

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

January 25, 2008

Board of Land  
and Natural Resources  
Honolulu, Hawaii

Request for Authorization and Approval to Issue a Papahānaumokuākea Marine National Monument Research Permit to Dr. Charles Littnan, National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service, for Access to State Waters to Conduct Research on Hawaiian Monk Seal Foraging Activities.

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

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

- Nihoa Island,
- Lisianski Island, Neva Shoal, and
- Pearl and Hermes Atoll

The activities covered under this permit will occur from February 1, 2008 through October 31, 2008.

INTENDED ACTIVITIES

Hawaiian monk seal research activities that are authorized under the Endangered Species Act (ESA) and Marine Mammal Protection Act (MMPA) are being proposed to take place in the Monument. The applicant proposes to conduct research which would better define juvenile Hawaiian monk seal (*Monachus schauinslandi*) foraging ecology and fine scale habitat needs by comparing foraging behavior and diet of seals across the condition spectrum to see if any observed differences are correlated with seal survival. These data would be compared to juvenile monk seal foraging ecology in the Main Hawaiian Islands. The research would also provide an opportunity to collect samples to determine

seasonality in diet. A secondary objective is to supplement population assessment efforts by tagging weanling seals and adults that do not have flipper tags. This would aid in their identification during future field efforts.

Land-based research procedures: Juvenile monk seals would be located within Pearl and Hermes reef and their suitability for instrumentation assessed. Juvenile seals would undergo a subset of the following procedures depending on their condition and extrinsic factors such as temperature, potential for disturbance or other species, and surrounding habitat:

1. Encounter: Involving observation of seals from a distance;
2. Capture: Involving the actual handling of individual seals;
3. Inspect: Involving handling and manipulating individual seals after capture;
4. Sample: Involving handling and taking physical samples (i.e. blood, fecal, blubber) from individual seals, alive, and dead, after capture; and
5. Tag: Involving placement or removal of a physical tag either into tissue of the flipper under the skin surface, or affixed to the fur of the individual seal.

Ocean-based research: GPS locations derived from satellite tags would allow researchers to pinpoint foraging 'hotspots' for individual seals. Researchers would determine the substrate type at these hotspots to help understand fine scale habitat needs of seals. Habitat assessment would be done by researchers submerging their head, or snorkeling in shallow areas. In deeper areas, a video camera mounted to a cable and winch would be dropped to record substrate characteristics.

In addition, up to 15 Hawaiian monk seals would be instrumented per cruise with Wildlife Computers MK10 Satellite Linked GPS Dive Recorders and Crittercam. These tags relay monk foraging location and dive information via satellite to researchers in Honolulu. They also archive fine scale dive information that can be downloaded upon recovery of the instrument.

The techniques used by the monk seal program are used by many programs worldwide and satisfy the University of Hawaii Institutional Animal Care and Use Committee standards and adhere to the draft guidelines for animal handling created by the Society for Marine Mammalogy.

One of the principal factors contributing to the current decline and lack of recovery of Hawaiian monk seals is low juvenile survival, evidently owing to poor foraging success. The continued population decline at several locations and the cessation of population increases at others has prompted calls from the Marine Mammal Commission, Hawaiian Monk Seal Recovery Team (HMSRT) and others for urgently needed research to explicitly link survival to prey abundance, foraging behavior, diet and condition of juveniles. This research supports the conservation mandates of the Endangered Species Act and Marine Mammal Protection Act.

This activity is ongoing within the Monument. The Protected Species Division (PSD) has assessed Hawaiian monk seal subpopulations in the NWHI annually since 1982 and has

continued to adhere to quarantine protocols as they have been established and refined by the US Fish and Wildlife Service. All interaction and take of Hawaiian monk seals would be in accordance with procedures delineated in permits issued by the NMFS Office of Protected Resources.

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

- Removing, moving, taking, harvesting, possessing, injuring, disturbing, or damaging any living or nonliving monument resource
- Anchoring a vessel
- Swimming, snorkeling, or closed or open circuit SCUBA diving within any Special Preservation Area or Midway Atoll Special Management Area

#### REVIEW PROCESS:

The permit application was sent out for review and comment to the following scientific entities: Hawaii Division of Aquatic Resources, Hawaii Division of Forestry and Wildlife, Papahānaumokuākea Marine National Monument (NOAA/NOS), NOAA Pacific Islands Regional Office (NOAA-PIRO), and United States Fish and Wildlife Service Pacific Islands NW Refuge Complex Office. The Office of Hawaiian Affairs (OHA), and the Kaho‘olawe Island Reserve Commission (KIRC) were also consulted.

#### **Comments received from the scientific community are summarized as follows:**

Scientific reviews support the acceptance of this application.

Concerns raised were:

1. If handling pregnant seals and seals with compromised health would be avoided;
2. The usefulness of comparing the northwestern Hawaiian Island seals with the main Hawaiian Island seals;
3. Additional information needed regarding collecting seasonality data about prey species;
4. If there are enough juvenile monk seals present at each site to provide a significantly valid sample size;
5. The necessity of camping at Nihoa;
6. The impact of attaching cameras and satellite tags to seals;

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

There were no objections to this permit application from the Native Hawaiian community. One reviewer noted that the proposed activities appear to be scientifically sound, would have no significant impacts on Archeological sites, and would result in knowledge to assist in the management needs of the Monument.

It was recommended that:

7. All samples be returned to the Monument at a location closest to its collection point once the need for the sample is completed

**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:

- Activities are currently authorized under Scientific Research and Enhancement Permit No. 848-1695-02, issued by the Office of Protected Resources, National Marine Fisheries Service.

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

If so, please summarize past permits:

- It should be noted that the Applicant is applying for a continuation of research, previously granted to a different applicant, covered under State permit DLNR/NWHI/07R002 issued on March 14, 2007.

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

**RESPONSE:**

1. The Applicant reports that the Hawaiian monk seal program's protocol and selection of study animals have all been approved by the NMFS Office of Protected Resources permit division as well as the University of Hawaii's Institutional Animal Care and Use Committee. In the past, captures focused primarily on larger and healthier seals while handling protocols were refined and the impact of instrument attachment assessed. Based on those assessments, and improved technology (smaller equipment), applicant feels it permissible to

begin instrumenting juvenile seals across a broader spectrum of condition to better understand factors contributing to juvenile mortality. While seals that are in poorer condition, relative to previously captured individuals, will be captured, animals that are emaciated, injured, or impaired in some fashion will be avoided. No female that is obviously pregnant will be handled except under very particular circumstances (removal of entanglements etc.). Some of the animals tagged will be adult females and a subset of these may be pregnant. There are many accounts of animals being tagged early in their pregnancy (unknown to the researchers) and successfully giving birth and nursing later in the year. There appears to be very low risk to flipper tagging early term females.

