tender vessels;
- xvi. Anchoring tender vessels;
- xvii. Traversing Mokumanamana to conduct population assessment surveys only when full surveys cannot be completed by multiple boat landings or UAS operations;
- xviii. Deploying acoustic recording devices to capture underwater vocalizations of Hawaiian monk seals.

The activity will benefit the conservation and management of the Monument by supporting the following strategies under the Monument Management Plan (PMNM MMP Vol. 1, 2008):

- TES-1: Support Activities that advance recovery of the Hawaiian monk seal for the life of the plan.
- MD-1: Remove and prevent marine debris throughout the life of the plan

REVIEW PROCESS:

The permit application was sent out for review and comment to the following scientific and cultural entities: Hawai'i Division of Aquatic Resources, Hawai'i 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 January 31, 2020 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:****QUESTIONS:**

1. *How many Galapagos sharks are requested to be culled? 13 is frequently stated while page 22 states 17. Is the additional 4 counting necropsy samples from deceased animals?*

The number 17 on page 22 is a typo and should be 13. The original request, as stated on page 5, was 20 Galapagos sharks, and to-date, 7 have been removed.

2. *The application states removal of up to 13 sharks this year, how was that number determined?*

The initial target of 20 sharks was determined based on data from the field whereby individually identifiable sharks (through tags or naturally acquired markings on their dorsal fins) that were engaged in predatory behavior on monk seal pups were enumerated.

Shark biologists were consulted and ecosystem modeling efforts indicated that the Galapagos shark population, which is neither threatened nor endangered, was capable of sustaining this level of population reduction. Hence, the initial request of 20 sharks was based on an agreed upon minimum number of sharks that were exhibiting this behavior, paired with ecosystem based support. Since the initial request of 20 made at the beginning of this project 7 Galapagos sharks have been caught and removed, leaving 13 remaining.

We have no reason to reduce the initial request, so our request to remove up to 13 sharks this year is the balance of initially requesting removal of 20 sharks, minus the 7 that have been removed historically to-date. Fishing requires a great deal of effort, and catch-per-unit-effort is low, therefore we expect that reaching this initial target number is still a long-term goal. What we know is that since 2000, it is common that 5-11 pups (15-25% of the pup cohort each year) is lost to predation. In 2019, 35 pups were born at FFS during the field season and Galapagos shark predation was confirmed in 3 pup deaths and strongly suspected in 6 additional disappearances, accounting for 25% of the pups born. Shark removal is not the only activity that is used to address this threat – translocation of pups, including forcing premature weaning, remains the most common intervention and in 2019, 14 pups were translocated.

3. *What are the agency's thoughts on having a cultural monitor for the proposed shark removal activities?*

Cultural monitors were in place at times in the early years of this program. That was phased out as it was logistically complex and it was difficult to recruit practitioners who would commit to a lengthy deployment. Instead, it was determined that the key tenants of respectful action in these delicate circumstances could be conveyed to field teams before deployment. That said, we have and will remain open to having a cultural monitor for these activities. The logistical constraints are the most limiting factor in this consideration. As shark removal does not occur until a trigger is met, and thereafter is weighed against a large suite of monk seal recovery activities and safety concerns (e.g., weather), having a cultural monitor present would require identifying someone who could be available for the entire field season (April – September) and as such, someone with proper training (or the ability to undergo months of training) and experience to be able to fully integrate as a scientist as part of the jointly operated monk seal/sea turtle field team based at Tern Island. Adding an individual that does not operate in multiple roles in this fashion would further increase our footprint and thus our disturbance and impact on the ecosystem. Hence, it is too late in the field season planning process to include someone in 2020, but we are open to further discussions for future years.

#### COMMENTS / RECOMMENDATIONS:

1. *This is a Monument priority activity that continues decades of research. FWS supports this research.*

Thank you for your comment and to the Monument and FWS for this support; if there is something in the text that bears addressing to this effect, please let us know.

2. *There were a few places where more details could be useful for review and documentation so please find these as helpful suggestions:*

- *What is the maximum distance from monk seals that the UAS will operate? There was information about operations below 400 ft, and 0.5 nm, but what is the minimum altitude or distance a UAS will be operated from a monk seal.*

The minimum altitude we will fly over monk seals will be 25 ft or 7.5 meters.

- *It would be helpful to see the cumulative historical and the proposed removal of sharks in context with estimated populations, for example, what percentage of the estimated shark population is the 13 proposed sharks?*

See response to question 2, above for additional text. Published data and consultation with Carl Meyer puts the population somewhere between 668 to just over 1000 sharks. The estimated removal would be between 1.3 – 1.9% of the population. Generally, we don't remove more than 1 shark per season or 0.1% of the population.

- *Where at FFS and P&H will soundtraps be deployed? Depth, approximate location etc.*

As specified on page 26, the soundtraps will be deployed at 5-10 m depth in sandy substrates as close to land as possible. As this is our first year deploying these devices, the soundtraps will most likely be placed close to the islands where field camps are established, in waters that are sufficiently protected and easily monitored (Tern Island for FFS; Southeast Island for Pearl and Hermes Reef).

3. *The main recommendation is that for operations at Pearl and Hermes that the monk seal team follow best management practices (BMPs) for biosecurity regarding all equipment and vessels which are exposed to the invasive Chondria alga. These BMPs will be included in PMNM's current BMP 011 (Disease and Introduced Species Prevention Protocol for Permitted Activities in the Marine Environment), and are currently being developed in collaboration with HMSRP and the Monument Management Board.*

The HMSRP will continue to collaborate with the MMB and others as appropriate as the BMPs are developed. We are committed to doing everything reasonably achievable to maintain biosecurity practices, and we appreciate the communication that the MMB has had with us.

4. *It is also recommended that the BMPs listed below for handling marine debris contaminated with the invasive algae are also followed.*

*Specific recommended conditions for marine debris collections and transport at P&H*

- *Collect photos of biofouling on collected debris, including close up with scale object for reference. Focus images on portions of debris with invasive alga when detected. When invasive alga is detected on debris, note the observation and collect coordinates.*
- *It is acceptable to pick up either dry or wet debris and stage at SE island*
- *If transporting debris by boat, contain within the hull of the boat, and don't allow debris to hang from the small boat, especially if the alga is in the debris.*
- *The small boat should be cleaned after transporting debris with alga by removing fragments from the small boat.*
- *If possible, accelerate the drying of debris by laying it out on land.*
- *Ensure there is a biocontrol plan for debris that is transported through the monument, which includes all phases from staging, to transport to larger ship, to containment to disposal. NMFS should propose a biocontrol plan and the working group will support finalization. It is highly encouraged to consult with the State of Hawaii if bringing debris and algal fragments back into the Main Hawaiian Islands.*

We agree and are willing and able to abide by these practices pertaining specifically to marine debris at Pearl and Hermes Reef. At this time, we are solely planning to stage debris on land by hauling it above the high water line to mitigate its impact and allow it to dry out on land. We know that the marine debris team will be out later in the season and will be able to collect it at that time.

*5. Please confirm that all proposed activities for 2020 are captured in your permit application.*

One additional activity we are proposing is to install small inexpensive trail cameras on existing infrastructure at Tern Island to monitor for wildlife entrapments. Please see additional information below:

**Tern Island Entrapment Camera Project**

This pilot project entails deploying 2-3 rugged trail cameras on Tern Island, French Frigate Shoals. Specific locations proposed are those which Hawaiian monk seals, green sea turtles and seabirds become entrapped by existing infrastructure.

Trail cameras are compact, self-contained systems that are programmed to take a certain number of pictures per day capturing the presence or absence of animals in specific locations.

Sizes of trail camera systems including external solar panels will be no larger than 16" x 12" x 12". Weights of systems including solar panels will be no more than 5 lbs.



Systems will be mounted on existing island infrastructure such as the seawall along the northeast side of the island or buildings on the south side. The exact infrastructure that will be used is dynamic season-to-season, so we cannot exactly pre-determine the location of mounting at this time. However there is a map and several images below that identify the key areas of interest based on common wildlife entrapment locations.

Systems will be tested by field staff from May - August 2020. During this timeframe, staff will check on all systems 2-3x weekly to evaluate their feasibility for offseason surveillance in terms of image quality, camera security (attachment to infrastructure), and disturbance to wildlife. If monitoring during the field season indicates that these systems have potential to collect good data and do so without any adverse impact to the wildlife or ecosystem, staff will leave systems in place to record data from September 2020 to May 2021, unattended.



SW Corner





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

Cultural reviews support the acceptance of this application. No concerns were raised.

**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. Environmental Assessment for conducting Hawaiian Monk Seal Conservation and Management Activities in PMNM (May 2012).
- ESA/MMPA permit # 16632-01 was issued to PIFSC HMSRP for authorized limited take of the Hawaiian monk seal.
- An informal consultation under Section 7 of the ESA is currently underway (initiated by NMFS PIFSC with the US Fish and Wildlife Service, Pacific Islands Fish and Wildlife Office (PIFWO)) for proposed land based activities on Mokumanamana. The outcome of this consultation may require the applicant to adhere to PIFWO-prescribed conditions. Such conditions would be reflected in the PMNM permit, prior to issuance.
- NHPA Section 106 consultation completed for archipelagic wide operations (main and northwestern Hawaiian Islands) in November 2013.
- The EA for this permit resulted in a FONSI (Finding of No Significant Impact) and is titled: Supplemental Environmental Assessment On Issuance Of A Permit For Field Research and Enhancement Activities On The Endangered Hawaiian Monk Seal (Permit No. 10137-04)
- Additionally, 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 CONSERVATION AND MANAGEMENT PERMIT TO MS. MICHELLE LINO, NOAA FISHERIES, PACIFIC ISLANDS FISHERIES SCIENCE CENTER, FOR ACCESS TO STATE WATERS TO CONDUCT MARINE MAMMAL ACTIVITIES UNDER PERMIT PMNM-2020-006”)

Has Applicant been granted a permit from the State in the past? Yes ☒ No ☐

If so, please summarize past permits:

- The Applicant (NOAA) was granted a permit to conduct similar activities each year under the PMNM-001 permit since the inception of the PMNM permitting process plus the following permits: PMNM-2018-014, PMNM-2017-012, PMNM-2008-016, PMNM-2010-018, PMNM-2009-030, and PMNM-2011-029 to conduct associated Hawaiian monk seal recovery work.

