UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Silver Spring, MD 20910

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT ON ISSUANCE OF A PERMIT FOR FIELD RESEARCH AND ENHANCEMENT ACTIVITIES ON THE ENDANGERED HAWAIIAN MONK SEAL

January 2010

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Location: Hawaiian Archipelago and Johnston Atoll

Abstract: NMFS proposes to issue a minor amendment to scientific research and enhancement Permit No. 10137-02, issued to the NMFS Pacific Islands Fisheries Science Center, Marine Mammal Research Program for takes of endangered Hawaiian monk seals (*Monachus schauinslandi*) in the wild, pursuant to the Marine Mammal Protection Act and the Endangered Species Act. The permit expires on June 30, 2014. The minor amendment would authorize the use of ultrasound on Hawaiian monk seals as a non-invasive tool for measuring body condition during currently permitted activities.

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CHAPTER 1 PURPOSE OF AND NEED FOR ACTION

1.1 DESCRIPTION OF ACTION

In response to receipt of a request from the Pacific Islands Fisheries Science Center, Marine Mammal Research Program (MMRP) NMFS proposes to issue a minor amendment (Permit No. 10137-03) that authorizes "takes"[1] of Hawaiian monk seals (*Monachus schauinslandi*) in the wild pursuant to the Marine Mammal Protection Act of 1972, as amended (MMPA; 16 U.S.C. 1361 *et seq*.), the regulations governing the taking and importing of marine mammals (50 CFR Part 216), the Endangered Species Act of 1973 (ESA; 16 U.S.C. 1531 *et seq*.), and the regulations governing the taking, importing, and exporting of endangered and threatened species (50 CFR Parts 222-226).

1.1.1 Background

Permit No. 10137-02 authorizes takes of Hawaiian monk seals to (1) assess survivorship, reproductive rates, pup production, condition, abundance, movements among subpopulations, and incidence and causes of injury or mortality; (2) diagnose disease, monitor exposure to disease, and develop normal baseline hematology and biochemistry parameters; (3) conduct activities to increase survival of individuals; and (4) investigate foraging ecology to determine foraging locations, diving parameters, characteristics of foraging substrate, and prey identification and foraging behaviors. The addition of ultrasound measurements would be done concurrently with the currently authorized takes of Hawaiian monk seals..

1.1.1 Purpose and Need

The purpose of issuing the permit amendment is the same as issuing the original permit, to provide an exemption from prohibitions under the MMPA and ESA to allow takes of an endangered marine mammal for bona fide scientific research and enhancement activities. MMPA and ESA regulatory issuance criteria require that permitted take activities are consistent with the purposes and polices of these federal laws and would not have significant adverse impacts on the species or stock.

Non-invasive ultrasound measurements would be used to measure blubber depth of monk seals to provide sensitive, fine- scale metrics of individual condition. This proposed project would be paired with already planned animal handling events, including a de-worming project in the Northwestern Hawaiian Islands (NWHI), flipper tagging in the Main Hawaiian Islands (MHI), and health assessment/foraging research in both locations. The addition of ultrasound would enhance the objectives of these studies by providing

1 Under the MMPA, "take" is defined as to "harass, hunt, capture, kill or collect, or attempt to harass, hunt, capture, kill or collect." [16 U.S.C. 1362(18)(A)] The ESA defines "take" as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."

data on body conditions with improved resolution and sensitivity that is more informative than mass and morphometric measurements alone, as currently permitted.

1.2 OTHER EA/EIS THAT INFLUENCE SCOPE OF THIS EA

The NMFS Permits Division prepared an environmental assessment (EA; NMFS 2009) for issuance of Permit No. 10137 to the MMRP for takes of Hawaiian monk seals, including but not limited to ground, vessel, and aerial surveys; marking and measuring; capture, restraint, sedation, health assessment sampling, instrumentation, de-worming; translocations of pups to increase survival (including establishing/re-establishing maternal association and risk alleviation); removal of adult male seals known to kill other seals; disentanglement and de-hooking; necropsies and opportunistic sample collection; and import/export of parts. Geographic locations of the take include the Hawaiian Archipelago (MHI and NWHI) and Johnston Atoll. Specimen samples may be imported/exported world-wide.

Permit No. 10137 was amended on two occasions. Permit No. 10137-01 replaced the original permit and added authorization for translocations of 6 pups from French Frigate Shoals to Nihoa Island within the NWHI; for this amendment, a new finding of no significant impact was prepared, as the original EA appropriately analyzed the effects of this action. Permit No. 10137-02 replaced Permit No. 10137-01 and amended the method of administering one of the de-worming drugs without changing the dose or effects of the drug. NMFS determined that no additional NEPA documentation was needed as the effects were considered in the original EA. For the current proposed action (the addition of ultrasound to currently permitted activities), certain sections of the 2009 EA prepared for the original permit are incorporated by reference.