2. The Applicant reports that the proposed work is trying to understand monk seal ecology and population dynamics to conserve the population, not just NWHI seals. The Hawaiian Monk Seal Research Program believes an extremely important question to answer is “why, contrary to what would be expected, are NWHI (who are afforded so much protection) doing so much worse than MHI seals (who have very little)?”. One important reason for the proposed work is to prevent what is happening in the NWHI to happen in the MHI, seemingly the last toehold of the monk seal population
3. The Applicant reports that seasonality of prey in the diet would be assessed primarily by the collection of scats during the winter foraging cruise and compared to those collected during the summer field camps. This work can provide information at an individual level but since most scats are from unknown animals it is most valuable at a population level. Fatty acid analysis from blubber samples provides diet information for individuals over a period of months. If possible, the same individual would be sampled during the winter and summer (during instrument recovery) and preferably in multiple years to see how the diet and potentially foraging behavior shifts over time. The fluctuation of prey between years and sites would be examined. The work would try to tie changes in the environment (summer vs. winter, El Nino etc.) to changes in abundance of prey in the diet then eventually linking these to survival. Collected scats would be examined for differences in diet between season, year, location, and age/sex class where possible. By tracking foraging, an idea of the level of effort in different foraging strategies and how foraging changes over time can be developed. By overlaying this with environmental data, natural drivers for the change in diet and foraging behavior may be determined.
4. Applicant acknowledges this is a great question and one that is difficult to answer right now, which is why they are starting at a relatively small scale. Past deployments on juveniles have used instruments with lower data resolution and focused primarily on seals in better condition. It is a possibility that there will be no measurable differences between successful and unsuccessful foragers and there is always a worry regarding sample size when it comes to endangered species. However, with the high quality data now recorded with the tags (GPS

quality location and full resolution dive behavior) much more can be learned from each individual seal than previous studies could have, increasing the power of these studies. This first season would be an attempt to deploy instruments on 15 juvenile seals (1-3 yr olds) at Lisianski Island, which is less than 1/3 of the juvenile population on the island.

5. The Applicant has amended his application and removed the request to camp at Nihoa.
6. An Environmental Assessment (EA) entitled "Environmental Assessment on the Effects of NOAA Fisheries Permitted Scientific Research and Enhancement Activities on Endangered Hawaiian Monk Seals" was completed in June 2003 which issued a Finding of No Significant Environmental Impact (FONSI) for these activities. The Applicant also cites the following references which show no differential survival for animals that have been handled for tagging, instrumenting or other purposes, as well as no detectable difference in dive ability/behavior of seals undergoing short term camera (Cittercam) deployments: (Baker, J. D., and T. C. Johanos. 2002. Effects of research handling on the endangered Hawaiian monk seal. *Mar. Mammal Sci.* 18:500-512. Littnan CL, Baker JD, Parrish FA, Marshall GJ 2004. Effects of video camera attachment on the foraging behavior of immature Hawaiian monk seals. *Mar. Mamm. Sci.* 20(2): 345-352).
7. The Applicant reports that samples can not be returned to the Monument, as all samples collected are destroyed in their eventual analysis.

#### STAFF OPINION:

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

1. 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.
2. 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.

3. 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.
4. Tenders and small vessels must be equipped with engines that meet EPA emissions requirements.
5. 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
6. No fishing is allowed in State Waters except as authorized under State law for subsistence, traditional and customary practices by Native Hawaiians.

MONUMENT MANAGEMENT BOARD OPINION:

Because the Applicant has amended their application to no longer request camping at Nihoa, the MMB is of the opinion that the Applicant has met the findings of Presidential Proclamation 8031 and this activity may be conducted subject to completion of all compliance requirements. The MMB concurs with the special conditions recommended by DAR staff.

RECOMMENDATION:

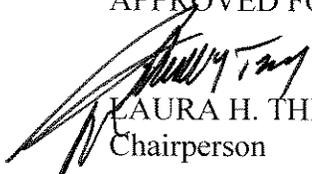
“That the Board authorize and approve, with stated conditions, a Research Permit to Dr. Charles Littnan, National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service.”

Respectfully submitted,



DAN POLHEMUS  
Administrator

APPROVED FOR SUBMITTAL



LAURA H. THIELEN  
Chairperson

**Northwestern Hawaiian Islands Marine National Monument**  
Permit Application

**NOTE:** *This Permit Application (and associated Instructions) are for activities to be conducted in the Northwestern Hawaiian Islands Marine National Monument, including Hawaiian Islands National Wildlife Refuge, the Midway Atoll National Wildlife Refuge, Battle of Midway National Memorial, Northwestern Hawaiian Islands State Marine Refuge, Kure Atoll Hawaii State Seabird Sanctuary, and the Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve. The Co-Trustees are required to determine that issuing the requested permit is compatible with the findings of Presidential Proclamation 8031. Within this Application, please 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, historical and cultural resources of the NWHI Marine National Monument (Monument).*

**Summary Information**

**Applicant name:**

Dr. Charles L. Littnan, NOAA Fisheries

**Permit categories:**

- Research – Please fill out Sections A-D (as applicable) and Appendix A
- Conservation and Management - Please fill out Sections A-D (as applicable) and Appendix A
- Education - Please fill out Sections A-D (as applicable) and Appendix B
- Native Hawaiian Practices - Please fill out Sections A-D (as applicable) and Appendix C
- Recreation (Midway ONLY) - Please fill out Sections A-D (as applicable) and Appendix D
- Special Ocean Use - Please fill out Sections A-D (as applicable) and Appendix E

**Briefly describe permit activity:**

- This application is for a RENEWAL of an existing permitted project.
- This application is for a NEW project.