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:

PMNM 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 PMNM staff.

RECOMMENDATION:

That the Board authorize and approve a Conservation and Management Permit to Ms. Michelle Lino, Pacific Islands Fisheries Science Center, with the following special conditions:

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 permittee provide, to the best extant possible, a summary of their Monument access, including, but not limited to, any initial findings to the DLNR for use at educational institutions and outreach events.
4. 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.
5. 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.
6. 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.
7. Tenders and small vessels must be equipped with engines that meet EPA emissions requirements.

8. 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.
9. No fishing is allowed in State Waters except as authorized under State law for subsistence, traditional and customary practices by Native Hawaiians.
10. The permittee is required to follow all applicable Federal, State, and County laws with respect to the COVID-19 emergency response that apply at the time of departure and return. In issuance of this permit, the State of Hawaii is not otherwise monitoring or regulating permittee's compliance with COVID-19 laws and is not responsible for the health and safety of crew members, researchers or other occupants of the vessel associated with this permit.

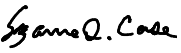
Respectfully submitted,



*Maria Carnevale*

Maria Carnevale  
Papahānaumokuākea Marine National Monument

APPROVED FOR SUBMITTAL

**Signature:** 

**Email:** [suzanne.case@hawaii.gov](mailto:suzanne.case@hawaii.gov)

SUZANNE CASE  
Chairperson

**Papahānaumokuākea Marine National Monument**  
**CONSERVATION AND MANAGEMENT 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:  
NOAA/Inouye Regional Center  
NOS/ONMS/PMNM/Attn: Permit Coordinator  
1845 Wasp Blvd, Building 176  
Honolulu, HI 96818  
nwhipermit@noaa.gov  
PHONE: (808) 725-5800      FAX: (808) 455-3093

**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:** Michelle Barbieri Lino

**Affiliation:** NOAA Fisheries

**Permit Category:** Conservation and Management

**Proposed Activity Dates:** 5/1/2020 – 4/30/2021

**Proposed Method of Entry (Vessel/Plane):**

NOAA RVs Oscar Elton Sette, possibly Searcher, Imua, or US Coast Guard C130.

**Proposed Locations:**

Hawaiian monk seal research and recovery efforts will occur across all islands, islets and atolls in the Northwestern Hawaiian Islands. Work will be done predominantly on the shoreline of each island/islet.

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

25

**Estimated number of days in the Monument:**

150

**Description of proposed activities: (complete these sentences):**

**a.) The proposed activity would...**

support priorities identified in the Papahānaumokuākea Marine National Monument Management Plan (December 2008, hereinafter referred to as MMP); specifically Priority Management Needs: 3.2 Conserving Wildlife (Hawaiian monk seals), and 3.3 Reducing Threats to Monument Resources (Hawaiian monk seals), as well as the Co-

Trustee's Conservation & Management Activity: Natural Resource Protection, as listed in section 6.3 of that Monument permit application.

NOAA aims to accomplish natural resource protection related to monk seals by conducting "...management actions to promote the conservation of Monument resources which includes activities necessary to carry out protection of species, such as carrying out existing recovery plans" to fulfill our obligations under the Endangered Species Act and the Hawaiian Monk Seal Recovery Plan (NMFS 2007).

**b.) To accomplish this activity we would ....**

be continuing three decades of effort to understand the biology, ecology and population trends of monk seals and identify threats to the species and implement actions to mitigate those dangers.

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

conducting population assessment and monitoring efforts across the NWHI archipelago in particular during the summer field camp season. Simultaneously we will collect information on the health, ecology and biology of monk seals and threats to the species and use these data to develop, implement and assess a multitude of recovery activities.

Recovery activities would include, but are not limited to, translocating seals away from danger and to areas of great survival, rehabilitation of undernourished seals, disentanglement from marine debris, mitigation of shark predation risks to pups at French Frigate Shoals, removal of marine debris, vaccination against morbillivirus, reuniting mothers and pups, and more.

**Other information or background:**

This is a brief summary of information relevant to monk seal research and recovery initiatives proposed here. More information can be found in the attached Recovery Plan for the Hawaiian Monk Seal.

- The Hawaiian monk seal is an endangered species numbering approximately 1,400 individuals, 1,100 seals reside in the NWHI.
- The Hawaiian monk seal has been the focus of research and recovery activities for over 30 years. This has resulted in one of the most robust population datasets for a large mammal species allowing the Program to develop and assess cutting edge recovery actions.

- These recovery activities have resulted in the fact that a minimum of 28% of Hawaiian monk seals alive today are here because they directly benefited from an action or are the offspring of a female seal that benefited.
- In the PMNM, the key threats to the survival of the species include low birth rates combined with poor survival of juvenile Hawaiian monk seals to reproductive age. The majority of research activities are directed to understanding threats to the seals and mitigating those, particularly related to young female seals.
- All activities proposed here are permitted by the NOAA MMPA/ESA Permit 22677 (and associated NEPA docs etc.) and supported by the Revised Recovery Plan for Hawaiian Monk Seals.
- This permit also supports effort conducted by our State and Federal partners that are directed towards monk seal research and recovery.
- To maximize the benefit from our limited time in this remote place, the Program will use a suite of methods to ensure that all areas are well-surveyed (including using technology to expand data collection, and requesting access to all monk seal haul-out areas).
- Unmanned aerial systems (UAS) will be used to conduct ecological surveys including surveying and monitoring monk seals, marine debris, and possibly other flora and fauna in the NWHI (as a by-product of habitat mapping or as requested by partners).
- UAS will be launched and recovered from land, NOAA ships, or small boats launched from those ships, and will be flown at altitude below 400 feet.
- UAS efforts will provide the ability to survey and map resources on the remote islands without (1) interference; (2) the potential for the introduction of invasive species; and (3) human disturbance to the natural resources. The UAS would increase the monitoring and surveying capacity in the Monument.
- While we work to minimize human presence on Mokumanamana, trained biologists familiar with the island may traverse Mokumanamana, using paths delineated by archaeologists and cultural practitioners familiar with the island, in the event that all seal haul-out areas cannot be surveyed through boat-landings or UAS flights at haul-out sites.
- This permit is comprehensive and includes ALL monk seal recovery activities that occur in the Monument including the mitigation of predation by Galapagos sharks on monk seal pups at French Frigate Shoals (FFS); the primary source of seal mortality at FFS.
- This is a continuation of permitted shark removal activities for monk seal conservation.

The original request was for up to 20 Galapagos sharks to be removed. In subsequent years we have removed 7 sharks including 1 in 2019. The request for this year would be for 13 Galapagos sharks.

- Predation peaked in 1997-1999; it continues at a rate of 5-11 pups per year from 2000-2019 (usually 15-25% of the pup cohort each year).
- Between 1997 and 2019, shark predation affected over 270 pups out of roughly 1150 born at FFS. Sharks have killed many pups and others were permanently maimed by severe shark bites and subsequently died.
- Since 1997, NMFS has engaged in a variety of actions to address this threat, including pre-weaning and translocating pups, predator deterrents, and targeted fishing activities to remove problem G. sharks.
- Removing the sharks exhibiting this behavior from the environment is the most effective means of preventing continued predation.
- NMFS has consulted numerous stakeholders including Native Hawaiians, animal welfare groups, conservation professionals, and the general public. Opinions and concerns are varied between individuals but no external group has requested NMFS cease this activity.
- This activity has been approved and undertaken safely and respectfully almost every year since 2010.
- Successful removal of these individuals could have a profound effect on the monk seal population at French Frigate Shoals while having negligible impact on the G. shark population.

**Section A - Applicant Information**

**1. Applicant**

Name (last, first, middle initial): Lino, Michelle B.

Title: Lead Scientist, Hawaiian Monk Seal Research Program

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

Mark Sullivan (CV attached)

NOAA / NMFS / PIFSC / Hawaiian Monk Seal Research Program

[REDACTED]

Stacie Robinson (CV attached)

NOAA / NMFS / PIFSC / Hawaiian Monk Seal Research Program

[REDACTED]

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

[REDACTED]

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

[REDACTED]

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

NOAA Fisheries

**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):**

Michelle Barbieri Lino, Veterinarian  
Stacie Robinson, Scientist  
Jessica Bohlander, Scientist  
Claudia Cedillo, Scientist  
Brenda Becker, Scientist  
Mark Sullivan, Scientist  
Thea Johanos, Scientist  
Tracy Mercer, Scientist  
Hope Ronco, Scientist  
TBD x 13, Scientist (seasonal field staff and program members)  
TBD, Scientist  
TBD, Vet Support

## **Section B: Project Information**

### **5a. Project location(s):**

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

NOTE: Shallow water is defined by water less than 100 meters in depth.

☒ Remaining ashore on any island or atoll (with the exception of Sand Island at Midway Atoll 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:**

Hawaiian monk seal research and recovery efforts will occur across all islands, islets and atolls in the Northwestern Hawaiian Islands. Work will be done predominantly on the shoreline of each island/islet.

### **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:***

All activities described in this application are directed towards understanding the biology, ecology, and population dynamics of the Hawaiian monk seal and identifying factors that impact the survival and recovery of the species. All of this information is then compiled to develop, implement, and assess the recovery actions described in this application.

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

**If so, please list the species you specifically intend to target.**

Hawaiian monk seals

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

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

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?**

All monk seal conservation and management activities conducted by the permit applicants will be carried out with strict safeguards for the natural, cultural and historic resources of the Monument as required by Presidential Proclamation 8031, and other applicable law and agency policies and standard operating procedures. All agencies have field protocols and best management practices. These practices and procedures will minimize or eliminate disturbance to wildlife, flora, habitats, and cultural and historic resources.

We have a rigorous training that all field staff undergo before being deployed to seasonal field camps. This includes monk seal based activities but also how to safeguard and minimize impacts to other natural and cultural resources. This will be further supported through providing Resource Monitor training for key field staff.

Additionally, pre-access permit and cultural briefings will be conducted for all new personnel entering the Monument and annually for all.