The NMFS Marine Mammal Health and Stranding Response Program (MMHSRP) prepared a Final Programmatic Environmental Impact Statement (FPEIS; NMFS 2009) for emergency response, rescue, rehabilitation, and salvage of threatened and endangered marine mammals and scientific research on marine mammals, including threatened and endangered species. The MMHSRP FPEIS analyzed the effects of using ultrasound on marine mammals. The NMFS Permits Division prepared an EA (NMFS 2006) for issuance of permits for research and enhancement activities on permanently captive ESA-listed pinnipeds. This EA analyzed the effects of using ultrasound on captive Hawaiian monk seals and captive Steller sea lions (*Eumetopias jubatus*). On the basis of the analyses contained in these EAs, the addition of ultrasound to already permitted procedures on monk seals does not have the potential to significantly affect the human environment; effects of using ultrasound are limited to the target species, and therefore, this supplemental EA focuses only on those effects.

1.3 SCOPING SUMMARY

The purpose of scoping is to identify issues to be addressed and significant issues related to the proposed action, and identify and eliminate from detailed study issues that are not significant or that have been covered by prior environmental review. An additional

purpose of the scoping process is to identify concerns of the affected public and Federal agencies, states, and Indian tribes. CEQ regulations implementing the National Environmental Policy Act of 1969 (NEPA; 42 U.S.C. 4321 *et seq*.) do not require that a draft supplemental environmental assessment (SEA) be made available for public comment as part of the scoping process. A draft of this SEA was not made available for public comment.

In accordance with Federal Regulations (50 CFR 216.39), the proposed action is issuance of a minor amendment. There will be no changes to the number or species of marine mammals authorized to be taken, imported, or exported. The manner in which these marine mammals may be taken, imported, exported, or otherwise affected would not result in an increased level of take or risk of adverse impact. There would be no changes in the locations in which the marine mammals may be taken, from which they may be imported, and to which they may be exported. The duration of the permit will not be extended. The application was not made available for public comment, consistent with processing a minor amendment.

1.4 APPLICABLE LAWS AND NECESSARY FEDERAL PERMITS, LICENSES, AND ENTITLEMENTS

NMFS is obligated under NEPA to ascertain whether the applicant is seeking other federal, state, or local approvals for their action. Section 1.4 of the 2009 EA for issuance of Permit No. 10137 summarized applicable laws and federal, state, and local permits, licenses, approvals, and consultation requirements necessary to implement the proposed action, (included in Appendix 1 of the 2009 EA), and there is no change for this amendment; thus, Section 1.4 of the 2009 EA is incorporated by reference.

CHAPTER 2 ALTERNATIVES INCLUDING THE PROPOSED ACTION

This chapter describes the range of potential actions (alternatives) determined reasonable with respect to achieving the stated objective. One alternative is the "No Action" alternative where the proposed permit would not be issued. The No Action alternative is the baseline for the rest of the analyses. The Proposed Action alternative represents the activities proposed in the submitted permit application (as modified), with terms and conditions specified by NMFS.

2.1 ALTERNATIVE 1 – NO ACTION

Under the No Action alternative, the permit amendment would not be issued to the applicant for the activities proposed. In absence of such amendment, MMRP activities currently authorized under Permit No. 10137-02 would continue through June 30, 2014.

2.2 ALTERNATIVE 2 – PROPOSED ACTION (Issuance of Permit Amendment with Conditions)

Under the Proposed Action alternative, NMFS would issue a permit amendment to the MMRP to conduct ultrasound measurements concurrent with permitted activities described below, with standard permit terms and conditions, conditions specific to pinnipeds, and conditions specific to the actions to be undertaken by the MMRP. No changes to the permit terms and conditions would change except for the take table (Appendix 1), which would be modified to include ultrasound during flipper tagging in the MHI and de-worming studies in the Hawaiian Archipelago (initially at Laysan Is. in the NWHI), and during health assessment/foraging research at any location in the Hawaiian Archipelago.

Overview

The MMRP is currently authorized to undertake the following activities annually:

- **Harassment** at any location in the Hawaiian Archipelago and Johnston Atoll:
  - **Monitoring**: 1,440 seals of any age/sex may be approached for monitoring activities via ground, aerial, and vessel (includes photo-ID)
  - **Incidental Harassment**: 200 seals of any age/sex may be incidentally disturbed during all other research and enhancement activities at
  - **Bleach marking**: 1,315 seals may be approached and bleach marked

- **Capture takes** at locations specified for each activity:
  - **Flipper tagging**: 556 seals of any size or sex except lactating females and nursing pups may be captured, restrained, flipper and PIT tagged, measured, and flipper plugs sampled; this includes retagging; locations include Hawaiian Archipelago and Johnston Atoll; **sonic tags**: up to 35 weaned pups at French Frigate Shoals may also have sonic tags applied concurrent with and on a flipper tag annually for up to three years