**When will the activity take place?**

From: Feb. 2008 To: Oct. 2008

**NOTE: INCOMPLETE APPLICATIONS WILL NOT BE CONSIDERED**

Please Send Permit Applications to:

NWHI Marine National Monument Permit Coordinator

6600 Kalaniana'ole Hwy. # 300

Honolulu, HI 96825

nwhipermit@noaa.gov

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

**NOTE: SUBMITTAL VIA ELECTRONIC MAIL IS PREFERRED BUT NOT  
REQUIRED. FOR ADDITIONAL SUBMITTAL INSTRUCTIONS, PLEASE SEE  
PG 7.**

## **Section A - Applicant Information**

### **1. Applicant**

Name (last, first, middle initial): **Littnan, Charles L.**

Title: Leader, Hawaiian Monk Seal Research Program, Protected Species Division, PIFSC, NOAA Fisheries

**2. Mailing address (street/P.O. box, city, state, country, zip):** NOAA Fisheries  
PIFSC, 2570 Dole Street, Honolulu, HI 96822

Phone: **808-983-5392**

Fax: **808-983-2902**

Email: **charles.littnan@noaa.gov**

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

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

Pacific Islands Fisheries Science Center, NOAA Fisheries, DOC

### **4. Additional persons to be covered by permit:**

#### **Dr. Jason Baker**

Pacific Islands Fisheries Science Center, NOAA Fisheries, DOC

T: 808-983-5711

E: jason.baker@noaa.gov

#### **Dr. Robert Braun**

Contract Veterinarian/Pacific Islands Fisheries Science Center, NOAA Fisheries, DOC

T: 808-983-3708

E: robert.braun@noaa.gov

#### **Dr. Gregg Levine**

Contract Veterinarian/Pacific Islands Fisheries Science Center, NOAA Fisheries, DOC

T: Email Only

E: glevinedvm@aol.com

**Chad Yoshinaga**

Pacific Islands Fisheries Science Center, NOAA Fisheries, DOC  
T: 808-983-3712  
E: chad.yoshinaga@noaa.gov

**Jessie Lopez**  
JIMAR/Pacific Islands Fisheries Science Center, NOAA Fisheries, DOC  
T: 808-983-3707  
E: jessica.lopez@noaa.gov

Additional members of the field team will be provided to the Monument as soon as we have confirmation of their participation.

## **Section B: Project Information**

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

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

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

### Location Description:

During the first research cruise (Feb. 2008) all monk seal surveys and captures will take place within Lisianski Island. During the second research cruise the field work will be conducted at Lisianski Island, Nihoa Island or Pearl and Hermes Atoll, including the islets of North, Little North, Southeast, Grass and Seal-Kittery. Selection of the field site for the second cruise will be determined by numbers of juvenile seals estimated during the 2008 summer field camps and other research priorities. We will contact the Monument at least 60 days prior to scheduled cruise departure to inform them what atoll/island will be visited.

On both cruises, a subset of foraging locations derived from GPS tags will be used to identify areas for habitat assessment (camera drops or snorkel surveys to identify substrate). Since the locations will be determined by the seals themselves, it is difficult to predict the location of habitat surveys. Most of the habitat assessment effort will be within the atoll or at neighboring shelf, slopes and seamounts.

### **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:***

The Hawaiian monk seal (*Monachus schauinslandi*) is endemic to the Hawaiian Archipelago. It resides principally at six breeding colonies in the NWHI, with a smaller, but apparently increasing, sub-population in the MHI. Total population size was estimated around 1,200 to 1,300 seals in 2005.

The Hawaiian monk seal was designated as *endangered* under the Endangered Species Act in 1976 owing to a decline in abundance of around 50% between the late 1950s and the early 1970s. In response to that substantial decline, the Marine Mammal Commission (MMC), U.S. Fish and Wildlife Service (USFWS), and the National Marine Fisheries Service (NMFS) initiated a program to discover and mitigate the factors affecting population vitality. A Species Recovery Plan was subsequently completed in 1983 and modified in 2005. The principal factor contributing to the current decline and lack of recovery of the species has been identified as poor survival of juveniles, evidently owing to poor foraging success.

The foraging behavior of juvenile monk seals has been investigated using satellite tags, time-depth recorders, and Crittercam technology. Diet has been assessed using both scat and fatty acid analyses. However, much of the knowledge is based on animals studied at a single point in time and at the higher end of the fitness spectrum. In other words, much is known about the behavior of successful individuals and nothing on juveniles that 'fail to thrive'.

**Purpose:** The proposed research will better define juvenile monk seal foraging ecology and fine scale habitat needs by comparing foraging behavior and diet of seals across the condition spectrum to see if any observed differences are correlated with seal survival. These data will be compared to juvenile monk seal foraging ecology in the Main Hawaiian Islands. The research will also provide an opportunity to collect samples to determine monk seal diet outside the traditional summer sampling period, allowing us to determine seasonality in the diet. A secondary objective is to supplement population assessment efforts by tagging weanling seals and adults that do not have flipper tags. This will aid in their identification during future field efforts.

**Need:** One of the principal factors contributing to the current decline and lack of recovery of Hawaiian monk seals is low juvenile survival, evidently owing to poor foraging success. The continued population decline at several locations and the cessation of increases at others has prompted calls from the Marine Mammal Commission, Hawaiian Monk Seal Recovery Team (HMSRT) and others for urgently needed research to explicitly link survival to prey abundance, foraging behavior, diet and condition of juveniles. This research supports the conservation mandates of the Endangered Species Act and Marine Mammal Protection Act. This information will also help to develop future efforts to conserve monk seals through captive care programs or translocations between atolls.

**Scope:** The temporal scope of the research to be conducted within the NWHI Marine National Monument during the cruises is specified below. The geographic scope of the research is limited to Lisianski Island, Pearl and Hermes Atoll, Nihoa Island and nearby seamounts or other habitats visited by foraging monk seals.

**7. As explained further in the instructions, please provide any 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, historical and cultural resources of the Monument:**

The ultimate goal of the work described here is to assist in the recovery of the Hawaiian monk seal, a goal that is shared with Monument mandates. We strive to conduct research that is compatible with the conservation and management goals of the Monument and minimizes disturbance to the NWHI ecosystem.

The work proposed here must be conducted within the Monument. Monk seals are endemic to the Hawaiian Archipelago with seals found in both the NWHI and MHI, however these two sub-populations demonstrate differences in demography and the condition of individuals.

In general, demographic trends observed within the NWHI monk seal population indicate that food limitation may be playing a primary role in regulating population growth. Declines have been observed in the beach count abundance index and in some cases these changes in abundance are preceded by, or simultaneous with, reduced juvenile survival. There are indications that relatively poor body condition in various age classes is associated with declining populations and these factors are consistent with either episodic or chronic prey limitation.

A strongly contrasting situation exists in the MHI. While juvenile survival rates there are unknown, MHI pups wean at very large size (average girth and length exceeds the 95<sup>th</sup> percentile observed in the NWHI), and, notably, animals appear to be in good physical condition across all age and sex classes. This suggests that monk seals at the MHI are not food limited. Studies of monk seal foraging ecology similar to the project proposed here are being conducted in the MHI to compare and contrast across the Archipelago. It is critical to understand monk seal foraging in the apparently resource limited NWHI.

Our studies are designed to minimize impacts to the terrestrial and marine environment. For instance, we have allotted approximately two weeks for instrument deployment, during which time we will have land-based camps. During our time on island we will be following strict quarantine protocols defined by USFWS and restrict our movements to the beach area, avoiding potential disturbance to bird and plant life on the island interiors. After the final tag deployment, NMFS monk seal researchers will arrange to return to the NOAA R/V Oscar Elton Sette thereby reducing any human disturbance to terrestrial habitats and species.