In 2014 and 2015, the UAS research team (including members from NOAA and USFWS) demonstrated that the APH-22 systems could operate with virtually no impacts to cultural and natural resources within the Monument. In 2018, use of UAS to count monk seals allowed us to obtain full surveys without a second landing or overland traverse demonstrating how it can help to minimize human presence and impact. As in all previous years, the UAS will be operated by trained NOAA staff and affiliates and all relevant Monument Best Management Practices and protocols specific to deployment and retrieval will be followed. Interactions with birds and other wildlife will be closely monitored and should significant interactions occur operations will be halted.

We are requesting the use of the APH-22 (used in 2015 and 2018) and DJI Mavic Pro GE at both Nihoa and Mokumanamana. Both of these islands and the cultural sites on them are of great significance to the native Hawaiian community. Past discussions have identified at least two areas of concerns to Hawaiian cultural practitioners: 1) capturing images of cultural sites and 2) generally operating over the islands themselves as it is both the land, sea and air around the islands that are sacred. We hope to continue to have access to conduct operations by only conducting flights over the coast (rocky shelves and beaches) of the two islands. There is no need to fly over the upper reaches of the islands and we will not photograph any cultural sites. We can also work to minimize the amount of time for operations.

All photos and imagery captured by the UAS will be used internally for purposes of conservation and management activities. Images will be shared with all Co-Trustee agencies upon request and not disseminated for public consumption without first ensuring the appropriateness, from a cultural and natural resource perspective, of the information being disseminated.

To protect sensitive upland sites when traversing Mokumanamana, we will use minimal staff (typically 3 survey staff and up to 2 veterinary staff) which will include a qualified and experienced Resource Monitor. Mokumanamana and appropriate PMNM Best Practices would be observed.

Careful quarantine procedures will be followed at each island where personnel land. This includes use of gear purchased new and dedicated to each island / atoll. Thorough cleaning, biosecurity, and safe storage protocols are followed between field seasons.

**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?**

Our Program has conducted monk seal research and conservation activities in the NWHI for decades. We have a large presence in the NWHI and with that comes the potential to negatively impact a number of cultural and natural resources. We have worked hard over the decades to develop and refine our protocols to minimize the amount of time and impact on these resources as well as follow other established protocols.

For new and particularly sensitive activities we direct considerable energy to share information with our Monument partners on the need and justification for each activity. For example for the shark predation mitigation work that has been permitted multiple times and is included in this project we consulted extensively with our MMB and native Hawaiian partners.

There has been extensive consultation with the Native Hawaiian community on this and many other Hawaiian monk seal research and conservation efforts since initiating this series of predation mitigation strategies in 2010. In 2010 -2011, we consulted with and received quality input from OHA and the Monument's Native Hawaiian Cultural Working Group (NHCWG). The feedback from the NHCWG and others was not homogenous with a diverse array of perspectives and opinions both supporting and opposing the activity. The NHCWG determined it was unable to offer an endorsement or censure of the proposed management activity and has not reviewed the activity since. We are looking forward to providing any information to the NHCWG at their request in the future.

Discussions with other members of the Hawaiian community have resulted in constructive feedback and improved understanding of the views of some representatives of the Native Hawaiian community on our proposed work. From these meetings, we also supported the participation of a number of Native Hawaiians in our shark predation mitigation work in 2010 and 2011.

In 2013 with the addition of seal flesh as bait, we were encouraged by the State of Hawaii Board of Land and Natural Resources to communicate with, and be responsive to, stakeholders regarding this activity. We alerted approximately 35 organizations and individuals about our field activities during the 2013 field season (including shark fishing) and updated them on our plans for the 2014 season. To date, none of these entities has expressed questions or concerns.

We also undertook consultations regarding the use of tissue from previously deceased monk seals as bait with several Native Hawaiians with whom we have been working with on other monk seal issues. In this regard, we have held one-on-one discussions with

several individuals (cultural practitioners, partners, and/or advisors). Input we received during these one-on-one discussions ranged from full support and understanding to acceptance without expressed support. No one we have spoken with regarding the use of seal tissue has voiced opposition or indicated that the use of seal tissue as we have proposed would adversely affect their productive relationships with our program or otherwise diminish their support for monk seal conservation. The overarching sentiment we have heard has been that as long as the seals would be dead of a cause beyond our control (which would be the case), using their bodies to try to save a still living seal, while admittedly difficult to consider or undertake, would be a reasonable effort in light of the endangered status of the monk seal population.

To safeguard the ecological integrity of the Monument, we propose to limit the scope of our removal actions as described above and also to avoid by-catch of any other wildlife to the greatest degree possible. Possible adverse effects on the coral reef ecosystem at FFS from shark removals were investigated using the EcoSim model (Parrish, unpublished data). Results from that work indicated that the removal of 20 sharks had a nearly imperceptible effect on the dynamics of the FFS ecosystem.

**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.**

There is not a practicable alternative location to the proposed activity outside of the Monument because this threat to the recovery of the endangered Hawaiian monk seal has only been identified in the Monument. While a small portion of the monk seal population lives outside of the Monument, in the MHI, the species will not likely avoid extinction without a healthy population in the NWHI. Recovery requires at least 2900 seals in the NWHI with at least 5 of the 6 main sub-populations above 100 individuals and increasing.

Specifically related to the shark predation mitigation component of these recovery activities: FFS shark predation must be mitigated to recover the FFS population. Losing a high number of pre-weaned and newly weaned pups to shark predation is a unique phenomenon at French Frigate Shoals only; therefore, we propose to manage this threat at this location only. We have tested other practicable alternatives (deterrents etc.) and they have not worked. We have taken this focused and targeted approach to maximize the limited federal resources and minimize adverse impacts to other Monument resources by conducting the shark removal activities at only in nearshore waters adjacent to monk seal pupping beaches where Galapagos shark predatory behavior is observed.

Related to UAS operations, the work proposed here is intended to be a regular part of Hawaiian monk seal research and recovery activities. The recovery of Hawaiian monk seals requires us to conduct this work in the NWHI. The use of UAS will help us to be more successful in obtaining full population counts (particularly of hard-to-observe areas) during more visits to the NWHI in the future.

Related to traversing Mokumanamana, the difficulty of landing at Mokumanamana has hindered our ability to fully assess the monk seal population in recent years. The ability to traverse the island in 2019 allowed us to conduct two full reliable ground counts whereas in 4 of the previous 5 years, we could only land at one site and only obtained partial counts. Cultural practitioners from the Office of Hawaiian Affairs (OHA) were included in 2019 to guide our scientists through areas of cultural sensitivity. There has been continued dialogue between NOAA and OHA since that initial visit, resulting in the development of a more detailed landing/access map, protocol and risk assessment. Gaining this complete data is essential to accurately tracking trends in the species and making informed management decisions.

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

The intent of all activities are to foster the recovery of the iconic and endangered Hawaiian monk seals. Many safeguards are in place to minimize the potential for negative impacts to the natural and cultural resources of the Monument (i.e. biosecurity measures). To date our recovery activities have had a significant benefit to the monk seal population and expect this will continue into the future.

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

This is a conservation permit for Hawaiian monk seals and covers activities that might need to be undertaken year-round as necessary. The majority of the work, however, is targeted from May to September to overlap with the primary breeding season for the species.

Some activities will be much more limited in scope. For example, Nihoa and Mokumanamana are typically only visited during our two research cruises each year (for field camp deployment and pick up).

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

The NOAA Hawaiian Monk Seal Research Program has been undertaking monk seal conservation and research activities in the Northwestern Hawaiian Islands since the early 80's. We have a long history of successful operations in the area and demonstrated measurable positive impact for the population. All seasonal staff receive extensive training in research activities, boat operations and safety, Monument BMPs and biosecurity protocols before being deployed to the NWHI.

Staff involved in UAS operations will be trained UAS pilots with extensive experience in the monument and flying the APH-22 or Mavic Pro GEs appropriate. The HMSRP intends to use UAS as a future tool to aid in their research, monitoring and emergency response of monk seals. All pilots and partners associated with this project will have training and experience relevant to the role they will play on the team.

Staff traversing Mokumanamana will be led by a team member with experience on the island and will include a trained Resource Monitor.

**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.**

Funding from the US Federal Government.

**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.**

Everything we are proposing in this permit has been assessed and approved in previous permits. We work hard to adhere to all Monument BMPs and regulations that overlap with our activities. We operate in areas related to our work to minimize impacting any other resource unnecessarily and many of our activities provide benefits to other resources (i.e. debris removal, entrapment walks, etc.).

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

Yes.

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

All other necessary permits and approvals have been acquired for this work and applicants have been in compliance with previous PMNM permits.

**8. Procedures/Methods:**

The following list of activities is intended to promote the recovery of the Endangered Hawaiian monk seal at any or all breeding sites in the NWHI. For more information about these activities please review attached document MMPA/ESA Permit 22677. Activities may include:

## A) Conservation Research Activities

### i. Population Monitoring.

a. Conducting seal assessments by visually identifying animals, marking animals, flipper tagging, pit tagging and other techniques approved under MMPA/ESA permit 22677 will occur across the NWHI.

b. Deploying field staff in camps for months at a time at French Frigate Shoals, Laysan Island, Lisianski Island, Pearl and Hermes Reef, and Kure Atoll. One 4-6 week stay at Midway Atoll is planned for July/August 2019 during the mouse eradication project, in coordination with USFWS; any additional short duration stays at Midway will be coordinated with USFWS as well.

c. Instrumentation of seals for post release monitoring or understanding ecology and behavior of monk seals will include seal mounted cameras, telemetry tags or other technology approved under MMPA/ESA permit 22677.

d. Use UAS (APH-22 hexacopter or Mavic Pro GE) to monitor Hawaiian monk seal populations (including counts, individual identification, body condition assessment), marine debris, and possibly other flora and fauna on or around islets in the monument.

The APH-22 has a pilot and a ground station operator/observer and is launched from land or the observer's hand. The Mavic Pro Ge is a vertical take-off and landing UAS that can be launched from land or boat but does not necessitate the use of a ground station or ground station operator. Once any UAS is launched a visual observer monitors the UAS flight and scans the sky to see if there is any air traffic or bird activity requiring the landing of the UAS. The UAS will fly for a maximum of 30 minutes and will remain within the pilot's visual line of sight and less than 0.5-nm. The rechargeable battery will be replaced for each flight.