  - **Health Screening and Foraging Instrumentation**: 70 healthy seals and 30 unhealthy seals of any age/sex excluding lactating females with pups and nursing pups may be captured, restrained, sedated, sampled for health and disease screening (swabs, fecal loop, blood, blubber biopsies), measured, weighed, and flipper tagged if necessary; of the healthy seals, 60 may also be instrumented with external tagging devices and weighed; location is the Hawaiian Archipelago

  - **Translocation for enhancement**: immature seals may be relocated or translocated as follows:
    - 20 nursing pups of either sex that are abandoned or have been switched between two lactating females may be captured, restrained by hand or net, and relocated to a prospective foster mother or their natural mother, respectively; multiple attempts may

        - 35 weaned pups of either sex may be captured, restrained by hand or net, sedated, sampled for health and disease screening, instrumented, and relocated via boat, vehicle, or aircraft from a high risk area (e.g., known shark predation) to a low risk area within the same island or atoll in the NWHI or Johnston Atoll; translocations in the MHI may be to a different location on the same island or to a different island in the MHI; locations include the Hawaiian Archipelago and Johnston Atoll

        - 6 weaned pups of both sexes were authorized to be captured at French Frigate Shoals, restrained, sedated, sampled for health and disease screening, instrumented, and transported/translocated via boat and ship to Nihoa Is. in 2009; currently no other inter-atoll/island translocations are authorized; the 2009 EA analyzed the effects of translocating up to 20 seals annually

    - **De-worming**: 200 seals of either sex, up to age 3 years, may be treated for intestinal parasites; treatment animals may include those captured for health assessments or foraging studies; location is the Hawaiian Archipelago, although the preponderance of activities may occur in the NWHI

    - **Disentanglement/de-hooking**: as warranted, seals may be disentangled and de-hooked to prevent injury or death; location is the Hawaiian Archipelago and Johnston Atoll

- **Specimen collection and import/export**: necropsies may be performed on all carcasses; samples (molt, scat, spew, urine, placentae) may be collected opportunistically from beaches; samples may be import/exported/imported for analysis (world-wide); location of necropsies and sample collection is the Hawaiian Archipelago and Johnston Atoll

The following takes are authorized to occur over the 5-year duration of the permit and may occur in the Hawaiian Archipelago and at Johnston Atoll:

- **Adult male removal**: 10 adult males may be relocated, removed, or euthanized to enhance survival of immature animals and adult females (2 males may die incidental to captures)
- **Euthanasia**: 10 moribund seals of any age/sex may be humanely euthanized or die incidental to handling during health assessment
- **Incidental mortality**: 4 incidental mortalities may occur during research and enhancement activities, with no more than 2 occurring in a single year

Methodology

The 2009 EA describes in detail methods used for flipper tagging, de-worming, and health assessments/foraging instrumentation. The proposed ultrasound measurements would be conducted concurrently with these activities, which are summarized here.

Flipper Tagging

Seals (primarily weaned pups but also older animals that have lost their tags, excluding obviously pregnant or lactating females) are manually restrained by hand or net and tagged with two plastic Temple Tags® inserted through holes punched in the webbing between two digits of each rear flipper. The lumbar area is cleaned and a PIT tag is injected in the lumbar area. Seals are then measured (length and girth). No sedating drugs are administered. Restraint time averages 5 minutes and does not exceed 15 minutes.

De-worming Study

Seals included in this study are weaned pups at least 120 days post-weaning and juveniles aged 1 to 2 years. Seals are identified during standard ground surveys and their health status and body conditions are assessed by visual inspection and examination of digital photos. Emaciated seals too compromised to treat without high risk of mortality are excluded. Seals of these ages are randomly assigned to a treatment or control group, or alternated systematically, with the goal to have equal numbers in each group, matched in age, sex, body condition, and location.

All study subjects are captured by hand and net, feces collected for subsequent determination of parasite burden/presence (voided feces or fecal sample collected via fecal loop or digital extraction; stored in 10 % formalin), measured and weighed, flipper tagged if necessary, and given an intramuscular dose of praziquantal (Droncit, Bayer) at 5 mg/kg and an oral dose of fenbendazole (Panacur) at 10mg/kg, and released. Control seals are handled exactly as the dosed seals minus the drug administration. No sedation is used for treatment or control seals. Seals are also handled for a follow up assessment (sampling and weighing) approximately 4 weeks post-dosing. Seals are treated at intervals of spring, summer, autumn, and winter.

Post treatment body condition and fecal egg counts would be determined by observing the seals, collecting scat from known individuals during MMRP monitoring patrols, and capturing and weighing seals. Parasite load would be determined from fecal egg count data, treated as a categorical covariate. Visual assessment of condition would be recorded on an ongoing basis throughout the study, using standard MMRP subjective body condition scoring and feces would be preserved for detection of parasites. Subsequent survival would be determined through visual re-identification during population assessment field research, supplemented by observations made during additional field sessions.