The Hawaiian monk seal research program has a long history of successful research and partnership with the agencies in charge of managing the Monument. Every member of the monk seal research team has experience working in the NWHI and familiar with the best practices to minimize impact on the NWHI ecosystem.

This project will not occur in the vicinity of any known western or Native Hawaiian archaeological sites within the Monument except for Nihoa Island, and thus are unlikely to impact any such resources. At Nihoa, we will work under the guidance of the Office of Hawaiian Affairs (OHA), Monument's Native Hawaiian program coordinator and others as appropriate to avoid impacting any archaeological or cultural site.

Native Hawaiians share a close link to the ocean, marine life, and islands within the monument and work to maintain the living cultural resources found there. Hawaiian monk seals are one of the most threatened of these cultural and natural legacies and the work presented here, and our intent that it is done with respect and in partnership with the Native Hawaiian community, is critical for the survival of this species into the future.

All scientists participating on these cruises will receive a Native Hawaiian cultural briefing before departure to the NWHI. In addition, the primary permittee, chief scientist, and other appropriate personnel look forward to consulting with the Office of Hawaiian Affairs (OHA) and the Monument's Native Hawaiian program coordinator on proper conduct while in the NWHI, on cultural sensitivities associated with the proposed activities and locations, and on the applicability of the results of this research to the role of OHA as one of the NWHI management agencies.

## **8. Procedures:**

**Land-based research:** The techniques used by the monk seal program are used by many programs worldwide and satisfy University of Hawaii Institutional Animal Care and Use Committee standards and adhere to the draft guidelines for animal handling created by the Society for Marine Mammalogy. Juvenile monk seals will be located within Pearl and Hermes reef and their suitability for instrumentation assessed. Juvenile seals will undergo a subset of the following procedures depending on their condition and extrinsic factors such as temperature, potential for disturbance of other species and surrounding habitat:

**A. Encounter.** This involves observing seals from a distance.

1. Observe behavior, either visually or with a camera.
2. Record presence, age/sex, health status, either visually or with a camera.

**B. Capture.** This involves the actual handling of individual seals.

1. Capture using gear on the beach, such as a hoop net, or stretcher net.
2. Capture of live seals will include sedation with diazepam depending on procedures being conducted (health screening and instrumentation).

**C. Inspect.** This involves handling and manipulating the individual seals after capture.

1. Measure for size.
2. Weigh.
3. Determine sex.
4. Conduct external exam for health status.
5. Conduct exam for external injuries, such as evidence of attempted predation, fishing line entanglement, or other.
6. Record existence of and information from tag(s).

**D. Sample.** This involves handling and taking physical samples from individual seals, alive and dead, after capture.

1. If animal is alive, in addition to the external inspections above, the following may be collected:
  - a. Blood samples for total protein, packed cell volume, serum chemistry, and/or parasites and other desired considerations. Samples are also used by the monk seal Health and Disease Program.
  - b. Skin or blood for DNA identification and stable isotope analysis.
  - c. Fecal, nostril, eye, and genital swabs for health and disease screening.
  - d. Blubber biopsy for fatty acid and contaminant analysis.

2. If the animal is dead, during external exam and/or necropsy, in addition to the above samples (other than blood), the following may be collected:

- a. Food from gastrointestinal tract.
- b. Feces.
- c. Skeletal materials.
- d. Skin or other tissue for DNA identification, stable isotope or other analyses.

**E. Tag.** This involves placing or removing a physical tag either into tissue of the flipper, under the skin surface, or affixed to the fur of the individual seal.

1. Passive tags:

- a. External flipper tag (plastic);
- b. Passive Integrated Transponder (PIT) tag injected under the skin that can then be electronically scanned;
- c. Bleach mark or epoxy resin on the fur (alphanumeric identification bleached white or black)

2. Active Tags: Transmitters and Archival tags are attached to the dorsal pelage using a low exothermic epoxy resin.

- a. Radio transmitter that either transmits globally using satellites or short-range using VHF frequencies attached to the fur. The tags used for this study will include a small VHF transmitter and a GPS Satellite linked dive recorder which will provide GPS quality foraging locations and dive behavior;
- b. Archival tag (collects and stores temperature, depth, time, and/or location data)
- c. National Geographic Crittercams: collect high resolution video and dive data that provide insight to the monk seals behavior, foraging habitat, prey base and the ecological community in which they live.

Capture and instrumentation of monk seals will require access to seals on beaches. Up to 15 Hawaiian monk seals will be instrumented per cruise with Wildlife Computers MK10 Satellite Linked GPS Dive Recorders and Crittercam. These tags will relay monk foraging location and dive information via satellite to researchers in Honolulu. They also archive fine scale dive information that can be downloaded upon recovery of the instrument.

The use of animal borne imaging devices, such as Crittercams, on the endangered Hawaiian monk seal has significantly advanced the understanding of the seals' foraging ecology. These devices are a source of high resolution data that provide insight to the monk seals behavior, foraging habitat, prey base and the ecological community in which they live. These instruments have shifted notions of the monk seal as primarily a shallow reef feeder to an animal that routinely feeds on the deep slopes of the atoll and ventures some into subphotic depths. Aside from the direct information this imagery conveys the data from animal borne imaging systems serve to guide where and how conventional research tools can be applied effectively to advance monk seal foraging research – essentially using the seals to guide the research. Use of animal borne imaging has resulted in unprecedented progress in understanding the foraging landscape of the monk seal and any refinements in this technology will serve to better inform recovery efforts. They also provide very valuable outreach material for Monument education efforts.

For the September cruise if work is done at Pearl and Hermes Reef, whalers will be used to transport personnel among islets and will occur virtually daily for the duration of the project at Pearl & Hermes Atoll. When accessing other islets within the lagoon, depending upon conditions, personnel will generally anchor the boats in shallow water adjacent to the islets, bow facing in, with a stern anchor leading offshore and a bow anchor placed on the islet. Researchers will then wade to the shore. Stern anchors will always be placed on a sandy bottom. Researchers will work to keep all activities within the beach zone to minimize any disturbance to other flora and fauna. No work will be conducted at night.

**Ocean-based research:** GPS locations derived from satellite tags will allow researchers to pinpoint foraging 'hotspots' for individual seals. Researchers will determine the substrate type at these hotspots to help understand fine scale habitat needs of seals. Habitat assessment will be done by researchers submerging their head or snorkeling in shallow areas. In deeper areas, a video camera mounted to a cable and winch will be dropped to record substrate characteristics. Additional ecosystem sampling will be conducted at seamounts near monk seal foraging sites that have been previously identified as monk seal foraging areas. This biological sampling is described below.