General Operation Guidelines will include:

- Operation in daylight hours only.

- Operation in winds less than 25kts.

- Only NOAA Certified Pilots trained specifically for the APH-22 or the Mavic Pro GE will operate the system.

- Pilots will avoid multiple take offs and landing in a single location to minimize repeat disturbance to nesting birds.

DJI Mavic Pro GE Specifications:

- Body: Quadcopter with 4 foldable arms

- Diagonal size (excluding propellers): 13.2" (335mm)

- Weight (including battery and propellers: 1.62 lbs (734 g)

Max Flight Time: 27 minutes  
Range, Physical: 8 miles (13km, no wind)  
Range, Max Transmission: 4.3 mi (7km)  
Payload: Integrated camera on gimbal  
Max Speed: 40 mph (65 kph)

For Mokumanamana visits, we will follow all appropriate Mokumanamana and PMNM Best Practices, as well as adhere to these General Guidelines:

Only traverse Mokumanamana when full surveys cannot be completed by multiple boat landings or UAS activities.

A qualified and experienced Resource Monitor would be present.

Minimum number of personnel would go ashore and undertake the hike.

f. Deployment of acoustic recording devices to capture underwater vocalizations of Hawaiian monk seals.

Passive acoustic monitoring via SoundTraps is a non-invasive method for studying underwater sounds. This study will use two SoundTrap ST500 HF underwater acoustic recorders at two sites (French Frigate Shoals and Pearl and Hermes Reef) to record the underwater vocalizations of Hawaiian monk seals and seasonal trends in their typical aquatic soundscape. It is important for increasing our baseline knowledge of their communication system and for measuring the level of man-made noise they encounter. Assessing the impacts of man-made sound on monk seal communication can inform our conservation decisions, particularly the development of noise mitigation measures and population monitoring through passive acoustics.

Other monk seal directed research as needed and authorized by MMPA/ESA permit 22677. All projects will be captured as a memo to file to ensure PMNM MMB is informed of all monk seal conservation research activities.

## B) Recovery Interventions

- i. Disentanglement of monk seals from marine debris;
- ii. Health response, including but not limited to cutting umbilical cords, lancing abscesses, administering antibiotics, vaccinating animals and responding to disease outbreaks, and necropsy;
- iii. Anthelmintic treatment (‘deworming’) by field staff, which may include monitoring to detect improvement in body condition of treated seals versus control seals. Anthelmintic medications may include various cestodocides and nematocides (e.g. praziquantel, fenbendazole, ivermectin, emodepside) applied via various routes (e.g. oral, injectable, topical);
- iv. Translocation, consisting of the following types:
  - a. Intra-atoll: These translocations will include moving seals from areas of high risk where threats are imminent to safer areas, and moving pups to promote maternal fostering when necessary. Field staff will perform these movements; greater resources (e.g. veterinarian care) will not typically be necessary.
  - b. Inter-atoll: These translocations will include transport of weaned female pups from atolls/islands of low survival to those of higher survival.
  - c. MHI – NWHI: These translocations will include transport of main Hawaiian Island (MHI) seals that are considered a threat to themselves or humans because they have demonstrated a pattern of interacting with humans.
  - d. NWHI-captive care: Seals may be taken into temporary captivity for treatment at appropriate, federally permitted rehabilitation facilities in the MHI for release back in the NWHI (i.e. permitted for captive care of injured, ill or prematurely weaned seals) (see below).
  - e. Aggressive male seal translocations to areas with no pups or juveniles (see below);
- v. Reunion of nursing mothers and pups, when separated (includes instances of pup switches);
- vi. Mitigation of male aggression towards pups and juveniles (individual and multiple male-based aggression), including utilizing all federally permitted techniques (including, but not limited to, poles, rocks, slingshots and air horns). Mitigation tools will be applied as appropriate for the given context (i.e. the intensity, severity and frequency of aggression and the location, with regard to other species in the area such as birds). Mitigation may include temporarily separating males from juveniles by placing either in

temporary shore-pens (see below). Mitigation also may include removal of the male(s) from the area by:

- a. Translocation to a location where no pups or juveniles will be harmed;
  - b. Placement in an appropriate, federally permitted facility that is agreeable and permitted to care for a male indefinitely; or
  - c. Lethal removal; this type of removal will only be applied when the above two options are not feasible, possible or exhausted. The preferred technique for euthanasia will be via physical means (e.g. firearm, captive bolt, etc.), in order for the carcass to remain in PMNM and for culturally appropriate and environmentally proper disposal to occur. When necessary, chemical euthanasia and removal of the carcass from PMNM will be allowed;
- vii. Rehabilitation and care of compromised seals to administer veterinary care and/or food supplementation. Captive care may include the capture and transport of seals to shore-pens (in the NWHI) or facilities in the MHI. We will aim to return NWHI seals under care in the MHI to the NWHI when a licensed veterinarian deems them rehabilitated and transport is feasible. The seals will then be released to the NWHI site deemed most appropriate for their subsequent survival (determined on the basis of such factors as the intensity and severity of imminent threats to the seals and recent survival trends at each atoll/island);
- viii. Monitoring shark activity at French Frigate Shoals. Monitoring may include camping on islets with shark incidents on nursing pups and recording shark activity and shark-seal interactions via hand-held or mounted cameras (cameras will be mounted on a pole 15' or less with no guy wires to be used only during the field season and attended daily by field staff);
- ix. Placement of temporary shore pens at selected NWHI breeding sites to facilitate monk seal recovery activities described here within (e.g. translocations, captive care, or male aggression mitigation); and
- x. Establishment of field staff residence at all monk seal breeding sites to perform the monk seal activities described here within.
- xi. Remove marine debris, trash, and other materials (land and ocean-based) that pose threats to Monument resources, including but not limited to derelict fishing gear and following established Monument BMPs.
- a. Disentanglement of threatened and endangered species by authorized personnel, debris tracking via drifter buoys and Unmanned Aerial Vehicles, and monitoring of sites that have been cleared of debris for recovery rates and effects of removal;

b. Location and removal of debris.

xii. Shark Predation Mitigation Activities:

a. Fishing personnel and location: A team of 3-5 staff experienced and trained in safe and effective methods for shark fishing/removal will be tasked with monitoring and removal of G. sharks that they encounter within 700m of shore of any FFS islet where predatory behavior is observed. As such, capturing sharks will only occur in what is considered the shallow lagoon inside the atoll in close proximity to islets with the highest rate of shark predation. Handlines and harpoon will be used in shallow water, from shore or close to shore or from a small boat; bottomsets and drumlines will be used in deeper water, over sandy substrate at distances farther from shore (up to 700m away). Ability to set the gear as far out as 700m from shore will help ensure that it performs as designed by Meyer in 2009. Shallow depth, coral and snags make setting the bottomset at closer distances a challenge.

b. Fishing Methods: Four different methods will serve as a “toolbox” of options to safely remove a maximum of 13 Galapagos sharks: handline, harpoon, bottomset, and drumline. Each method has its advantages and drawbacks. The potential for shark wariness to humans in combination with extremely low CPUE near pupping sites indicates that such a “toolbox” is needed to successfully capture sharks at the numbers and in the areas we desire.

Handlines and harpoons have the advantage of being very specific and have been successful in the past.

Bottomsets and drumlines are, by design, restricted by habitat characteristics due to the potential for lines to become tangled, etc. Thus, bottomsets and drumlines are not recommended to be effective in very shallow depths. Bathymetry and currents are islet-sector specific; therefore, the distance from shore to achieve a feasible depth (approx. 25 feet) and appropriate substrate (sandy bottom) is also islet-sector specific; a zone of 700m around each islet will provide for this.

No single method is guaranteed to be successful given the unpredictability and individualistic nature of sharks. However, together, all the methods provide the greatest chance of success. The order in which the different methods will be applied will be at the discretion of the team and will be highly dependent on a variety of environmental and biological factors. If we employ more than one method at a time, we still expect that the total number of removals will be low based on the low CPUE in the shallow lagoon.

We will monitor the total number of baited hooks deployed across methods in order to remain within the proposed catch quota of 13 additional sharks. We will

use the same bait type (large tuna heads, shark remains and tissue from previously deceased seals) and hook type (circle hook, size 18/0 to 20/0) as previously approved. Fish and seal tissue bait will be brought from outside the Monument. There may not be the opportunity to collect tissue from a deceased seal at French Frigate Shoals. Seal tissue and shark tissue bait will also be collected within the Monument as available.

We will tend the gear to avoid bycatch mortality (non-target species will be dehooked and released). It is assumed that bycatch will be minimal and primarily shark species, based on Meyer's crew's experience in 2009 and our bycatch in 2010-2015. Fishing staff will avoid lethal removal of non-target sharks through their proper identification. The only shark species that is likely to be confused with the G. shark is the grey reef shark. However, in G. sharks, there is a very distinct ridge along the back between the first and second dorsal fins. Also, the maximum size of 20 grey reef sharks caught across the NWHI was 159 cm (total length) in a 2003 study and in 2011 at Trig and Gin by our staff (3 5-foot grey reefs were caught and released). So, based on the absence of the dorsal ridge and a threshold size requirement above 200cm for removal, we will ensure that we do not misidentify and cull a shark that is actually a grey reef.

For handlines, a line will be baited from shore or small boat. A hand-held harpoon will be used from shore or small boat when a shark is observed. A barbed shaft, on the end of the harpoon pole will be delivered by hand and the tip will be attached to wire cable and connecting line that will be used to retrieve the shark. For these methods, captured sharks will be hauled out on to the beach for euthanasia.

Bottomsets will be made to the specifications identical to those used in the Meyer's project permitted in the Monument to catch sharks in 2009. Meyer's bottomsets had 10 hooks; we propose to use this many or less on each set. The gear is designed for sandy substrate with no potential for snagging. Approximately 200- 350m long 1/2 inch polypropylene mainline with overhand loops at regular intervals (40-60m) for gangion (branch line with hook) attachment will be used. Each end of the mainline will have a buoy line consisting of 1/2-inch polypropylene with a cleat at the top and a Danforth anchor (9-12 lb) at the bottom. The buoy line length will be contingent on target set depth (45-75 feet depending on depth of deployment allowed). Gangions will consist of a stainless steel lobster trap clip (snaps onto mainline loops) with 2m of 1/2 inch polypropylene, a large swivel, 2m of 7/19 strand stainless steel aircraft cable (bite leader) to a 20/0 Mustad circle hook. Sets will be made from a small boat, and with short soak times of a maximum of 3 hours (in the daytime only).