Health Assessment and Foraging Instrumentation

Health screening includes sampling (1) animals displaying debilitation, emaciation, or abscesses which may be symptomatic of a disease or a disease process; and (2) healthy seals.

Depending upon the condition of the animal, symptoms it is displaying, and an assessment of the animals' tolerance to restraint, samples from unhealthy seals include up to 70 ml blood, viral and microbial swabs from all body orifices and wounds, a blubber biopsy, weight and morphometrics (girth and length). Seals would be flipper/PIT tagged if not previously tagged. Seals may be recaptured one time for subsequent health sampling. Up to 10 moribund seals may be humanely euthanized or die incidental to capture for sampling activities.

Procedures for sampling of healthy seals differ. Sedation, if deemed necessary by the attending veterinarian, includes diazepam administered intravenously in the extradural vein at a dosage of 0.1-0.2 mg/kg. Up to 90 ml of whole blood is collected from the extradural vein. Microbial and viral swabs are collected from the eyes, nares, mouth, anus, genital orifice, and external wounds. Two blubber core samples (through the full depth of the blubber layer) are collected from the dorsal pelvic region using a sterile 6 mm biopsy punch. Seals are weighed, morphometrics taken, and flipper/PIT tagged if not done previously. Handling time for health assessments ranges from 5 to 20 minutes.

Telemetry instruments are applied to a subset of the healthy animals sampled for health assessments as described above. Once samples have been collected, an instrument package is glued to the dorsal pelage using epoxy adhesive. A variety of instruments would be used and are specified in the 2009 EA, ranging in total combined weight from 27 g to 1 kg (air weight). Instrumented seals may be may be taken twice to remove the instrument and re-sample. Total restraint time for health assessments and instrumentation averages 25 minutes and does not exceed 60 minutes.

Ultrasound

Blubber depth measurements using a SonoSite portable imaging ultrasound (SonoSite, Bothell, WA) would be collected by applying light pressure to the skin to obtain images along the lateral side and dorsum of the animal. Images would be collected in wild seals from both the de-wormed and control animals during the next two treatment cycles (estimated to be in January 2010 and April 2010). Blubber depth measurements of additional pup and juvenile seals will occur at this and other locations as more individuals are added to the de-worming study in subsequent years. Measuring blubber depth will help elucidate the benefit gained from de-worming as it not only reflects changes in fat deposition but growth via lean mass.

Additionally, the MMRP proposes to collect blubber depth measurements on seals in the MHI of any age/sex (excluding lactating females, nursing pups, and obviously pregnant females) in conjunction with routine flipper tagging operations. Monitoring condition of these animals will provide comparative indices from a stable/growing population. Over the duration of the permit, the MMRP propose to conduct ultrasound measurements

during captures for health assessments/foraging research while seals are sedated to provide additional data on each seals' body condition to complement the health and foraging data being collected.

MMRP Mitigation During Handling Events

The following mitigation measures apply to monk seal handling events for capture, handling, tagging, de-worming treatments, sedation, biological sampling, and instrumentation. These mitigation measures would also apply to handling for ultrasound, as it would be combined with the aforementioned activities.

Animals are not handled during sensitive times in their life cycle. Because of the critical importance of pup survival, lactating females and nursing pups are not tagged or sampled during the suckling period. Tagging and handling molting seals is avoided.

The capture team has a briefing prior to an event to discuss roles of each team member and contingencies and responsibilities in the event of unanticipated results or action by the animal. Researchers minimize stress from captures and restraint by keeping the handling procedures as short as possible and cooling the animal with water. Prior to any animal capture, the location is evaluated for presence of environmental hazards that could present a risk of injury to the animal or the handlers. For example, seals would not be captured if they are in proximity to rock ledges or hard substrate. Procedures requiring longer restraints such as biological sampling and instrumentation involve the use of sedatives to calm the animal and reduce stress.

Procedures requiring physical contact with seals include precautions to ensure that humans handling seals do not inadvertently transfer pathogens between animals. All personnel who come into contact with a seal wear protective clothing (coveralls, gloves, booties), which is either sterile or has been disinfected. All instruments/gear are cleaned and disinfected. All personnel involved in restraining seals, prior to handling another animal, wash their hands in anti-bacterial soap, don a fresh pair of latex gloves (and cotton over-gloves if using), coveralls, and mask, and dip their "rubber booties" in a 1:20 solution of Clorox.

Seals are observed for five to 20 or more minutes after being handled to ensure they resume normal behavior (either going into water with normal ambulation or resuming normal respiration rates on land). During an animal's recovery from sedation, vital signs are monitored, including alertness of eyes, respiratory rate and depth of respiration, and heart rate. In the event of adverse reactions, emergency procedures are initiated under the advice of an on-site veterinarian, as described in the 2009 EA. Regular patrols and censuses of the area are conducted to resight and monitor individuals.