**Data Use:** The instruments being deployed will provide the PIs with information on the dive behavior and foraging locations of juvenile Hawaiian monk seals. Feces and blubber and other tissue samples will provide information on the diet and trophic position of each individual. This information on diet and foraging effort coupled with other parameters such as body condition, health status, and survival, will allow us to determine what habitats and food items are important to juvenile monk seals and explore what particular factors (i.e. diet or behavior), or combination of factors, allow some individuals to survive while others do not. These data will be compared to similar data being collected in the main Hawaiian Islands.

**Concurrent ecosystem sampling** will be conducted with expendable bathythermograph (XBT) probes (in offshore waters only), conductivity-temperature depth (CTD) casts, additionally equipped with a Seapoint profiling fluorometer, a Biospherical Instruments scalar irradiance (PAR) sensor, redundant dissolved oxygen sensors, and a 10- Niskin water bottle carousel rosette sampler. Sea surface temperature and salinity measurements will be collected using a hull-mounted thermosalinograph (TSG) continuously throughout the sampling regime. Acoustic surveys measuring biological backscatter and current velocity and direction will be conducted simultaneously along transect lines using a Simrad EK60 echosounder system and an acoustic Doppler current profiler (ADCP), respectively.

## **Section C: Logistics**

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

Activity is currently authorized under Scientific Research and Enhancement Permit No. 848-1695-02, issued by the Office of Protected Resources, National Marine Fisheries Service. A copy is attached. This permit will expire on June 30, 2008. An application for a new Scientific Research and Enhancement permit has been submitted, and any such permit (or extension of existing permit) will be forwarded to the Monument upon receipt.

**9a. For each of the permits listed, please identify any permit violations or any permit that was suspended, amended, modified or revoked for cause. Please explain the circumstances surrounding the violation or permit suspension, amendment, modification or revocation.**

No violations or suspensions of the above permits have occurred. Permit 848-1695-02 represents the twice-modified version of a permit originally issued as 848-1695. The two modifications were to include the Hawaiian monk seal captive care ('Second Chance') project at French Frigate Shoals, and later to change the venue of said project from FFS to Midway.

**10. Funding sources (Please attach copies of your budget, specific to proposed activities under this permit and include funding sources. Please see instructions for more information):**

All funding from Department of Commerce – NOAA Fisheries.

**11. Time frame:**

Activity start:           Cruise I: Feb 14, 2008      Cruise II: Sept. 09  
Activity completion: Cruise I: Mar 10, 2008      Cruise II: Oct. 13

**Dates actively inside the Monument:**

From: Cruise I: Feb 16, 2008      Cruise II: Sept. 07  
To:    Cruise I: Mar 12, 2008      Cruise II: Oct. 11

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

The dates above and below are based on the current NMFS PIFSC cruise schedule. However, due to issues with the federal budget continuing resolution and other restraints on ship time, these dates may be shifted or canceled entirely. The applicants will update the Co-Trustees if the dates change.

**Personnel schedule in the Monument:**

Cruise I ( Estimated)

Feb 16 - OES Enters Monument  
Feb 19 - Disembark Littnan, Yoshinaga, Braun/Levine, Baker, Lopez at Lisianski Island  
Feb 20 - Mar 7 GPS Tag Deployments  
Mar 7 - Embark Littnan, Yoshinaga, Braun/Levine, Baker, Lopez to OES  
Mar 7-10 - Monk Seal Habitat Surveys  
Mar 10 - Return to Honolulu  
Mar 12 - Leave Monument

Cruise II (Estimated)

We are currently unsure what atoll/island we will be visiting but will inform the monument no later than 60 days prior to cruise departure.

**12. Please 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:**

**13. Please check the appropriate box to indicate how personnel will enter the Monument:**

- Vessel  
 Aircraft

Provide Vessel and Aircraft information:  
**NOAA R/V Oscar Elton Sette**

**14. What certifications/inspections do you have scheduled for your vessel? Please fill in scheduled date (attach documentation):**

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

**15. 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 :

How will you comply with the 'No Discharge' regulations stipulated in Presidential Proclamation 8031? Describe in detail. If applicable, please attach schematics of the vessel's discharge and treatment systems:

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

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

VMS Email:  
Inmarsat ID#:

**16. Tender information:**

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

Workboats listed above detailed to the O.E. Sette will be used to transport gear and materials between ship and shore. Workboats at Pearl and Hermes Atoll will be two 20 ft whalers, each with two 4 stroke Honda engines.

## **Section D: Additional Information for Land Based Operations**

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

Transportation of gear to and from Lisianski, Southeast Island (Pearl and Hermes Atoll) and/or Nihoa: Whalers and tenders from the NOAA R/V OES will be used to transport gear and personnel from the research vessel to Southeast Island.

**Small boat operations:** Whalers will be used to transport personnel among islets at Pearl and Hermes Atoll (if that site is selected) for the purpose of locating and instrumenting Hawaiian monk seals and conducting cetacean surveys. Boat operations will occur virtually daily for the duration of the project at Pearl & Hermes Atoll. At night, boats will be anchored in nearshore waters of Southeast Island. When accessing other islets within the lagoons, depending upon conditions, personnel will generally anchor the boats in shallow water adjacent to the islets, bow facing in, with a stern anchor leading offshore and a bow anchor placed on the islet. Stern anchors will always be placed on a sandy bottom. If conditions preclude safely anchoring the boat while accessing the islets, one observer will remain in the small boat as coxswain and will stay on station away from the islet while co-workers census/instrument seals.

### **18. Room and board requirements on island:**

Temporary facilities will be set up on Lisianski Island, Southeast Island, and/or Nihoa to support 5 field staff working on island. The temporary camp will be constructed in the same area as summer monk seal field camps or at the designated camping spot on Nihoa Island. Four small 2-man 3 season tents will be used for sleeping and two larger canvas tents will be used for a kitchen and office/laboratory. Camp may be modified as appropriate for Nihoa Island. Bathing will occur in the water near camp and environmentally safe biodegradable soap will be used.

### **19. Work space needs:**

All food, water and energy needs will be provided for by NOAA Fisheries. This will include a small solar panel system to provide power to charge batteries and run computers and other communication equipment.

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.

---

Signature

Date

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

NWHI Marine National Monument Permit Coordinator

6600 Kalaniana'ole Hwy. # 300  
Honolulu, HI 96825  
FAX: (808) 397-2662

**DID YOU INCLUDE THESE?**

- Applicant CV/Resume/Biography
- Electronic and Hard Copy of Application with Signature
- 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
- Statement of information you wish to be kept confidential

## Appendix A: Research OR Conservation and Management Application

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

**1a. 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:

*Monachus schauinslandi*

# & size of specimens:

Hawaiian monk seal specimens to be collected during instrument deployment (30 MK10 Satellite Link GPS Dive Recorders and Crittercams) or flipper-tagging efforts on weanling and other untagged individuals. The animals will be captured 3 days later to remove the videocamera.

