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

April 13, 2018

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 Dr. Charles Littnan, 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 Dr. Charles Littnan, Lead Scientist, 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 April 16, 2018 and April 15, 2019. The proposed activities are a renewal of work previously permitted and conducted in the Monument. Two new activities are being requested as follows: Deploying a temporary telemetry receiver at Tern Island and traversing Mokumanamana to access seal haul out sites.

INTENDED ACTIVITIES

Dr. Charles Littnan (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. The application is not considered a "renewal" as 2 new activities are proposed: Deploying a temporary telemetry receiver at Tern island and traversing Mokumanamana to access seal haul out sites. Proposed activities would be conducted by up to 25 individuals between April 2018 – April 2019. Specific 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 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 cestodicides and nematocides (e.g. praziquantel, fenebendazole, 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. Health response, including but not limited to cutting umbilical cords, lancing abscesses, administering antibiotics, vaccinating animals, responding to disease outbreaks, and necropsy;

xiii. Removing marine debris;

xiv. Removing up to 17 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-2017-012).

xv. Operating unmanned aircraft systems (APH-22 hexacpoter and FireFLY6) to assist in monitoring Hawaiian monk seal population.

xvi. Traversing Mokumanamana to conduct population assessment surveys only when full surveys cannot be completed by multiple boat landings or UAS operations.

xvii. Deploying a temporary telemetry receiver at Tern island.

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 February 5, 2018 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. Are the UAVs powered by lithium batteries? Are there containment and cleaning supplies available should one of the batteries become damaged or for some other reason leak?

   The UAS's are powered by Lithium Polymer (LiPo) batteries. They are stored in fire resistant bags unless being actively used. If a battery indicates poor performance, abnormal temperature, or other indication of damage it will not be used and will be stored in the fire resistant bags and a hazmat locker for proper disposal after return of the cruise. If a battery indicates leakage, damage, or ignition, the SDS procedures will be followed (attached). Spill kits and proper fire extinguishers will be kept on the ship and in the field when LiPo batteries are being used as is the case with all Hazmat materials.

2. On page 17 with regards to personnel going on Mokumanamana it states, "Minimum number of personnel would go ashore...". What is that minimum number?

   The minimum number of people for seal surveys would be three. If veterinary assessment or intervention was needed for any of the animals present, addition people may be required (likely just 2, vet and vet tech).

3. In instances where sharks have been caught in previous years, what type of bait was used to catch them? In addition, if there have been sharks caught without the monk seal flesh, how can it be determined that monk seal flesh is a more effective bait versus other options? Please clarify.

Sharks have previously been caught using tuna heads as bait. Since requesting the use of seal flesh we have not had an opportunity where an appropriate seal carcass has been available during the time of fishing. However, in early trials conducted, the CPUE was an order of magnitude higher using seal flesh vs fish bait. Further, it was recommended by shark researchers and fishermen to use bait that the shark's (or any predator) are searching for. Given that the Galapagos sharks are coming in shore to look for monk seal prey it stands to reason that seal flesh would be the most effective bait. While not commonly used, we wish to maintain monk seal flesh as a bait option to ensure that we have the tools available to vary our approach if some sharks do not respond to or become habituated to the tuna bait.

4. From the sharks that have already been caught, has there been confirmation, or is there a way to confirm that the "correct" sharks, the ones attacking pups, are indeed the ones being caught using these fishing methods?

   Our highly selective shark fishing protocol is the best way of ensuring that the "correct" sharks are targeted. Because fishing is only initiated in specific areas after sharks have been seen patrolling those areas for seals or seals have disappeared, and because fishing is constrained to the shallow near-shore areas, we are specifically targeting those sharks that come in to patrol the pupping beaches. Though anecdotal, disappearances and observed predatory behaviors disappear for weeks to months after the successful removal of a shark, lending some support.

COMMENTS:

1. Please clarify if the use of UAS at Mokumanamana will be for monitoring seal populations. And if so, why is it needed to have a party traverse the island to various haul-out locations.