CHAPTER 3 AFFECTED ENVIRONMENT

The action area for the proposed action is the same as for the original action, which includes the Hawaiian Archipelago and Johnston Atoll. Chapter 3 of the 2009 EA for issuance of Permit No. 10137 described the affected environment, including the social,

economic, physical, and biological environment, and background information on the target species, Hawaiian monk seals, and non-target species including other marine mammals, sea turtles, birds, and plants. That section is incorporated by reference and is summarized here.

Activities undertaken by the MMRP in the NWHI require entrance into the Papahānaumokuākea Marine National Monument (hereinafter "Monument"). There are cultural and historic resources in the Monument, and it is considered a unique and ecologically critical area with numerous marine species. The MMRP is required to obtain annual permits from the Monument to access the islands to conduct research on Hawaiian monk seals. The NWHI contains critical habitat for Hawaiian monk seals and certain endangered plants.

As reported in the 2009 EA, in 2008, the best estimate of the Hawaiian monk seal population size was 1,208 (Caretta et al. 2008) based on data from 2006. The "Draft U.S. Pacific Marine Mammal Stock Assessments: 2009" (Caretta et al. 2009) indicates the current best estimate for the population is 1,146, showing the expected decline (NMFS 2007). No additional takes of Hawaiian monk seals are requested in the proposed action. The spinner dolphin (*Stenella longirostris*), green sea turtle (*Chelonia mydas*), and Laysan finch (*Telespyza cantans*) were identified in the 2009 EA to be non-target species that may be affected by the MMRP permitted activities.

CHAPTER 4 ENVIRONMENTAL CONSEQUENCES

Chapter 4 of the original 2009 EA characterized and evaluated the environmental impacts of the suite of research and enhancement activities currently permitted, and that section is incorporated by reference and summarized.

Monument permits obtained by the MMRP contain mitigation requirements to minimize impacts to resources in the NWHI, including physical, historical, and cultural resources. Any work conducted in the Monument requires strict quarantine procedures when transiting to islands within the Monument (i.e., in the NWHI) to prevent the introduction or spread of non-indigenous species.

None of the activities proposed are likely to have a significant impact on designated critical habitat of the Hawaiian monk seal. MMRP would not erect permanent structures or otherwise modify critical habitat of endangered plants in the NWHI or affect endangered plants in any way. None of the activities in the proposed action are directed at or likely to have an impact on any designated essential fish habitat.

The only other marine mammal affected by the proposed action is the spinner dolphin; up to 500 dolphins may be harassed during research activities in the NWHI, which is currently permitted. Research activities may cause incidental disturbance of to up to 140 basking green sea turtles (under the jurisdiction of the USFWS) annually in the NWHI. Annually, up to 200 Laysan finches may be disturbed and unintentional mortality or serious injury of two Laysan finches is possible during monk seal research and

enhancement activities in the NWHI. NMFS consulted with the USFWS on this incidental take as discussed further below.

Based on the analysis in the 2009 EA, we concluded no significant impact would occur to any component of the physical environment. Therefore, this section appropriately focuses on the individual and synergistic effects of the new method (ultrasound) when combined with the currently permitted activities.

4.1 EFFECTS OF ALTERNATIVE 1: No Action

Under the No Action alternative, the minor amendment would not be issued, and the MMRP would be authorized to conduct research/enhancement activities as currently permitted through 2014, and as analyzed in the 2009 EA as Alternative 2. Thus, Section 4.2.2 of the original EA is incorporated by reference into Section 4.1 of this SEA.

Section 4.2.2 of the 2009 EA provided information on the effects of research and enhancement procedures authorized by Permit No. 10137. In summary, capture and handling seals causes temporary stress and could cause injury or death. Baker and Johanos (2002) reported that there were no effects on survival, migration, or condition of seals that were handled, sedated, tagged, blood sampled, and instrumented a year following the handling event. They concluded that conservative selection procedures and careful handling techniques had no deleterious effects on Hawaiian monk seals.

4.2 EFFECTS OF ALTERNATIVE 2: Issue Permit Amendment with Conditions

The proposed action, conducting ultrasound, would be done concurrent with already permitted capture activities that were analyzed in the 2009 EA. Therefore, animals proposed to be sampled via ultrasound will require no additional capture or restraining equipment beyond the present capture protocols for flipper tagging, de-worming, and health assessment/instrumentation protocols. Ultrasound is wholly non-invasive and involves light, momentary, pressure on the animal's skin. Water may be used to ensure proper transducer-skin contact. A portable ultrasound instrument will be used and a trained technician will be conducting the procedures.

Use of ultrasound is common in humans and domesticated animals for diagnostic use, including during pregnancy to monitor fetal development. Ultrasound is also routinely used in pinnipeds to measure blubber thickness as an indication of body condition (Pitcher 1986; Gales and Burton 1987; Beck-Gregor and Smith 1995; Trites and Jonker 2000).