The drumline will be of either of the following 2 designs. It may consist of a large buoy, with a chain trace attached to it and single baited hook, shackled to the other end of the chain trace. A baited hook will be suspended approximately 10

feet above the sea floor. A groundline will be shackled to the drum with a swivel, attached to a Danforth or CQR anchor and anchored to the bottom substrate. A scope of 3-4 times the water depth will be used. Alternatively, it may consist of 20ft of 1/2 in. polypropylene substituting for a chain trace, connected to the same branchline type used for the bottomsets described above. The opposite end of this mainline will be shackled to a float-line buoy that serves as the ‘drum’. A chain will be run through this buoy with the other end shackled to an 8’ yellow marker line. The other end of the yellow line will then be shackled to a large red buoy with the connected float line (same used for bottomsets). The drumline set-up is a modification of what was used in 2010 so that the single baited hook rests on the bottom and does not suspend in the water column. This is preferred because we are targeting a species that spends most of its time on the bottom feeding on demersal fishes. With this design, the drum-buoy functions as a ‘bobber’ that will sink or move when an animal is hooked.

c. Post-catch procedures:

When a shark is hooked or harpooned it will be brought to shore or to the side of the small boat and tail-roped and euthanized with a .44 caliber bang stick. HMSRP has established bangstick training and safety protocols and conduct an annual Operational Risk Management (ORM) for shark fishing operations. ORM is a continual process which includes risk assessment, risk decision making, and implementation of risk controls, which results in acceptance, mitigation, or avoidance of risk. It is standard for HMSRP to conduct ORM and risk assessment for projects that may involve risks such as this shark predation mitigation work.

Refresher training on use of the bang stick will occur boat side on inert material here on Oahu.

HMSRP will perform a necropsy on captured G. sharks on site, including gut content inspection, morphometric measurements, and identification of sex and reproductive state. Procedures will mirror those done on monk seals, using the same kits, modified as necessary based on instructions in the Elasmobranch Husbandry Manual (editors M. Smith, D. Warmolts, D. Toney & R. Hueter). The main focus of shark necropsies will be to determine pregnancy and gut contents, provide remains for Native Hawaiian cultural practices (if requested, they have not been for the last several permit cycles), and take samples for scientific analysis.

Samples of muscle, liver, vertebrae for fatty acid and isotope/ diet analysis will be removed from the carcass after the necropsy and stored frozen. Vertebrae samples will likely be sent to Woods Hole Oceanographic Institute to be processed by Greg Skomal’s lab for isotope analysis. Fatty acid profiles will likely be analyzed for data on prey recently consumed, likely Sara Iverson’s laboratory at Dalhousie University. Stomach contents will be screened for monk seal remains and

provided to shark ecologists upon request. Some remaining tissue will possibly be retained for bait.

Thereafter, shark remains will be handled as deemed appropriate by cultural advisors and the State of Hawaii Office of Hawaiian Affairs. In recent years, shark remains have been returned to the ocean outside of the fringing reef and that will continue unless directed otherwise by our OHA partners.

d. Reporting: The MMB will be notified by NMFS when a shark has been removed. This will be done as quickly as possible and should normally be within 24 hours. A report that summarizes data concerning the removal of each shark will be submitted to the Monument in compliance with the Monument reporting schedules.

**NOTE: If land or marine archeological activities are involved, contact the Monument Permit Coordinator at the address on the general application form before proceeding.**

**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: Hawaiian monk seal  
Scientific Name: *Neomonachus schauinslandi*  
# & size of specimens: 1000 varied  
Collection location: All Locations  
Collection type: Non-lethal (living organism, or naturally deceased)  
☒ Whole organism ☒ Partial organism

Common Name: Galapagos Shark  
Scientific Name: *Carcharinus galapagensis*  
# & size of specimens: 17 varied  
Collection location: French Frigate Shoals  
Collection type: Lethal (living organism)  
☒ Whole organism ☐ Partial organism

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

- In the case of living seals collected for rehabilitation, these seals will be released back in the NWHI upon completion of rehabilitation (and clearance by veterinary examination).
- In the case of samples collected from seals (either biological specimens such as blood or tissue samples from living animals, or necropsy samples from dead animals), these will

be either be sent to appropriate research / diagnostic collaborators or archived in appropriate storage facilities at the NOAA IRC in Honolulu.

- In the case of samples collected from sharks (necropsy samples from dead animals), these will be either be sent to appropriate research / diagnostic collaborators or cultural practitioners.

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

‘Yes’ will only apply to live monk seals taken into rehabilitation outside of Monument waters and then released. Some seals will be held for a short time in shoreline pens while waiting for pickup or to help them acclimate to the wild prior to release after translocation or rehabilitation.

**• General site/location for collections:**

All atolls and islets within the Monument.

**• 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?**

This relates to seals that are captured and brought in for rehabilitation or transported as part of the translocation program. They will be housed with other monk seals.

**• Will organisms be released?**

Monk seals will be released after rehabilitation or translocation.

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

Samples will be shipped out of the Monument in appropriate media and containers on board the NOAA research or charter vessels supporting our activities.

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

The Hawaiian Monk Seal Research Program is the primary entity conducting research and recovery work on monk seals in the Northwestern Hawaiian Islands. All samples collected are covered under our MMPA/ESA permit 22677 and then are distributed to our partners a complete list of partners is included in attached document MMPA/ESA Permit 22677. This eliminates the likelihood of duplicative sampling or research happening related to monk seals. We collaborate with a wide variety of programs to share samples and conduct our research. Requests can be made to the HMSRP for samples and with sufficient biological/recovery justification samples are often shared.

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

A complete list of gear and materials is included in the supplemental material.

**13. List all Hazardous Materials you propose to take to and use within the Monument:**

A complete list of hazmat is included in the supplemental material.

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

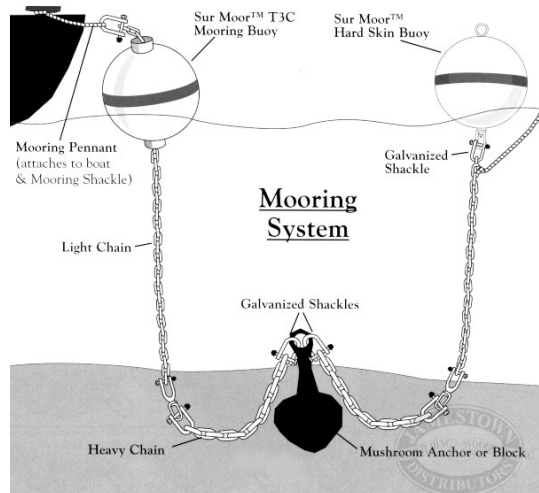
**Propose to Install**

Temporary Installation polyvinyl tents for housing monk seal field teams at French Frigate Shoals, Laysan, Lisianski, Pearl and Hermes and Kure.

Temporary mooring buoys from two small boats at Tern Island, French Frigate Shoals. Due to potential hurricane/storm damage to the davit at Tern Island which is used to launch and recover our small boats each day, we are preparing to potentially deploy two temporary long-term (season long) mooring systems to anchor our boats. This type of system is recommended over traditional anchoring for leaving boats unattended for long intervals, i.e. overnight, in high surge areas. etc. In many cases, a mooring system is the safest way to leave a boat in the water to prevent it from breaking free and coming ashore, which will cause damage to the boat and shoreline environment.

Permanent and/or semi-permanent moorings use less scope than traditional anchoring which reduces the "footprint" on the bottom, risk of damage to the environment and risk of wildlife entanglement/entrapment. Appropriate moorings are comprised of a suitable anchor, a light chain, and surface float. Mushroom anchors are designed for use on moorings. They take up less area than concrete systems, utilize sand or mud to hold in place versus grapple or hook anchors that need reef or rock to maintain purchase to the bottom, and are designed for vertical load bearing. An additional line may be attached to the pier to ensure the vessel cannot float away if the mooring system fails in inclement weather. These will be deployed on sandy substrate directly off from the dock at Tern

Island. The following image (credit to Jamestown Distribution) illustrates the type of system that would be temporarily installed if necessary.



## Recording Hawaiian monk seal underwater vocalizations using the SoundTrap ST500 HF in the Northwestern Hawaiian Islands

### Study Objective

This study aims to record and describe the underwater vocal repertoire and seasonal trends in sound production for Hawaiian monk seals in the Northwestern Hawaiian Islands using two SoundTrap ST500 HF underwater acoustic recorders. One recorder would be deployed at each of two locations: French Frigate Shoals and Pearl and Hermes Reef.

### Equipment

The recording units are Ocean Instruments SoundTrap ST500 HF (serial number to be determined). The full-scale response of this model is 173 dB re 1  $\mu$ Pa and the bandwidth is 20 Hz - 150 kHz  $\pm$  3 dB. A SoundTrap user manual and specification sheet are attached to this protocol.



#### Software

SoundTrap Host software will be used to configure the instrument before and after each deployment. This software can be downloaded from the Ocean Instruments website (<http://www.oceaninstruments.co.nz/downloads/>). The first time the SoundTrap and then the device will be visible in the SoundTrap Host software. It will be listed as “SoundTrap serial number TBD” or “SoundTrap device is connected to the computer (via USB), drivers will be installed serial number TBD” depending upon the unit you have.

#### Data Storage – To be determined

#### Environment

Both SoundTraps should be deployed at 5-10 m depth in sandy substrates as close to land as possible. GPS locations for the SoundTraps must be taken immediately after deployment, and again when the units are “checked” to verify they have not drifted.

#### Duration of Deployment

Units would be deployed during the first month of the field team’s arrival. Units will remain in the water for the duration of the field camp and be retrieved prior to departing the camp.

#### Maintenance

Units will be checked regularly during the first week of deployment. If no issues are encountered (i.e., unit not drifting and still intact) within the first week, units will be checked once a week for the remainder of the camp duration. “Checked” means seeing the unit from the boat. GPS locations for the SoundTraps must be taken when the units are “checked” to verify they have not drifted.