   We do hope to use UAS to survey monk seals at Mokumanamana. If the UAS can be flown over both seal haul out areas, there may be no need to traverse the island. Likewise if boat landing is possible on both haul out areas, we would not traverse the island. We wish to have permission to traverse the island as a last resort. There may be weather conditions that prevent UAS flights but still allow boat landing on one of the haul out areas. Likewise, if a UAS flight detects a seal in distress, but boat landing is not possible on that side of the island, traversing the island may allow us to intervene to rescue a seal. It is in these scenarios that we would wish to traverse the island. Boat landing or UAS surveys of the two areas would always be preferred, and these options would be attempted first before traversing the island.

2. If a Resource Monitor is needed and requested for activities at Mokumanamana, it is recommended that this individual have knowledge of the cultural importance of the island and is familiar with protocols for the place. OHA maintains the importance of performing cultural protocols while accessing all monument locations, when possible.

We appreciate this comment and are committed to conducting all our activities with respect for the cultural importance of the Monument, especially at Mokumanamana. We are open to discussions with OHA and the Resource Monitor training program to help find a good balance of maximizing the care and respect of Mokumanamana while also taking into account limited berthing and the need for veterinarians, scientists, and field staff being deployed.

3. OHA appreciates the HMSRP's efforts within Papahānaumokuākea, and looks forward to having further discussions about activities in the area.

   Likewise, we appreciate the input from OHA. Thank you for the openness to share ideas and discuss.

4. We strongly support the Office of Hawaiian Affairs position that any access to Mokumanamana follows protocol and guidelines suggested by OHA.

   We agree that any access to Mokumanamana must be highly sensitive to its cultural, as well as biological resources. We look forward to working with OHA and FWS to find the most feasible ways to ensure protection of the monk seal population as well as the rest of the resources of the Monument.

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).
- NHPA Section 106 consultation completed for archipelagic wide operations (main and northwestern Hawaiian Islands) in November 2013.
- MMPA/ESA permit related to this activity: Permit To Take Protected Species For Scientific Research And Enhancement Purposes, Permit No. 10137-04, issued by the Office of Protected Resources, National Marine Fisheries Service

- 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)
- The proposed activities are in compliance with the National Environmental Policy Act and HRS chapter 343. The Final Environmental Assessment covering the subject activity was published in OEQC's The Environmental Notice on December 23, 2008 with a finding of no significant impact (FONSI).
- 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 PAPAHĀNAUMOKUĀKEA MARINE NATIONAL MONUMENT CONSERVATION AND MANAGEMENT PERMIT TO DR. CHARLES LITTNAN, NOAA FISHERIES, PACIFIC ISLANDS FISHERIES SCIENCE CENTER, FOR ACCESS TO STATE WATERS TO CONDUCT MARINE MAMMAL ACTIVITIES UNDER PERMIT PMNM-2018-014")

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-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 Dr. Charles Littnan, 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.

Respectfully submitted,

Maria Carnevale
Papahānaumokuākea Marine National Monument

APPROVED FOR SUBMITTAL

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: Charles L. Littnan

Affiliation: NOAA Fisheries

Permit Category: Conservation and Management

Proposed Activity Dates: 4/1/2018 – 3/31/2019

Proposed Method of Entry (Vessel/Plane):

NOAA RVs Oscar Elton Sette and Hi'ialakai, possibly Searcher, Kahana, and Ka`imikai-O-Kanaloa.

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 1,350 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 16632-01 (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 areal 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 in the event that all seal haul-out areas cannot be surveyed through boat-landings at haul-out sites.

• Recently, the NMFS Hawaiian Monk Seal Research Program has developed and published new methods for estimating abundance of monk seals throughout their range. At each site or subpopulation, different analytical techniques are used depending upon the type and quantity of data available. At Mokumanamana and Nihoa Islands, counts of seals on shore are adjusted to account for the proportion of seals at sea, thus yielding a total population estimate with associated error. In order to use this "correction factor"

method, it is critical that a full count of the seals on shore during a survey is obtained.