In captive pinnipeds, including captive Hawaiian monk seals, Steller sea lions, and harbor seals, animals have been trained to remain stationed while researchers conduct the ultrasound measurements (Permit Nos. 455-1760, 881-1745 and 14334, and 881-1710). A 2006 biological opinion and environmental assessment analyzing the effects of use of ultrasound on captive Hawaiian monk seals and Steller sea lions indicated no negative

impacts were anticipated from the use of ultrasound; and based on permit reports, no negative effects from use of ultrasound have been reported in these captive pinniped species.

In wild monk seals, additional restraint time would be required, which is expected to be approximately 3 minutes or less. It is not anticipated that this limited addition of time required for the ultrasound measurements will adversely impact the subject animals above that previously analyzed for the original Permit No. 10137.

Ultrasonography is generally considered a safe imaging modality (Merritt 1989), and a meta-analysis of several ultrasonography studies found no statistically significant harmful effects from ultrasonography (Bricker et al., 2000). Adding ultrasound to the permitted studies should enhance the interpretation of data gained during research programs including the de-worming study, a potential enhancement tool for this species, and research on the overall health status of the species.

4.3 SUMMARY OF COMPLIANCE WITH APPLICABLE LAWS, NECESSARY FEDERAL PERMITS, LICENSES, AND ENTITLEMENTS

4.3.1 Endangered Species Act

This section summarizes conclusions resulting from consultations as required under section 7 of the ESA. NMFS informally consulted with the NMFS Endangered Species Division, which concurred in a memorandum (NMFS 2010) that authorizing the use of ultrasound in Permit No. 10137-03 is not likely to adversely affect Hawaiian monk seals beyond the effects of currently authorized capture, restraint, and handling, as assessed in the June 2009 biological opinion on the original permit.

Since completion of the original 2009 EA in June 2009, on July 19, 2009, NMFS received a biological opinion from the USFWS regarding disturbance and incidental mortality of Laysan finch, which concluded that issuance of Permit No. 10137 was not likely to jeopardize the continued existence of Laysan finch. The proposed action would not change the manner or extent of take of Laysan finch; therefore, consultation was not re-initiated for the proposed amendment.

NMFS also informally consulted with the USFWS regarding incidental disturbance of basking green sea turtles in the NWHI. Best management practices were included in Permit No. 10137 to minimize and avoid the unintentional harassment of basking and/or nesting green sea turtles while conducting research or camping on various islands. These measures include the following:

- Walking is prohibited on all beaches, from dusk to dawn, where adult turtles rest.
- All field camps will use maximum light control (shading, minimum wattage, etc.).
- All field camps must avoid disorienting hatchling turtles.

USFWS concurred with NMFS' determination that this action "may affect, but is not likely to adversely affect" terrestrial green sea turtles because researchers will follow the

aforementioned minimization measures and adhere to best management practices to avoid basking and nesting green sea turtles.

4.3.2 Marine Mammal Protection Act

The research and enhancement proposed in the submitted application and additional information provided by the applicant is consistent with permit issuance criteria in the MMPA and NMFS' implementing regulations. The views and opinions of scientists and other organizations knowledgeable of Hawaiian monk seals and matters germane to the application were considered and support NMFS' determinations regarding the application.

The permit amendment would contain the standard terms and conditions included in Permit No. 10137-02, as required by the MMPA and NMFS regulations. These include (1) the effective date of the permit; (2) the number and kinds of marine mammals that may be taken; (3) the location and manner in which they may be taken; and (4) other terms and conditions related to minimizing potential adverse impacts of specific activities (e.g., capture, sampling), monitoring of impacts of research, and reporting to ensure permit compliance.

4.3.3 Other Applicable Laws

Compliance with other applicable laws was discussed in Section 4.3.3 of the original EA. This section is incorporated by reference and includes the National Historic Preservation Act, National Marine Sanctuaries Act, Migratory Bird Treaty Act, Magnuson-Stevens Fishery Conservation and Management Act, Coastal Zone Management Act, Convention on International Trade in Endangered Species of Wild Fauna, and Animal Welfare Act. Issuance of this amendment does not change which laws are applicable and NMFS has concluded that the amendment does not change what other permits are required.

4.5 MITIGATION MEASURES

4.5.1 Physical Environment

Section 4.5.1 of the 2009 EA is included by reference. It provides a discussion of measures to minimize impacts to the physical environment in the NWHI (Monument). This includes such measures as prevention of spread of non-indigenous species from island to island in the NWHI (e.g., cleaning boat hulls, special preparation of gear, clothes, and food), cleaning up areas after field camps, and ensuring safe shipments of biological samples.

4.5.2 Biological Environment

Section 4.5.2 of the 2009 EA discusses mitigation used to minimize impacts to the biological environment, including monk seals and other non-target species. This section is incorporated by reference and includes a summary of permit conditions for Permit No.