30 x 2 (per animal) blubber biopsies (approx. 0.6 cm diameter, 2-3 cm in length)

30 blood samples (up to 90 mL)

30 swabs x 5 orifices (anal, genital, mouth, nose, eye)

30 fecal samples

100 Scats opportunistically collected on beach

Up to 40 x 2 skin plugs from flipper tagging efforts of weanlings and adults

There is also the possibility of conducting necropsies on any dead seals found during research activities. The type and number of samples collected during necropsies varies depending on the condition of the carcass. A necropsy protocol that highlights the potential tissues that may be collected from dead monk seals can be provided upon request, though tissues could include: samples from all major organs, skin, muscle, blood, blubber, hair, bone and other.

Collection location:

Lisianski Island, Pearl and Hermes Atoll, Nihoa Island

Whole Organism  Partial Organism

**1b. What will be done with the specimens after the project has ended?**

Samples will be analyzed in a timely basis upon return to Honolulu (see below). All samples collected and not analyzed during this project (i.e. duplicate blubber for fatty acids, skin for genetics) will be stored at the PIFSC or Bishop Museum for future analysis.

**1c. Will the organisms be kept alive after collection?**  Yes  No

• Specific site/location:

• Is it an open or closed system?  Open  Closed

• Is there an outfall?  Yes  No

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

• Will organisms be released?

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

All samples collected within the monument will be transported out on the NOAA/RV OES. Blubber and other tissue samples will be stored in a liquid nitrogen dewar. Most tissues will be stored in ethanol. Skin plugs from monk seals and cetaceans may be stored in DMSO prior to freezing. Fecal samples are stored in buckets and later frozen on the vessel.

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

Currently NOAA Fisheries is the only group researching Hawaiian monk seals eliminating duplicative research. As well, there are limited cetacean research programs ongoing in the NWHI. Where these are underway (e.g. spinner dolphin research at Midway), we have ongoing collaborations with those researchers, included in the list below. However, we have several partners aiding us in the analysis of our samples and data. These include: Bishop Museum, University of Hawaii Manoa and Hilo, UH Hawaii Institute of Marine Biology, Southwest Fisheries Science Center, Scripps Institute of Oceanography and Dalhousie University, Canada.

Data collected during this study will also be provided to the Monument to aid with their management objectives.

**4a. Gear and materials:**

A detailed list of gear and materials being brought into the NWHI Monument is included at the end of this permit.

**4b. Please list all Hazardous Materials you propose to take to and use within the Monument:**

A detailed list of hazmat being brought into the NWHI Monument is included at the end of this permit. MSDS will be provided on request.

**5. Fixed installations and instrumentation:**

No fixed installations will be used in these studies.

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

Data collected via satellite tags will undergo some analysis immediately to determine foraging hotspots. The remainder of the data will not be analyzed until all the tags have stopped transmitting or have been recovered. This could be up to 6-8 months. After all the data is collected foraging information will be analyzed and summarized.

Tissue samples will be analyzed at different times. Feces, blubber and other tissues used for diet analysis will be processed and logged within one month of return to Honolulu. They will then be distributed to the appropriate lab for analysis. Other samples should be analyzed within 6 months of collection depending on the workload of partner and contract laboratories. An important point to emphasize is that we do have partners in place to analyze samples and interpret resulting data.

Publication of results will not occur until after at least two field seasons and will likely extend through 2010.

**7. List all publications directly related to the proposed project:**

Hawaiian Monk Seal Recovery Plan

Abernathy, K. J. 1999. Foraging ecology of Hawaiian monk seals at French Frigate Shoals, Hawaii. M.S. Thesis, Univ. of Minnesota, Minneapolis, MN, 65 p.

Antonelis, G.A., J.D. Baker, and J.J. Polovina. 2003. Improved body condition of weaned Hawaiian monk seal pups associated with El Niño events: potential benefits to an endangered species. *Marine Mammal Science* 19(3): 590-598.

Baker, J. D. and T. C. Johanos. 2004. Abundance of the Hawaiian monk seal in the main Hawaiian Islands. *Biological Conservation*. 116: 103-110.

Baker, J. D., and T. C. Johanos. 2002. Effects of research handling on the endangered Hawaiian monk seal. *Mar. Mammal Sci.* 18:500-512.

Goodman-Lowe, G. D. 1998. Diet of the Hawaiian monk seal (*Monachus schauinslandi*) from the Northwestern Hawaiian Islands during 1991-1994. *Marine Biology* 132:535-546.

Harting, A. L. 2002. Stochastic simulation model for the Hawaiian monk seal. Ph.D. Dissertation. Montana State University, Bozeman, MT, 328 p.

- Littnan, C.L., J.D. Baker, F.A. Parrish, and G. J. Marshall. 2004. Evaluation of possible effects of video camera attachment on the foraging behavior of immature Hawaiian monk seals. *Mar. Mamm. Sci.* 20:345-352.
- MacDonald, C. D. 1982. Predation by Hawaiian monk seals on spiny lobsters. *J. Mammal.* 63:700.
- Parrish, F.A., Boland, R.C. 2004. Habitat and Reef-Fish Assemblages of Bank Summits in the Northwestern Hawaiian Islands. *Mar Bio.* 144:1065-1073.
- Parrish, F. A., K. Abernathy, G. J. Marshall, B. M. Buhleier, 2002. Hawaiian monk seals (*Monachus schauinslandi*) foraging in deepwater coral beds. *Mar. Mamm. Sci.* 18:244-258.
- Parrish, F. A., M. P. Craig, T. J. Ragen, G. J. Marshall, and B. M. Buhleier. 2000. Identifying diurnal foraging habitat of endangered Hawaiian monk seals using a seal-mounted video camera. *Mar. Mamm. Sci.* 16:392-412.
- Parrish, F. A., G. J. Marshall, C.L. Littnan, M. Heithaus, S. Canja, B. L. Becker, R. C. Braun, and G. A. Antonelis. 2005. Foraging of juvenile monk seals at French Frigate Shoals, Hawaii. *Marine Mammal Science* 21(1):93-107.
- Stewart, B. S. 2004a. Geographic patterns of foraging dispersion of Hawaiian monk seals (*Monachus schauinslandi*) at the Northwestern Hawaiian Islands. Pacific Islands Fisheries Science Center Admin. Rep. H-04-05C.
- Stewart, B. S. 2004b. Foraging ecology of Hawaiian monk seals (*Monachus schauinslandi*) at Pearl and Hermes Reef, Northwestern Hawaiian Islands: 1997-1998. Pacific Islands Fisheries Science Center Admin. Rep. H-04-03C.
- Stewart, B. A., G. A. Antonelis, J. D. Baker, and P. Y. Yochem. In press. Foraging biogeography of the Hawaiian monk seal in the Northwestern Hawaiian Islands. Third NWHI Scientific Symposium, Honolulu, Hawaii. Atoll Research Bulletin.
- Stewart, B. S. and P. K. Yochem. 2003. Dispersion and foraging ranges of Hawaiian monk seals (*Monachus schauinslandi*) near Lisianski and Midway Islands: 2000 & 2001. HSWRI Technical Report 2003-322: 1-106.
- Stewart, B. S., and P. K. Yochem. 2004a. Dispersion and foraging of Hawaiian monk seals (*Monachus schauinslandi*) near Lisianski and Midway Islands: 2000-2001. Pacific Islands Fisheries Science Center Admin. Rep. H-04-04C.
- Stewart, B. S., and P. K. Yochem. 2004b. Use of marine habitats by Hawaiian monk seals (*Monachus schauinslandi*) from Laysan Island: Satellite-linked monitoring in 2001-2002. Pacific Islands Fisheries Science Center Admin. Rep. H-04-02C.
- Stewart, B. S., and P. K. Yochem. 2004c. Use of marine habitats by Hawaiian monk seals (*Monachus schauinslandi*) from Kure Atoll: Satellite-linked monitoring in 2001-2002. Pacific Islands Fisheries Science Center Admin. Rep. H-04-02C.