• At Mokumanamana, seals land at various locations, mostly along the northern coastline and West Cove. To avoid traversing the island on foot, researchers must be put ashore at least at two locations (the saddle at the northwestern side of the island and along the eastern half of the northern coastline). Unfortunately, it is very rare that people can be landed at both sites.

• From 2013 through 2017,10 attempts were been made to land at Mokumanamana. There was only one case were people landed on both sides of the island to achieve a full population assessment (in 3 cases no landing was possible, in 6 remaining cases landing was only possible in one of the two critical landing areas).

• The lack of reliable, annual full counts of seals on Mokumanamana greatly limits NMFS ability to track monk seal population trends at this site. Further, missing full counts at Mokumanamana (which requires using previous years' data as a proxy and assuming no population change has occurred) reduces overall confidence in the total range-wide abundance estimate for the species.

• In the past, NMFS researchers were permitted to traverse the island on foot when unable to land researchers at both ends of the island. Broader access to transit across the island would have resulted in full reliable ground counts could have been obtained in four of the past five years.

• In an effort to reduce potential impacts to Mokumanamana NMFS self-limited their access to the island. After several years of attempting to survey the data for seals at Mokumanana has several degraded. So we are requesting a return of permission for NMFS researchers to carefully traverse the island to conduct complete surveys while adhering to all BMPs and biosecurity measures.

• 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.

• Predation peaked in 1997-1999; it continues at a rate of 5-11 pups per year from 2000-2014 (usually 15-25% of the pup cohort each year).

• Between 1997 and 2017, shark predation affected over 250 pups out of roughly 1100 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.

• Despite the suite of activities (e.g. deterrents of many kinds) implemented by NMFS, the monk seal population in the NWHI, and particularly at FFS, has continued to decline.

• 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): Littnan, Charles L.

Title: Protected Species Division Director

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

Mark Sullivan (CV attached)

[redacted]

Stacie Robinson (CV attached)

[redacted]

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

[redacted]

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

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, Veterinarian
Stacie Robinson, Scientist
Jessie Bohlander, Scientist
Joshua Carpenter, Scientist
Angie Kaufman, Scientist
Brenda Becker, Scientist
Mark Sullivan, Scientist
Thea Johanos, Scientist
Tracy Mercer, Scientist
Hope Ronco, Scientist
Rory Driskell, Scientist
Keelan Barcina, Scientist
Alix Gibson, Scientist
Alison Northy, Scientist
Brittany Dolan, Scientist
Shawn Farry, Scientist
Sean Guerin, Scientist
Darren Roberts, Scientist
Megan Roberts, Scientist
Caroline Cummings, Scientist
Helena Dodge, Scientist

Section B: Project Information

5a. Project location(s):

		Ocean Based	
☒ Nihoa Island	☒ Land-based	☒ Shallow water	☐ Deep water
☒ Necker Island (Mokumanamana)	☒ Land-based	☒ Shallow water	☐ Deep water
☒ French Frigate Shoals	☒ Land-based	☒ Shallow water	☐ Deep water
☒ Gardner Pinnacles	☐ Land-based	☒ Shallow water	☐ Deep water
☐ Maro Reef			
☒ Laysan Island	☒ Land-based	☒ Shallow water	☐ Deep water
☒ Lisianski Island, Neva Shoal	☒ Land-based	☒ Shallow water	☐ Deep water
☒ Pearl and Hermes Atoll	☒ Land-based	☒ Shallow water	☐ Deep water
☒ Midway Atoll	☒ Land-based	☒ Shallow water	☐ Deep water
☒ Kure Atoll	☒ Land-based	☒ Shallow water	☐ Deep water
☐ 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 MidwayAtoll 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 safe guard 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. As in 2014 and 2015, 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 2016) and FireFLY6 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 dicussions 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 gain 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.

As part of telemetry studies, we propose to temporarily install a Mote (a land-based satellite receiving station) at the Tern Island warehouse. The Mote will augment data transmission from seal-mounted satellite tags, improving the data stream and increasing the benefits of animal tracking research. The Mote will be installed to minimize impacts on existing structures and avoid interactions with wildlife. The receiver will be placed at ground level at the base of the warehouse and secured with sandbags, and the antenna will be affixed with removable brackets to the existing ladder. We will monitor bird activity around the antenna and receiver.