10137, which would not change for the proposed amendment. In addition to the researchers' self-imposed mitigation measures, permits issued by NMFS for research on marine mammals and threatened and endangered species contain terms and conditions to minimize potential adverse impacts to the target species, monitoring of impacts of research, and reporting to ensure permit compliance.

No additional mitigation measures would be added to the permit for the addition of ultrasound to already permitted capture activities. Conditions are already included in the permit to:

- avoid disturbance to pregnant and lactating females and nursing pups;
- monitor seals during handling and post-release;
- terminate activities if they are life threatening to seals;
- use trained and experienced personnel to minimize handling time and disturbance;
- use an experienced marine mammal veterinarian for activities involving the sedatives or anesthesia; and
- use sterile or appropriately sanitized equipment to sample seals.

4.6 UNAVOIDABLE ADVERSE EFFECTS

Section 4.6 of the original EA incorporates the unavoidable adverse effects from all permitted activities, and is incorporated by reference. These would not change based on the addition of ultrasound to already permitted captures. Adverse effects from captures include stress, injury, and unintentional mortalities. Disturbance to non-target animals, including green sea turtles, spinner dolphins, and Laysan finch, would unavoidably result from the presence and actions of the researchers. Serious injury or mortality of no more than two Laysan finch is possible.

4.7 CUMULATIVE EFFECTS

The cumulative effects of issuing this minor amendment are no different than issuing original permit, since this proposed action is a minor modification to the original permit analyzed by the 2009 EA. The addition of ultrasound to the permitted activities would not change the effects to the physical, social, economic, and biological environment, other than a minimal additional impact to the target species, which is likely to be insignificant.

Section 4.7 of the 2009 EA is included by reference and summarized here. Requirements of the Monument would be in place to ensure preservation of the NWHI ecosystem and the resources it holds. Activities in the MHI are not likely to have a measurable impact to the environment relative to those activities that already exist (e.g., recreational boating and fishing, use of beaches by tourists), and no permanent damage to the physical environment (e.g., construction) is proposed.

The analysis presented in the 2009 EA provides evidence that if conducted conservatively and with caution, capture activities (where most stress is incurred to the target animal) will not have significant long-term adverse effects for the species; and based on past-

performance, if these measures are implemented in the future, the probability that incidental mortalities would occur during handling events is low.

The MMRP's assessment of the status of the MHI and NWHI subpopulations, research programs on health and foraging, and enhancement activities provide critical data and actions necessary for the management and recovery of this species. Based on the analysis in the 2009 EA, it is highly unlikely that activities carried out by the MMRP would have significant cumulative impacts when considered with other factors affecting monk seals.

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APPENDIX 1: TABLE SPECIFYING THE PROTECTED SPECIES, LOCATIONS, AND MANNER OF TAKING PROPOSED FOR PERMIT NO. 10137-03

Table 1. Authorized annual takes of Hawaiian monk seals. Locations: Hawaiian Archipelago=Main Hawaiian Islands (MHI) and adjacent islets, Kaula Rock, Necker Island (Is.), Nihoa Is., and the Northwestern Hawaiian Islands (NWHI). MHI=Hawaii, Maui, Molokai, Kahoolawe, Lanai, Oahu, Kauai, and Niihau. NWHI=French Frigate Shoals, Laysan Is., Lisianski Is., Pearl and Hermes Reef, Midway Atoll, and Kure Atoll.

Task	Size (Age)	Sex	No. Seals Taken/ Year	No. Takes/ Seal/Year	Type of Takes	Locations	Dates/Time Period And Details
1. Monitoring	Any	Both	150	3	Disturbance from visual observation and photo-identification during ground monitoring and aerial and vessel surveys	MHI	Annually at any time of year.
			50	1		Nihoa Is.	
			50	1		Necker Is.	
			250	5		French Frigate Shoals	
			10	1		Gardner Pinnacles	
			250	3		Laysan Is.	
			225	3		Lisianski Is.	
			200	3		Pearl and Hermes Reef	
			100	2		Midway Atoll	
			150	2		Kure Atoll	
			5	1		Johnston Atoll	

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Task	Size (Age)	Sex	No. Seals Taken/ Year	No. Takes/ Seal/Year	Type of Takes	Locations	Dates/Time Period And Details
2a. Tagging	Any except nursing pups, lactating or obviously pregnant females.	Both	30	3	Restraint, tagging (flipper and PIT), collect flipper plugs, morphometrics (length and girth)	MHI[1]	Annually at any time of year (predominantly during summer field camps). All of the animals may also be taken by Tasks 1 and 3. **[1]Weaned pups in the MHI may also have ultrasound performed concurrent with flipper tagging** [2]At French Frigate Shoals, 35 weaned pups of either sex may have a sonic tag deployed on a third flipper tag (annually over three years).
			25	1		Nihoa Is.	
			15	1		Necker Is.	
			150	3		French Frigate Shoals[2]	
			75	3		Laysan Is.	
			50	3		Lisianski Is.	
			50	3		Pearl and Hermes Reef	
			25	2		Midway Atoll	
			35	2		Kure Atoll	
			1	1		Johnston Atoll	
2b. Retagging	Any except nursing pups, lactating or obviously pregnant females.	Both	100	1	Restraint, retagging (flipper), flipper plugs, morphometrics	Hawaiian Archipelago	Annually at any time of year. Seals may have been taken by disturbance (Task 1) and may have been tagged in previous years.
3. Marking	Any	Both	75	2	Temporary bleach marking	MHI	Annually at any time of year. All of the animals may also