### **Additional Information**

Equipment, Materials and HAZMAT to be brought into the NWHI Monument:

*Communications*

- Radios/GPS**
- 3 VHF radios
  - 2 VHF battery charger
  - 1 GPS w/ spare set of batteries
  - 1 Fixed mount radio for office tent
  - 1 Radio antenna for office tent
  - 1 clear case for GPS
  - 1 Garmin GPS for zodiac
- Sat Phone**
- 1 Satellite Phone
  - 2 sat phone charger (AC and DC, 1 ea/phone)
  - 1 phone to computer chord (1/phone)
  - 1 extra batteries
  - 1 mast antenna
  - 1 PVC pole to mount mast antenna
  - 1 phone card adapter
- Power Systems**
- 1 Solar Panel Unit (includes two panels w/ hardware)
  - 1 Solar Panel Mounting PVC Pole
  - 1 Solar Panel Mounting Bracket and bolts
  - 3 12 Volt battery
  - 8 Battery cables (4 red, 4 black)
  - 1 ~6 f wire for direct solar to battery connection
  - 3 Cig. lighter (female) to Battery connections
  - 1 Power Box / Regulator
  - 1 Cig. lighter (female) to Power Box connections
  - 2 DC to AC Inverters
- Spare Parts:**
- assort. Electrical Connections (Butt ends, ring terminals..)
  - misc. Shrink wrap 3/8 ", 1/4"
  - 2 Cig. lighter Sockets
  - 12 Fuses 'car fuse' (10, 15 AMPS - 6 ea)
  - 4 Perko plugs (2 female, 2 male)
  - 5 Fuses for tent radio (250V/6A)
  - 1 voltmeter

*Data and Tagging*

- 3 Metal clipboards
- 1 Thermometer
- 3 camelbacks
- 4 Dry bags - 3 small, 1 large yellow
- 2 Bottles for Alcohol & Betadine
- 1 File, Round -for sharpening punch tips
- 2 Leather Punch
- 7 Leather Punch, Replacement Tips
- 2 Nail Brush
- 10 Pit Tags and 4 punches

**Emergency Equipment**

- 1 Emergency Pelican
- 2 Generators
- 1 Generator supply bucket
- 1 Grey Tool Kit
- 1 debris tool bucket
- 3 Binos
- 3 Cameras w/accessories
- 1 First off bucket
- 1 tent repair kit
- 1 PHR Zodiac and gear
- 1 FFS whaler (or new Avon) and gear
- 2 boat tool kits
- 1 office supplies

**Kitchen Supplies**

- 1 Coleman Kitchen Table
- 1 Drinking Jug, 5 gal
- 1 Stove, cast iron
- 1 Oven, collapsible
- 3 Propane regulator & hose (Stove)
- 2 Fire Extinguisher
- 30 Water Jugs, 6 gal
- 20/10 Trash bags, Large / Xlarge
- 50 Ziplock bags, S / M / L (50 ea.)
- 1 Foil
- 1 Plastic wrap
- 3 Hot pads
- 4 Dish towels
- 2 Paper towels
- 5 Scrubbies & Sponges (misc)
- 1 Kitchen Action Packer
- \*8 sets dishes, cups, utensils\*

**Living Amenities**

- 8 Foam pads
- 8 Sleeping bags
- 8 Pillows
- 8 Sand chairs
- 4 Seat cushions
- 1 Toilet seat
- 3 Tarp, Large
- 3 Tarp, Medium
- 1 Lg. Broom w/ dustpan
- 1 Whisk broom w/ dust pan
- 1 Dry erase board
- 4 Tables, 2 med, 2 lg
- 1 set 1/2" Plywood for latrine (3 sides, 1 top)
- 8 Towels Sets: Bath Towel/Face Cloth (2 sets/ per)
- 30 Toilet paper (1 roll/3 days)
- 5 lbs Lime for L.D.

- 40 Q-Tips
- 1 Soap, Waterless Antibacterial (large size)
- 3 Personal size, waterless antibacterial soap
- 1 Spray Bottles for bleach
- 1 Tag Reader
- 8 Tag Reader, AA Batteries
- 1 Tape Measure
- 1 Tupperware for Pit Tag
- 1 Tweezers for tissue plugs
- 3 Bleach Dispensing Bottles w/ lines
- 2 Backpacks (1 Large / 3 Daypacks)
- 2 Hoop net and poles  
hoop net: 3 poles, 1 connector
- 1 Stretcher net
- 8 Coveralls
- 8 Gloves
- 2 Kneepads
- 1 scale
- 1 weighing pole
- tags

Cetacean data equipment

**HAZMAT**

**FLAMMABLES**

**Boating**

- 1 Corrosion Block
- 1 Epoxy Cement
- 2 EZ Store Fuel Stabilizer
- 1 Boat Oil
- 27 Gas, 55 gal drums
- 1 Grease, Silicon
- 2 Marine Sealant / Silicon Sealer
- 1 Marine Tex
- 1 gal Ospho Rust Remover
- 1 Permatex
- 1 Resin
- 1 Silicone Lubricant
- 2 WD-40/LPS
- Generator**
- 1 Carburator Cleaner
- 1 Lead Substitute
- 2 Motor Oil, Quart ( SAE 10W-40)