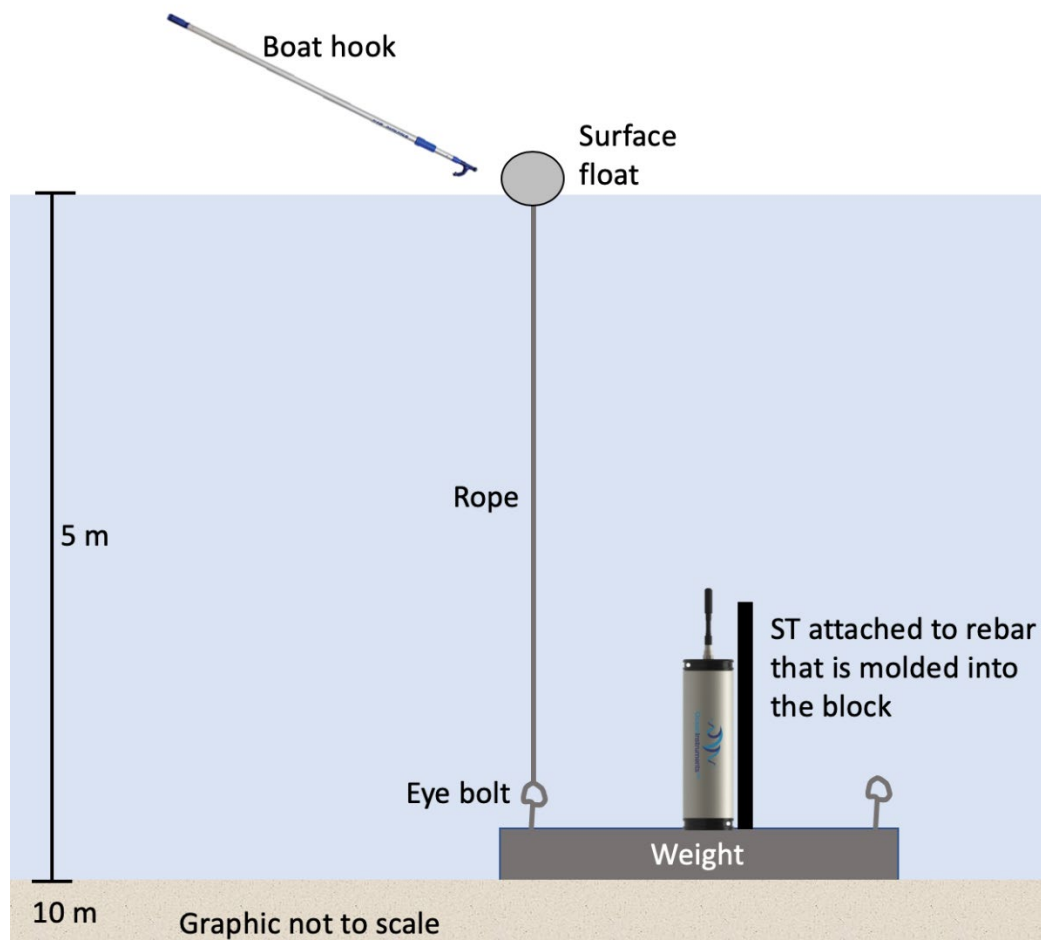
#### Equipment Configuration

Single anchored line with surface or sub-surface float (10 m total depth). The SoundTrap will be attached to a rebar stand molded into a concrete block (weight) with the

hydrophone facing the surface. The rope with the float will be tied to an eyebolt molded into the concrete block. Another eye bolt at the opposite side of the concrete block can be used for lowering the unit during deployment. Two grooves at the top and bottom of the SoundTrap housing provide attachment points for cable ties. The cable ties should be threaded through the associated holes so they cannot slip off. To minimize any possible entanglement risk of the rope, supportive padding material may be attached to it.

**Deployment:** Unit will be lowered down by rope threaded through the eyebolt. Once the unit is stationary, one side of the rope can be dropped into the water while the other side is pulled up through the eyebolt.

**Retrieval:** Grappler anchor or boat hook catches buoy and unit is pulled upward towards vessel.



Propose to Maintain / Repair

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

Population assessment data analyzed within 5 months.

Telemetry and UAS data analyzed within 12 months.

**16. List all Applicant's publications directly related to the proposed project:**

More publications can be provided if necessary.

Sullivan M, Robinson S, Littnan C. Social media as a data resource for #monkseal conservation. *PLoS One*. [2019] 14(10):e0222627. Published 2019 Oct 23. doi:10.1371/journal.pone.0222627

Robinson SJ, Barbieri MM, Murphy S, Baker JD, Harting AL, Craft ME, Littnan CL. Model recommendations meet management reality: implementation and evaluation of a network-informed vaccination effort for endangered Hawaiian monk seals. *Proceedings of the Royal Society B: Biological Sciences*. [2018] Jan 10;285(1870):20171899.

Kaufman AC, Robinson SJ, Borjesson DL, Barbieri M, Littnan CL. Establishing hematology and serum chemistry reference intervals for wild Hawaiian monk seals (*Neomonachus schauinslandi*). [2018] *Journal of zoo and wildlife medicine*. Dec;49(4):1036-40.

Comparative application of trophic ecosystem models to evaluate drivers of endangered Hawaiian monk seal populations

Weijerman M, Robinson S, Parrish F, Polovina J, Littnan C  
[2017] *Marine Ecology Progress Series*. 582:215-229. doi:10.3354/meps12320

Estimating population size for Hawaiian monk seals using haulout data

Harting A, Baker JD, Johanos TC  
[2017] *Journal of Wildlife Management*. 81:1202-1209. doi:10.1002/jwmg.21303.

Modeling a morbillivirus outbreak in Hawaiian monk seals to aid in the design of mitigation programs

Baker JD, Harting AL, Barbieri MM, Robinson SJ, Gulland FMD, Littnan CL  
[2017] *Journal of Wildlife Diseases*. doi:10.7589/2016-10-238

2016 report on Hawaiian monk seal vaccination program

Pacific Islands Fisheries Science Center

[2017] Pacific Islands Fisheries Science Center, PIFSC Data Report, DR-17-010, 12 p.  
doi:10.7289/V5/DR-PIFSC-17-010

Integrating multiple technologies to understand the foraging behaviour of Hawaiian monk seals

Wilson K, Littnan C, Halpin P, Read A  
[2017] Royal Society Open Science. 4(3). doi:10.1098/rsos.160703

Estimating Hawaiian monk seal range-wide abundance and associated uncertainty  
Baker JD, Harting AL, Johanos TC, Littnan CL  
[2016] Endangered Species Research. 31:317-324. doi:10.3354/esr00782

Protozoal-related mortalities in endangered Hawaiian monk seals *Neomonachus schauinslandi*  
Barbieri MM, Kashinsky L, Rotstein DS, Colegrove KM, Haman KH, Magargal SL, Sweeny  
AR, Kaufman AC, Grigg ME, Littnan CL  
[2016] Diseases of Aquatic Organisms. 121(2):85-95. doi:10.3354/dao03047

Prevalence of interactions between Hawaiian monk seals (*Nemonachus schauinslandi*) and  
nearshore fisheries in the main Hawaiian Islands.  
Gobush KS, Wurth TA, Henderson JR, Becker BL, Littnan CL  
[2016] Pacific Conservation Biology. doi:10.1071/PC15029

Estimating contact rates of Hawaiian monk seals (*Neomonachus schauinslandi*) using social  
network analysis  
Baker JD, Harting AL, Barbieri MM, Johanos TC, Robinson SJ, Littnan CL  
[2016] Journal of Wildlife Diseases 52(3):533-543. doi:10.7589/2015-10-286

Testing marine conservation applications of unmanned aerial systems (UAS) in a remote marine  
protected area.  
Brooke S, Graham D, Jacobs T, Littnan C, Manuel M, O’Conner R  
[2015] Journal of Unmanned Vehicle Systems, 3(4): 237-251, 10.1139/juvs-2015-0011

Range-wide patterns in Hawaiian monk seal movements among islands and atolls  
Johanos TC, Harting AL, Wurth TL, Baker JD  
[2015] U.S. Dept. of Commerce, NOAA Technical Memorandum

NOAA-TM-NMFS-PIFSC-44, 26 p. doi:10.7289/V5FT8J02  
Benefits derived from opportunistic survival-enhancing interventions for the Hawaiian monk  
seal: the silver BB paradigm  
Harting AL, Johanos TC, Littnan CL  
[2014] Endangered Species Research 25: 89-96. doi:10.3354/esr00612

Geographic variation of persistent organic pollutants in Hawaiian monk seals *Monachus*  
*schauinslandi* in the main Hawaiian Islands  
Lopez J, Hyrenbach KD, Littnan C, Ylitalo GM  
[2014] Endangered Species Research 24: 249-262. doi:10.3354/esr00602

Range-wide movement patterns of Hawaiian monk seals  
Johanos TC, Harting AL, Wurth TA, Baker JD  
[2014] Marine Mammal Science 30(3): 1165-1174. doi:10.1111/mms.12084

Validation and application of noninvasive glucocorticoid and thyroid hormone measures in free-ranging Hawaiian monk seals

Gobush KS, Booth RK, Wasser SK

[2014] General and Comparative Endocrinology 195: 174-182. doi:10.1016/j.ygcen.2013.10.020

A two-stage translocation strategy for improving juvenile survival of Hawaiian monk seals

Baker JD, Harting AL, Littnan CL

[2013] Endangered Species Research 21: 33-44. doi:10.3354/esr00506

Dietary comparison of two Hawaiian monk seal populations: the role of diet as a driver of divergent population trends

Cahoon MK, Littnan CL, Longenecker K, Carpenter JR

[2013] Endangered Species Research 20: 137-146. doi:10.3354/esr00491

Body growth in Hawaiian monk seals

Baker JD, Johanos TC, Wurth TA, Littnan CL

[2014] Marine Mammal Science 30(1): 259-271. doi:10.1111/mms.12035

U.S. Pacific marine mammal stock assessments: 2012

Carretta JV, Oleson E, Weller DW, Lang AR, Forney KA, Baker J, Hanson B, Martien K, Muto MM, Lowry MS, Barlow J, Lynch D, Carswell L, Brownell Jr. RL, Mattila DK, Hill MC

[2013] U.S. Dept. of Commerce, NOAA Technical Memorandum

NOAA-TM-NMFS-SWFSC-504, 378 p

Identification of ciguatoxins in Hawaiian monk seals *Monachus schauinslandi* from the Northwestern and main Hawaiian Islands

Bottein M-Y D, Kashinsky L, Wang Z, Littnan C, Ramsdell JS

[2011] Environmental Science and Technology 45(12): 5403-5409. doi:10.1021/es2002887

Relative influence of climate variability and direct anthropogenic impact on a sub-tropical Pacific top predator, the Hawaiian monk seal

Baker JD, Howell EA, Polovina JJ

[2012] Marine Ecology Progress Series 469: 175-189. doi:10.3354/meps09987

Non-lethal efforts to deter shark predation of Hawaiian monk seal pups

Gobush KS, Farry SC

[2012] Aquatic Conservation: Marine and Freshwater Ecosystems 22: 751-761.

