

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

April 26, 2019

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 May 1, 2019 and April 30, 2020. The proposed activities are a renewal of work previously permitted and conducted in the Monument.

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. Proposed activities would be conducted by up to 25 individuals between May 2019 – May 2020. Specific HMSRP activities are listed below:

- 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 14 Galapagos sharks (tail length of 200 cm or greater) at French Frigate Shoals within 700 meters of select pupping sites using hand lines, hand-held harpoon, drum line and/or small 10-hook bottomset (NOTE: no new removal methods are proposed and applicant's activities are a renewal of activities approved in permit # PMNM-2017-012).
- xv. Operating unmanned aircraft systems (APH-22 hexacopter 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

reviewers.

b) Is the proposed UAS or drone on FAA's list of approved UAS/drones?

Yes. They are Federally owned and operated UAS platforms operated and comply with all FAA regulations.

c) Is the proposed drone(s) registered with FAA (<https://faadronezone.faa.gov/#/>)?

Yes. They are Federally owned and operated UAS platforms operated and comply with all FAA regulations.

d) Would all drone operations consist of at least 2 people (one pilot/commander and one observer)?

Yes. Per page 17 of the application, any UAS flight will have an observer that is not the pilot.

COMMENTS / RECOMMENDATIONS:

1. Currently there is a problem with *Cenchrus* (plant) on Nihoa Island. Please speak with USFWS staff regarding recommended protocols to avoid spreading the invasive plant from one location of the island to another location of Nihoa. (Possible agency contact: Sheldon Plentovich, Sheldon.Plentovich@fws.gov). Sheldon has a 2018 *Cenchrus* distribution map which may determine if any of the seal survey routes or trail cameras on Nihoa could be near the *Cenchrus* pockets and could possibly be avoided.

Our field teams will coordinate with Sheldon. However, the survey routes are along the shore and the cameras are on rock shelves below the vegetation line so it is unlikely that researchers will encounter *Cenchrus*.

2. Please clarify how many sharks are requested to cull at FFS. One part of the application mentions 14 sharks and another 17 sharks.

14

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:

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.

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: 4/1/2019 – 3/31/2020

Proposed Method of Entry (Vessel/Plane):

NOAA RVs Oscar Elton Sette and Hi'ialakai, possibly Searcher, Imua, 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 aerial systems (UAS) will be used to conduct ecological surveys including surveying and monitoring monk seals, marine debris, and possibly other flora and fauna in the NWHI (as a by-product of habitat mapping or as requested by partners).
- UAS will be launched and recovered from land, NOAA ships, or small boats launched from those ships, and will be flown at altitude below 400 feet.
- UAS efforts will provide the ability to survey and map resources on the remote islands without (1) interference; (2) the potential for the introduction of invasive species; and (3) human disturbance to the natural resources. The UAS would increase the monitoring and surveying capacity in the Monument
- While we work to minimize human presence on Mokumanamana, trained biologists familiar with the island may traverse Mokumanamana in the event that all seal haul-out areas cannot be surveyed through boat-landings or UAS flights 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 and staying mindful of cultural resources.
- This permit is comprehensive and includes ALL monk seal recovery activities that occur in the Monument including the mitigation of predation by Galapagos sharks on monk seal pups at French Frigate Shoals (FFS); the primary source of seal mortality at FFS.
- This is a continuation of permitted shark removal activities for monk seal conservation. The original request was for up to 20 Galapagos sharks to be removed. In subsequent years we have removed 6 sharks in including 2 in 2018. The request for this year would be for 14 Galapagos sharks.
- 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)
NOAA / NMFS / PIFSC / Hawaiian Monk Seal Research Program



Stacie Robinson (CV attached)
NOAA / NMFS / PIFSC / Hawaiian Monk Seal Research Program



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



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
Alix Gibson, Scientist
Shawn Farry, Scientist
Carrie McAtee, Scientist
Jon Schneiderman, Scientist
Shelby Yahn, Scientist
Margaret Morrison, Scientist
Marjorie Cox, Scientist
Kristi Kaleel, Scientist
Eli Michael, Scientist
Paige Mino, Scientist
Matt Chauvin, Scientist
Alexa Gonazalez, Scientist
Katie Anderson, Scientist
TBD, Scientist
TBD, Vet Supportaph

Section B: Project Information

5a. Project location(s):

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

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

Remaining ashore on any island or atoll (with the exception of Sand Island at Midway Atoll and field camp staff on other islands/atolls) between sunset and sunrise.

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

Location Description:

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

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

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

- Subsistence fishing (State waters only)
 Swimming, snorkeling, or closed or open circuit SCUBA diving within any Special Preservation Area or Midway Atoll Special Management Area

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

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

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

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

Hawaiian monk seals

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

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

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

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

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

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

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

The Findings are as follows:

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

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

We have a rigorous training that all field staff undergo before being deployed to seasonal field camps. This includes monk seal based activities but also how to 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. In 2018, use of UAS to count monk seals allowed us to obtain full surveys without a second landing or overland traverse demonstrating how it can help to minimize human presence and impact. As in all previous years, the UAS will be operated by trained NOAA staff and affiliates and all relevant Monument Best Management Practices and protocols specific to deployment and retrieval will be followed. Interactions with birds and other wildlife will be closely monitored and should significant interactions occur operations will be halted.