**Propane**

- 1 Propane tank, 40 lb
- 1 Propane tank, 20 lb
- 2 Propane tank, 1 lb

**Insecticide**

- 2 Tick Repellant
- 1 Insecticide
- 3 Bug bombs

**Tagging**

- Epoxy for tags
- acetone

**CORROSIVES** Pack each corrosive 'type'

- 2 propane lantern
- 1 lantern tree
- 5 fluorescent lanterns
- 20 lantern batteries
- 3 Sunscreen, SPF 30, 6 oz. (.5/per/wk)
- 5 Sunscreen, SPF 50, 6 oz. (.5/per/wk)
- 2 Joy liquid soap
- 5 Campsuds, 16 oz (.2/per/wk)
- 3 Flashlights
- 6 sets Flashlight batteries
- 5 Lighters
- 2 Matches 250/box
- 2 pkg Clothes pins
- 3 fly swatters
- 2 ant traps

**Medication**

- 1 O2 Kit
- 1 IV Kit
- 1 Crash Kit
- 1 Large Med pelican

**Tents**

- 1 Large 9' x 13' tent
- 1 Large Fly 13' x 21'
- 1 Ridge pole (1 / tent + spare)
- 4 Ridge pole support (2 / tent + spare set)
- 24 Wall poles 5' (12 / tent + spare set)
- 6 Extendable aluminum poles
- 40 Set of stakes for tent/fly (40 / tent)
- 1 Small 8 x 8 tent
- 1 Small Fly
- 1 Ridge pole
- 2 Ridge pole support
- 8 Wall poles
- 20 Set of stakes for tent/fly (20 / tent)
- 4 small pup tents

separately!

**Animal Handling**

- 20 Clorox
- 50 Developer, Clairoxide 20 Vol.  
Instant Whip  
Lightening Activators (envelopes)
  
- 1 **SPILL KIT**

**DID YOU INCLUDE THESE?**

Material Safety Data Sheets for Hazardous Materials

## **Appendix B: Education Application**

- 1. Are you collaborating with others in any way to reduce duplicative activities in the Monument or elsewhere?**
  
- 2. Gear and materials:**
  
- 3. Fixed installations and instrumentation:**
  
- 4. Is your proposed activity based on a State Department of Education Standards Based Curriculum? If so, please describe:**
  
- 5. What materials, products or deliverables will be developed as a result of your proposed activity? Provide a time line for write-up and publication of information or production of educational materials:**
  
- 6. List all publications/references directly related to the proposed project:**
  
- 7a. 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:

Scientific name:

# & size of specimens:

Collection location:

Whole Organism    Partial Organism

**7b. What will be done with the specimens after the project has ended?**

**7c. Will the organisms be kept alive after collection?**  Yes  No

- Specific site/location:
  
- Is it an open or closed system?  Open  Closed
  
- Is there an outfall?  Yes  No
  
- Will these organisms be housed with other organisms? If so, what are the other organisms?
  
- Will organisms be released?

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

### **Appendix C: Native Hawaiian Practices Application**

**1. Please state how the purpose and intent of the activity are appropriate and deemed necessary by traditional standards in the Native Hawaiian culture (pono), and demonstrate an understanding of, and background in, the traditional practice, and its associated values and protocols:**

**2. Please state how the activity benefits the resources of the Northwestern Hawaiian Islands and the Native Hawaiian community:**

**3. Please state how the activity supports or advances the perpetuation of traditional knowledge and ancestral connections of Native Hawaiians to the Northwestern Hawaiian Islands:**

**4. Will you be collecting any Monument resource?  Yes  No**  
**If so, please provide the following information:**

**4a. 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 and/or Scientific name:

# & size of specimens:

Collection location:

Whole Organism  Partial Organism

**4b. What will be done with the specimens after the Native Hawaiian cultural practice is complete?**

**4c. Will organisms be kept alive after collection?  Yes  No**

• Specific site/location:

- Is it an open or closed system?  Open  Closed
  
- Is there an outfall?  Yes  No
  
- Will these organisms be housed with other organisms? If so, what are the other organisms?
  
- Will organisms be released?

**NOTE: Any Monument resource harvested from the Monument for the purpose of Native Hawaiian practices will be consumed in the Monument.**

**5. Are you collaborating with others in any way to reduce duplicative activities in the Monument or elsewhere?**

**6. Gear and materials:**

**7. Will you erect any Native Hawaiian cultural structures or leave any offerings in the Monument?**  Yes  No

**If so, please describe:**

**8. Will you produce any publications, educational materials or other deliverables?**  
 Yes  No

**Provide a time line for write-up and publication of information or production of materials:**

**Appendix D: Recreation Application**

For Activities in the Midway Atoll Special Management Area Only

- 1. Please explain how the activity is for the purpose of recreation as defined: An activity conducted for personal enjoyment that does not result in the extraction of Monument resources and that does not involve a fee-for-service transaction:**
  
- 2. Other Associated Monument Permits:**
  
- 3. Gear and materials:**
  
- 4. Fixed installations and instrumentation:**

## **Appendix E: Special Ocean Use Application**

**NOTE: If this is a first time Special Ocean Use activity, it will be subject to a pilot project.**

**1. Please provide proof of general liability insurance, or indicate that you will be posting an equivalent bond against claims arising out of activities conducted under the permit:**

**2. Are you collaborating with others in any way to reduce duplicative activities in the Monument or elsewhere?**

**3. Gear and materials:**

**4. Fixed installations and instrumentation:**

**5. List all publications directly related to the proposed project:**

For projects occurring with the Midway Atoll Special Management Area answer the following questions:

**6. Please explain how your activity has been found compatible with the purposes for which the Midway Atoll National Wildlife Refuge was designated?**

**7. Please explain how your activity meets the requirement of furthering conservation and management of the Monument:**

For projects occurring outside of the Midway Atoll Special Management Area answer the following questions:

**8. Please explain how the proposed activity will directly benefit the conservation and management of the Monument:**

**9. Please explain how the purpose of the proposed activity is for research and education related to resources or qualities of the Monument:**

**NOTE: SPECIAL OCEAN USE PERMITS OUTSIDE THE MIDWAY ATOLL SPECIAL MANAGEMENT AREA DO NOT ALLOW THE USE OF A COMMERCIAL PASSENGER**

NWHI Monument Permit Application

OMB Control # 0648-0548

Page 30 of 30

**VESSEL.** A commercial passenger vessel is defined by the monument regulations as a vessel that carries individuals who have paid for such carriage.