To protect sensitive upland sites when traversing Mokumanamana, we will use minimal 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 been conducted monk seal research and conservation activities in the NWHI for decades. We have a large presence in the NWHI with 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 we 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 full assess the monk seal population for the past five years. The ability to traverse the island will open up many more opportunities for full reliable ground counts (for example, in 4 of the past 5 years when we could only land at one site). Gaining this complete data will be essential to accurately tracking trends in the species and making informed management decisions.

Related to Mote installation at the Tern Island warehouse, the temporary installation proposed here will allow more data to be collected from satellite tags used to track seals. While tracking can be conducted without the Mote, this device will increase the value of this research. Tracking seals' movement and dive behaviors through satellite tags and other instruments is a key method for gaining insights into their foraging behavior. This line of research is particularly important at French Frigate Shoals where food limitation has been particularly threatening to juveniles in the population. Additionally, the availability of the warehouse provides the opportunity to maximize the height of the receiver antenna without the need to build additional tall structures (e.g. tripods).

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.

Staff involved in UAS operations will be trained UAS pilots with extensive experience in the monument and flying the APH-22 or FireFLY6 as 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 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 16632-01. 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 16632-01 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. Short duration stays at Midway will be coordinated with USFWS.

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 16632-01.

Data collection from satellite tags will be augmented by temporarily installing a Mote (ground-based receiving station) on Tern Island. We propose to minimize impacts of this installation by installing the receiver unit and power supply at ground level next to the base of the Tern Island warehouse near the bottom of the roof access ladder. This will require no permanent structures or attachments as the gear is self-contained, and solar panels can be propped in place using sand bags. The ground-based gear will include:

- Wildlife Computers Mote – 25lbs – 24" x 19" x 13"
- Power enclosure and battery – 58lbs – 24" x 24" x 16"
- Solar panel - 15lbs – 40" x 27" x 6"

A 30foot cable will be used to connect the Mote to an omni-directional antenna mounted to the top of the ladder. The base of the antenna will be affixed to the outer side rail of the ladder using U bolts. The cable will be secured at multiple points along the length of the side rail using parachute cord. All will be disassembled at the end of the field season.

- Omni antenna – 5lbs – 56" x 5" x 5"

We will visually monitor for bird interactions with the antenna or other parts of the Mote set up. We will initially monitor daily. If no interactions are observed, we will decrease monitoring to twice weekly. If

interactions are observed, the set up will be adjusted to avoid bird strikes, or removed if necessary.

d. Use UAS (APH-22 hexacopter or FireFLY6) 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 the observer's hand. The FireFLY6 is a vertical take-off and horizontal flight UAS. It is launched and recovered on land and would primarily be used for habitat mapping activities. Once any UAS is launched the observer monitors the ground station and scans the sky to see if there is any air traffic requiring the landing of the UAS. There will also be a wildlife observer who will note animal disturbance or interactions with birds in the air. The system will fly for approximately 10-15 minutes and will remain within the pilot's visual range (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 will operate the system.
Pilots will avoid multiple take offs and landing in a single location to minimize repeat disturbance to nesting birds.

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. Other monk seal directed research as needed and authorized by MMPA/ESA permit 16632-01. 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. Antihelmintic treatment ('deworming') by field staff, which may include monitoring to detect improvement in body condition of treated seals versus control seals. Antihelmintic medications may include various cestodicides and nematocides (e.g. praziquantel, fenebendazole, 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; 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 17 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. Handlines were successful in the past.

Bottomsets and drumlines are, by design, restricted by habitat characteristics, otherwise lines can get 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 one 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 17 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 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 in 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.

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 and then released.

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

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 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 16632-01 and then are distributed to our partners a complete list of partners is included in attached document MMPA/ESA

Permit 16632-01. 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 installation of an antenna and telemetry receiver at the Tern Island warehouse.

One additional small tent will be deployed at Trig Island during fishing operations.