We are requesting the use of the APH-22 (used in 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 continue to have access to conduct operations by only conducting flights over the coast (rocky shelves and beaches) of the two islands. There is no need to fly over the upper reaches of the islands and we will not photograph any cultural sites. We can also work to minimize the amount of time for operations.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Related to traversing Mokumanamana, the difficulty of landing at Mokumanamana has hindered our ability to 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.

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

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

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

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

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

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

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

Staff involved in UAS operations will be trained UAS pilots with extensive experience in the monument and flying the APH-22 or 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.
- 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 or the FireFLY6 will operate the system.
- Pilots will avoid multiple take offs and landing in a single location to minimize repeat disturbance to nesting birds.

FireFLY6 Specifications:

- Wingspan: 60" (1524mm)
- Length: 32.6" (828mm)
- Weight: 8.4-9.9lbs (3.8-4.5kg)
- Flight Time: 50-59min with payload
- Range, Physical: up to 33mi (53km)
- Range, Wireless: 3+mi (5+km)
- Payload Capacity: 1.5lbs (0.7kg)
- Cruise Speed: 30-35kts (15-18m/s)

Coverage: 600 acres (200 ha)
Durable EPO foam body
Carbon fiber frame with aircraft-grade plywood supports

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

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

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

b. Location and removal of debris.

xii. Shark Predation Mitigation Activities:

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

b. Fishing Methods: Four different methods will serve as a “toolbox” of options to safely remove a maximum of 14 Galapagos sharks: handline, harpoon, bottomset, and drumline. Each method has its advantages and drawbacks. The potential for shark wariness to humans in combination with extremely low CPUE near pupping sites indicates that such a “toolbox” is needed to successfully capture sharks at the numbers and in the areas we desire.

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

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

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

We will monitor the total number of baited hooks deployed across methods in order to remain within the proposed catch quota of 14 additional sharks. We will

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

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

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

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

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

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

c. Post-catch procedures:

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

Refresher training on use of the bang stick will occur boat side on inert material here 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 and that will continue unless directed otherwise by our OHA partners.

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

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

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

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

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

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

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

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

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

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

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

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

All atolls and islets within the Monument.

• **Is it an open or closed system?** Open Closed

• **Is there an outfall?** Yes No

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

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

• **Will organisms be released?**

Monk seals will be released after rehabilitation or translocation.

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

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

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

The Hawaiian Monk Seal Research Program is the primary entity conducting research and recovery work on monk seals in the Northwestern Hawaiian Islands. All samples collected are covered under our MMPA/ESA permit 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:

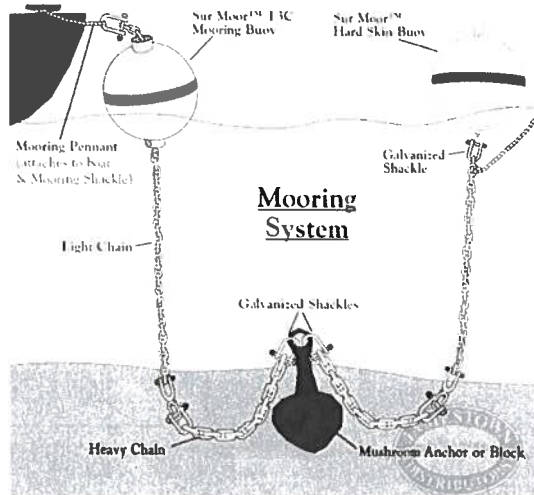
Propose to Install

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

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

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

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



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 *Monachus schauinslandi* from the Northwestern and main Hawaiian Islands

Bottein M-Y D, Kashinsky L, Wang Z, Littnan C, Ramsdell JS
[2011] *Environmental Science and Technology* 45(12): 5403-5409. doi:10.1021/es2002887

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

Baker JD, Howell EA, Polovina JJ
[2012] *Marine Ecology Progress Series* 469: 175-189. doi:10.3354/meps09987

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

Gobush KS, Farry SC
[2012] *Aquatic Conservation: Marine and Freshwater Ecosystems* 22: 751-761.

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

Lopez J, Boyd D, Ylitalo GM, Littnan C, Pearce R
[2012] *Marine Pollution Bulletin*. doi:10.1016/j.marpolbul.2012.07.012

Effectiveness of an antihelmintic 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

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

1 February, 2019

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	Role
Mark Sullivan	Scientist
Joshua Carpenter	Scientist
Angie Kaufman	Scientist
Stacie Robinson	Scientist
Shawn Farry	Scientist
Hope Ronco	Scientist
Thea Johanos	Scientist
Brenda Becker	Scientist
Tracy Mercer	Scientist
Alix Gibson	Scientist
Jessica Bohlander	Scientist
TBD	13 Scientists
Michelle Barbieri	Veterinarian

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

Provide Vessel and Aircraft information:
May/June 2019 NOAA RV Oscar Elton Sette

August/September 2019 NOAA RV Oscar Elton Sette

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:

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

DAVID Y. IGE
GOVERNOR OF HAWAII



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

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

April 26, 2019

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 PAPAĀNAUMOKUĀKEA MARINE NATIONAL MONUMENT CONSERVATION AND MANAGEMENT PERMIT TO DR. CHARLES LITNAN, 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-2019-012.

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-2019-012

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 May 1, 2019 through April 30, 2020.

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.

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

ROBERT MASUDA
FIRST DEPUTY

KALEA MANUEL
ACTING DEPUTY DIRECTOR - WATER

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

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 2018 (PMNM-2018-014, 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