Persistent organic pollutants in the endangered Hawaiian monk seal (*Monachus schauinslandi*) from the main Hawaiian Islands

Lopez J, Boyd D, Ylitalo GM, Littnan C, Pearce R

[2012] Marine Pollution Bulletin. doi:10.1016/j.marpolbul.2012.07.012

Effectiveness of an antihelmintic Antihelmintic treatment in improving the body condition and

survival of

Hawaiian monk seals

Gobush KS, Baker JD, Gulland FMD

[2011] *Endangered Species Research* 15: 29-37. doi:10.3354/esr00364

The Hawaiian monk seal in the Northwestern Hawaiian Islands, 2004

Johanos TC, Baker JD (comps. and eds.)

[2011] U.S. Dept. of Commerce, NOAA Technical Memorandum

NOAA-TM-NMFS-PIFSC-28, 112 p. + Appendices

Recovery of the Hawaiian monk seal (*Monachus schauinslandi*): A review of conservation efforts, 1972 to 2010, and thoughts for the future

Lowry LF, Laist DW, Gilmartin WG, Antonelis GA

[2011] *Aquatic Mammals* 37(3): 397-419. doi:10.1578/AM.37.3.2011.397

Evaluation of the captive care and post-release behavior and survival of seven juvenile female Hawaiian monk seals (*Monachus schauinslandi*)

Norris TA, Littnan CL, Gulland FMD

[2011] *Aquatic Mammals* 37(3): 342-353. doi:10.1578/AM.37.3.2011.342

Short Note: Hawaiian monk seals at Kure Atoll: Some life history effects following efforts to enhance pup survival

Gilmartin WG, Johanos TC, DeMaster DP, Henderson JR

[2011] *Aquatic Mammals* 37(3): 326-331. doi:10.1578/AM.37.3.2011.326

Rehabilitation and relocation of young Hawaiian monk seals (*Monachus schauinslandi*)

Gilmartin W, Sloan AC, Harting AL, Johanos TC, Baker JD, Breese M, Ragen TJ

[2011] *Aquatic Mammals* 37(3): 332-341. doi:10.1578/AM.37.3.2011.332

Translocation as a tool for conservation of the Hawaiian monk seal

Baker JD, Becker BL, Wurth TA, Johanos TC, Littnan CL, Henderson JR

[2011] *Biological Conservation* 144: 2692-2701. doi:10.1016/j.biocon.2011.07.030

Estimating the carrying capacity of French Frigate Shoals for the endangered Hawaiian monk seal using Ecopath and Ecosim

Parrish FA, Howell EA, Antonelis GA, Iverson SJ, Littnan CL, Parrish JD, Polovina JJ

[2012] *Marine Mammal Science* 28(3): 522-541. doi:10.1111/j.1748-7692.2011.00502.x

Aversive conditioning and monk seal-human interactions in the Main Hawaiian Islands Aversive Conditioning Workshop, Honolulu, Hawaii, November 10-11, 2009

Jenkinson EM

[2011] U.S. Dept. of Commerce, NOAA Technical Memorandum

NOAA-TM-NMFS-PIFSC-25, 28 p.

U.S. Pacific marine mammal stock assessments: 2010

Carretta JV, Forney KA, Oleson E, Martien K, Muto MM, Lowry MS, Barlow J, Baker J, Hanson B, Lynch D, Carswell L, Brownell Jr. RL, Robbins J, Mattila DK, Ralls K, Hill MC (with contributions from Patrick Opay, Brent Norberg, Jeff Laake, Dan Lawson, Joe Cordaro, Elizabeth Petras, Dale Sweetnam, and Chris Yates)

[2011] U.S. Dept. of Commerce, NOAA Technical Memorandum

NOAA-TM-NMFS-SWFSC-476, 352 p

Dizygotic twinning in the Hawaiian monk seal

Schultz JK, Becker BL, Johanos TC, Lopez JU, Kashinsky L

[2011] Journal of Mammalogy 92(2): 336-341. doi:10.1644/10-MAMM-A-275.1

Range-wide genetic connectivity of the Hawaiian monk seal and implications for translocation

Schultz JK, Baker JD, Toonen RJ, Harting AL, Bowen BW

[2011] Conservation Biology 25(1): 124-132. doi:10.1111/j.1523-

Hawaiian monk seals and their prey: assessing characteristics of prey species fatty acid signatures and consequences for estimating monk seal diets using fatty acid signature analysis  
Iverson S, Piche J, Blanchard W

[2011] U.S. Dept. of Commerce, NOAA Technical Memorandum NOAA-TM-NMFS-PIFSC-23, 114 p. + appendices

Dramatic shifts in Hawaiian monk seal distribution predicted from divergent regional trends

Baker JD, Harting AL, Wurth TA, Johanos TC

[2011] Marine Mammal Science 27(1): 78-93. DOI:10.1111/j.1748-7692.2010.00395.x

Report on validation and calibration of fatty acid signatures in blubber as indicators of prey in Hawaiian monk seal diet (A report submitted under Contract No. AB133F-030SE-1195, September 2003)

Iverson SJ, Stewart BS, Yochem PK

[2010] Pacific Islands Fisheries Science Center Administrative Report H-10-05, 19 p

Characterization of forage fish and invertebrates in Northwestern Hawaiian Islands using fatty acid signatures: species and ecological groups

Piche J, Iverson SJ, Parrish FA, Dollar R

[2010] Marine Ecology Progress Series 418: 1-15. doi:10.3354/meps08814.  
doi:10.3354/meps08814

Genome-wide loss of diversity in the critically endangered Hawaiian monk seal

Schultz JK, Marshall AJ, Pfunder M

[2010] Diversity 2: 863-880. doi:10.3390/d2060863

Vital rates and population dynamics. In: Boyd IL, Bowen WD, and Iverson SJ (eds.). Marine Mammal Ecology and Conservation: A Handbook of Techniques

Baker JD, Westgate A, Eguchi T

[2010] Oxford University Press, p. 119-143, 480 p.

Shark Predation on Hawaiian Monk Seals: Workshop II & Post-Workshop Developments,  
November 5-6, 2008

Gobush KS

[2010] U.S. Dept. of Commerce, NOAA Technical Memorandum NOAA-TM-NMFS-PIFSC-21,  
43 p. + appendices

Shark Predation on Hawaiian Monk Seals Workshop, Honolulu, Hawaii, January 8-9, 2008

Harting AL

[2010] Pacific Islands Fisheries Science Center Administrative Report H-10-02C, 36 p. +  
appendices

Impacts of sex ratio reduction on male aggression in the Critically Endangered Hawaiian monk  
seal *Monachus schauinslandi*

Johanos TC, Becker BL, Baker JD, Ragen TJ, Gilmartin WG, Gerrodette T

[2010] Endangered Species Research 11: 123-132. doi:10.3354/esr00259

Clinical observations of ocular disease in Hawaiian monk seals (*Monachus schauinslandi*)

Hanson MT, Aguirre AA, Braun RC

[2009] U.S. Dept. of Commerce, NOAA Technical Memorandum NOAA-TM-NMFS-PIFSC-18,  
9 p.

Organochlorine contaminants in endangered Hawaiian monk seals from four subpopulations in  
the Northwestern Hawaiian Islands

Ylitalo GM, Myers M, Stewart BS, Yochem PK, Braun R, Kashinsky L, Boyd D, Antonelis GA,  
Atkinson S, Aguirre AA, Krahn MM

[2008] Marine Pollution Bulletin 56(2): 231-244. doi:10.1016/j.marpolbul.2007.09.034

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.

1 February, 2019

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Signature

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Date



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

NOAA/Inouye Regional Center  
NOS/ONMS/PMNM/Attn: Permit Coordinator  
1845 Wasp Blvd, Building 176  
Honolulu, HI 96818  
FAX: (808) 455-3093

**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):**

Name (Last, First)	Title
Robinson, Stacie	Scientist
Ronco, Hope	Scientist
Cedillo, Claudia	Scientist
Staman, Marylou	Scientist
Staman, Jan	Scientist
Copenrath, Christina	Scientist
Becker, Brenda	Scientist
Nikolai, Heidi	Scientist
Mercer, Tracy	Scientist

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

Nihoa Island  
Mokumanamana Island  
French Frigate Shoals  
Laysan Island  
Lisianski Island  
Pearl & Hermes Reef  
Midway Atoll  
Kure Atoll

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

NMFS Permit No. 22677  
Permit to take protected species<sup>1</sup> for scientific research and enhancement purposes  
Expiration Date: December 31, 2024

**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.**

None

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

NOAA federal funds

**5. Time frame:**

Activity start: August 1, 2020 (earliest possible departure)

Activity completion: September 4, 2020 (estimated return; may be later)

Dates actively inside the Monument:

From: 8/1/20

To: 9/4/20

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

We are providing an **estimate** of possible departure/return dates within the range that we think we may operate, however given the impacts of COVID-19 on our mission, we still have potential for further delays or changes to dates. August 1 is the earliest possible date of departure given current NOAA guidelines, so we are planning our departure based on that. We are currently planning for a single maximum of a 34 day mission at sea, with small camps deployed during the time the ship is at sea, and recovering all personnel by the end of that 34 day mission. We are not currently planning to have separate deployment and recovery missions as we do in typical years. We will revise the personnel list and schedule as soon as any changes are made.