Propose to Maintain / Repair

Two long-term remote camera boxes are currently in place on the cliffs at Nihoa overlooking the monk seal breeding beach.

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.

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 Monochus 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.

19 January, 2019

Signature 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
NA☐ 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	Affiliation
Sullivan, Mark	Emergency Response Lead (Chief Scientist)	JIMAR
Carpenter, Joshua	Logistics Technician (Operations Lead)	JIMAR
Kaufman, Angie	Veterinary Technician	JIMAR
Robinson, Stacie	Research Ecologist	NOAA
Rory Driskell	UAS pilot	NOAA
Shawn Farry	JIMAR Research Technician	JIMAR
Sean Guerin	JIMAR Research Associate	JIMAR
Helena Dodge	JIMAR Research Associate	JIMAR
Jon Schneiderman	JIMAR volunteer	JIMAR
Brittany Dolan	JIMAR Research Technician	JIMAR
Allison Northey	JIMAR Research Associate	JIMAR
Marylou Staman	JIMAR Research Associate	JIMAR
Jan Willem Staman	JIMAR Research Associate	JIMAR
Lindsey Bull	JIMAR Research Associate	JIMAR
Hope Ronco	JIMAR Research Technician	JIMAR
Amanda Mathieu	JIMAR volunteer	JIMAR
Margaret Morrison	JIMAR volunteer	JIMAR
Caroline Cummings	JIMAR Research Associate	JIMAR
Darren Roberts	JIMAR Research Technician	JIMAR
Megan Roberts	JIMAR Research Associate	JIMAR
Alix Gibson	JIMAR Research Associate	JIMAR
Paige Mino	JIMAR volunteer	JIMAR
Keelan Barcina	JIMAR Research Technician	JIMAR
Sarah Sharp	Veterinarian	IFAW

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. 16632-02
Permit to take protected species1 for scientific research and enhancement purposes
Expiration Date: June 30, 2019

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: April 17, 2018
Activity completion: April 16, 2019

Dates actively inside the Monument:
From: April 17, 2018
To: October 15, 2018
And
From: TDB, approx. Feb 1, 2019
To: April 30, 2019

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

- At the time of application our April deployment cruise dates are set (though always subject to small changes), however there are likely to be small adjustments in the October pick-up dates according to weather or ship conditions.
- In 2019 we hope to have an early season effort at French Frigate Shoals, but these exact dates will be determined by staffing and ship availability.
- We anticipate applying for a permit in 2019 that will extend the 2019 field season beyond the April 30, 2019, expiration of this permit.

Personnel schedule in the Monument:

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 will fly to Midway)

Provide Vessel and Aircraft information:

April/May 2018	NOAA RV Oscar Elton Sette Possible Midway flight
August 2018	NOAA RV Hiialakai Possible Midway flight
October 2018	NOAA RV Oscar Elton Sette
Feb 2019	SV Kahana
April/May 2019	NOAA RV Oscar Elton Sette or Hiialakai Possible Midway flight

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:

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 Kahana 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 HAWAI'I
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAI'I 96809

April 13, 2018

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 PAPAHĀNAUMOKUĀKEA MARINE NATIONAL MONUMENT CONSERVATION AND MANAGEMENT PERMIT TO DR. CHARLES LITTNAN, 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-2018-014.

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 Dr. Charles Littnan, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, for Access to State Waters to Conduct Marine Mammal Conservation Activities.

Permit Number: PMNM-2018-014

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 April 16, 2018 through April 15, 2019.

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 seventeen (17) 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-roped, 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 February 5, 2018 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-2016-001.

There is the potential that two ships may be in the Monument during this time frame. The SEARCHER (PMNM-2017-001). The activities supported by these ships are permitted separately. The SEARCHER would support three anticipated proposed activities, to conduct research and intertidal activities at Nihoa, Mokumanamana, French Frigate Shoals and Gardner Pinnacles. The conservation objectives and species involved differ greatly and do not overlap for Dr. Littnan's work and the anticipated work of the intertidal and related research teams.

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.