Personnel schedule in the Monument:

Name (Last, First)	Role	Date in PMNM	Date out PMNM
Ronco, Hope	Operations Lead	8/2/2020	9/1/2020
Cedillo, Claudia	Veterinary Technician	8/2/2020	9/1/2020
Robinson, Stacie	Chief Scientist	8/2/2020	9/1/2020
Staman, Marylou	JIMAR Research Associate	8/2/2020	9/1/2020
Staman, Jan	JIMAR Research Associate	8/2/2020	9/1/2020
Copenrath, Christina	JIMAR Research Associate	8/2/2020	9/1/2020
Becker, Brenda	Scientist	8/2/2020	9/1/2020
Mercer, Tracy	Scientist	8/2/2020	9/1/2020

Ship schedule

8/1/20	HNL
8/2/20	Nihoa

8/3/20	Mokumanamana
8/4/20	FFS
8/5/20	FFS
8/6/20	transit
8/7/20	Laysan
8/8/20	Lisi
8/9/20	PHR
8/10/20	PHR
8/11/20	Midway
8/12/20	Midway
8/13/20	Midway
8/14/20	Midway
8/15/20	Midway
8/16/20	Midway
8/17/20	PHR
8/18/20	PHR
8/19/20	PHR
8/20/20	PHR
8/21/20	Lisi
8/22/20	Lisi
8/23/20	Lisi
8/24/20	Laysan
8/25/20	Laysan
8/26/20	Laysan
8/27/20	transit
8/28/20	FFS
8/29/20	FFS
8/30/20	FFS
8/31/20	Mokumanamana
9/1/20	Nihoa
9/2/20	Niihau
9/3/20	HNL

**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:**

Federal Government

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

- ✓ ☐ Vessel (most will enter on NOAA ship cruises)
- ✓ ☐ Aircraft (some may fly to Midway)

Provide Vessel and Aircraft information:

NOAA RV Oscar Elton Sette

USCG C130 aircraft (if needed, in cooperation with USFWS, USCG, PIRO)

Midway charter flight (if needed, in cooperation with USFWS)

**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:
- ☐ Tender vessel, Date:
- ☐ Ballast water, Date:
- ☐ Gear/equipment, Date:
- ☐ Hull inspection, Date:

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

Vessel name:

Vessel owner:

Captain's name:

IMO#:

Vessel ID#:

Flag:

Vessel type:

Call sign:

Embarkation port:

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

Length:

Gross tonnage:

Total ballast water capacity volume (m3):

Total number of ballast water tanks on ship:

Total fuel capacity:

Total number of fuel tanks on ship:

Marine Sanitation Device:

Type:

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:

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

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:

VMS Email:  
Inmarsat ID#:

\* 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:

“SE-2” and “SE-4” are the two Sette small boats that will be used for gear and personnel transport to islands.

### **Additional Information for Land Based Operations**

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

Personnel, gear, materials, and samples will be transported to and from the monument on NOAA ships, and occasionally Midway flights or chartered cruises on the Imua and/or Searcher.

**12. Room and board requirements on island:**

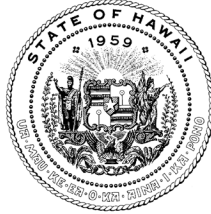
None

**13. Work space needs:**

None

**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



**STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES**

POST OFFICE BOX 621  
HONOLULU, HAWAII 96809

SUZANNE D. CASE  
INTERIM CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT MASUDA  
FIRST DEPUTY

JEFFREY PEARSON P.E.  
ACTING DEPUTY DIRECTOR - WATER

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

June 26, 2020

TO: Division of Aquatic Resources File

THROUGH: Suzanne Case, Chairperson

FROM: Maria Carnevale  
Papahānaumokuākea Marine National Monument

DECLARATION OF EXEMPTION FROM THE PREPARATION OF AN ENVIRONMENTAL ASSESSMENT UNDER THE AUTHORITY OF CHAPTER 343, HRS AND CHAPTER 11-200 HAR, FOR PAPAHA NAUMOKUĀKEA MARINE NATIONAL MONUMENT CONSERVATION AND MANAGEMENT PERMIT TO MS. MICHELLE LINO, NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION, NATIONAL MARINE FISHERIES SERVICE, FOR ACCESS TO STATE WATERS TO CONDUCT HAWAIIAN MONK SEAL SURVEY AND SHARK REMOVAL ACTIVITIES UNDER PERMIT PMNM-2020-006.

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 Conservation and Management Permit to Ms. Michelle Lino, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, for Access to State Waters to Conduct Marine Mammal Conservation Activities.

Permit Number: PMNM-2020-006

Project Description:

The conservation and management permit, as described below, would allow entry and activities to occur in Papahānaumokuākea Marine National Monument including the NWHI State waters from July 1, 2020 through June 30, 2021.

Alongside the field camp management, monitoring and research activities associated with NMFS Hawaiian Monk Seal conservation actions (including the use of unmanned aerial systems), this permit also includes the removal of predatory sharks from these areas. Shark removal activities would support the recovery of the endangered Hawaiian monk seal by reducing the likelihood of shark predation on seal pups at French Frigate Shoals. This specific activity is the focus of this analysis as all other activities in this permit are analyzed in the Environmental Assessment (2008) for the Monument Management Plan.

Three to four trained staff would remove thirteen (13) Galapagos sharks (tail length of 200 cm or greater) caught within 700 m of select pupping sites at French Frigate Shoals. Sharks would be caught by: (1) hand line, (2) hand-held harpoon, (3) drum-line, and/or (4) small 10-hook bottomset.

Bait for proposed fishing activities would include large tuna heads (brought from outside the Monument), shark remains (from individuals caught from proposed activities), and seal remains (from deceased individuals at FFS and from deceased individuals outside PMNM). Bringing seal tissue from outside the Monument is meant to ensure that there is tissue available to use for bait as there may not be the opportunity to collect tissue from a deceased seal at French Frigate Shoals. For all methods, hooked sharks would be pulled into shore or alongside a small boat, tail-rope, and killed with a bangstick. Shark carcasses would be examined (gross necropsy) and sampled for future scientific analyses (isotope, fatty acid, and genetic analysis). Remains would be handled as deemed appropriate by the Native Hawaiian community. Currently, the plans would be to return remains to the ocean outside the atoll (about 0.5 miles beyond the breaking reef at FFS).

The activities are in direct support of the Monument Management Plan's priority management needs 3.2 – Conserving Wildlife and Habitats, through action plan 3.2.1 – Threatened and Endangered Species. This action plan states that “site specific mitigation plans and methods should be developed and implemented” (PMNM MMP Vol 1, p.163). This action plan includes an activity to reduce shark predation on monk seals. Monitoring shark activity and removing sharks are also both listed in the Hawaiian Monk Seal Recovery Plan (NMFS 2007) as necessary activities, critical to the species' recovery.

In addition, activities to support threatened and endangered species in the NWHI are addressed in the Monument Management Plan (MMP) Environmental Assessment (EA). This EA analyses the MMP covered field activities “to monitor predation of sharks on Hawaiian monk seals and its effects, and develop and implement methods to deter predation” (PMNM MMP Vol 2, p.173). The EA states that “these activities could have a beneficial effect on the endangered monk seal by decreasing population loss”.

#### Consulted Parties:

The permit application was sent out for review and comment to the following scientific and cultural entities: Hawai'i Division of Aquatic Resources, Hawai'i 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, the Office of Hawaiian Affairs (OHA), and the Cultural Working Group Permits Sub-Committee. In addition, the permit application has been posted on the Monument Web site since January 31, 2020 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 monitoring and removal of sharks, 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 may involve an activity that is precedent to a later planned activity, i.e. the continued removal of sharks next year if seventeen (17) sharks are not removed this year, or removal of twenty (20) sharks in total over a multi-year period since the project's inception. Subsequent activities will depend largely on the results achieved under this permit.

2. The Exemption Class for Experimental Management with no Serious or Major Environmental Disturbance Appears to Apply. Chapter 343, HRS, and §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." The proposed removal activities here appear to fall squarely under the exemption class #5, exempt item #13 as described under the Exemption List for the Department of Land and Natural Resources published on June 5, 2015. As discussed below, no significant disturbance to any environmental resource is anticipated in the monitoring and removal of a limited number of sharks. Thus, so long as the below considerations are met, an exemption class should include the action now contemplated.

The Applicants would follow Monument Best Management Practices (BMPs) to mitigate threats activities could have on listed species, sea birds, and terrestrial birds. The BMPs include Human Hazards to Seabirds (BMP 003), the Laysan Finch Protocol (BMP 005), Artificial Light on Sea Turtles (BMP 009), Marine Wildlife Viewing Guidelines (BMP 010), and Precautions for Minimizing Human Impacts on Endangered Land Birds (BMP 012). Bycatch would be expected to be minimal based on experience from previously approved permits from 2010 to 2015 (PMNM-2012-013 and PMNM-2013-017, PMNM-2014-023, PMNM-2015-009) and research done by Meyer in 2009 (PMNM-2009-009 and PMNM-2009-036). To avoid the misidentification between Galapagos sharks and grey reef sharks, the minimum size requirement would be set to about 160 cm for removal and an absence of the dorsal ridge seen in grey reef sharks.

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 project would continue shark removal activities that were undertaken in 2007 and 2010 to 2016, under permits PMNM-2007-025, PMNM-2010-014, PMNM-2011-007, PMNM-2012-013, and PMNM-2013-017, PMNM-2014-023, PMNM-2015-009, and PMNM-2016-008; which had no deleterious effects on Monument resources. Possible adverse effects on the coral reef ecosystem at French Frigate Shoals (FFS) from shark removals were investigated using the EcoSim model (Parrish, NMFS). Results from that work indicated that the removal of 20 sharks had a nearly imperceptible effect on the dynamics of the FFS ecosystem. With that 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 that would occur as a result of these activities. 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-2020-001.

4. Overall Impacts will Probably be Minimal and Insignificant 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 conservation and management 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.