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Task	Size (Age)	Sex	No. Seals Taken/ Year	No. Takes/ Seal/Year	Type of Takes	Locations	Dates/Time Period And Details
			30	2		Nihoa Is.	be taken by disturbance (Task 1) and tagging (Task 2).
			30	2		Necker Is.	
			250	2		French Frigate Shoals	
			250	2		Laysan Is.	
			225	2		Lisianski Is.	
			200	2		Pearl and Hermes Reef	
			100	2		Midway Atoll	
			150	2		Kure Atoll	
			5	1		Johnston Atoll	
4. Health Screening and Foraging Studies	Any healthy seal excluding lactating females with pups and nursing pups	Both	70	2	Restraint, sedation, tagging, blood sampling, swabs, blubber biopsy, weight, morphometrics, **ultrasound**, instrumentation	Hawaiian Archipelago	Annually any time of year. Sixty (60) healthy seals may be instrumented. Recaptures for instrument removal and sampling. All animals may have been taken by Tasks 1-3.

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Task	Size (Age)	Sex	No. Seals Taken/ Year	No. Takes/ Seal/Year	Type of Takes	Locations	Dates/Time Period And Details
	Any unhealthy seal excluding lactating females with pups and nursing pups	Both	30	2	Restraint, sedation, tagging, blood sampling, swabs, blubber biopsy, morphometrics, **ultrasound**, treatment (lance abscesses), humane euthanasia or incidental mortality of 10 moribund animals	Hawaiian Archipelago	Annually at any time of year. Includes humane euthanasia of up to 10 moribund or severely injured seals at discretion of veterinarian authorized over a five-year period. All animals may have been taken by Tasks 1-3.
5. Intestinal Parasite Treatment	Pups $\geq$ 120 days post-weaning and juveniles up to age 3	Both	200	8	Restraint, weight, morphometrics, fecal collection (voided feces or fecal sample collected via fecal loop or digital extraction), treatment (IM praziquantel and oral fenbendazole), **ultrasound**; post-treatment monitoring at approximately 4 week intervals (visual assessments and recapture for weight, morphometrics, and fecal sampling)	Hawaiian Archipelago	Annually, year-round. Initial study trials to include pups $\geq$ 120 days post weaning to juveniles $\leq$ 2 years. Maximum number of seals that may be included in initial study are: French Frigate Shoals: 47 seals; Laysan Island: 41 seals; and Lisianski Island: 29 seals. Treatments may be combined with other activities requiring restraint and sedation
6. Translocation	Nursing pup	Both	20	6	Capture, restraint, and relocation by hand to natural mother or	Hawaiian Archipelago, Johnston Atoll	Establishing/re-establishing maternal association. Annually at any time of

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Task	Size (Age)	Sex	No. Seals Taken/ Year	No. Takes/ Seal/Year	Type of Takes	Locations	Dates/Time Period And Details
					prospective foster mother		year but predominantly during summer field camps. Most takes will occur in the NWHI (intra-island/atoll).
	Weaned Pup	Both	35	3	Capture, restraint, sampling, and relocation from high risk areas via boat, ship, vehicle, or air craft	Hawaiian Archipelago, Johnston Atoll	Risk alleviation. Annually at any time of year. Most takes occur at French Frigate Shoals (intra-atoll) or within the Main Hawaiian Islands.
	Weaned Pup	Both	6	3	Capture, restraint, sedation, sampling, instrumentation, temporary holding, translocation from areas of low survival via boat and ship	NWHI	Seals may be translocated from French Frigate Shoals to Nihoa Island in 2009.
7. Adult Male Removal	Adult	Male	10	2	Capture, restraint, sedation, sampling, instrumentation/trans-location, permanent captivity, or euthanasia	Hawaiian Archipelago; Johnston Atoll	Up to 10 males may be removed over a five year period.
8. Disentangle	Any	Both	As warranted (likely not to exceed 25/year)	>1	Disentanglement and dehooking (with or without capture, sedation, and release)	Hawaiian Archipelago; Johnston Atoll	Annually at any time of year. All animals may have been taken by Tasks 1-3.

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Task	Size (Age)	Sex	No. Seals Taken/ Year	No. Takes/ Seal/Year	Type of Takes	Locations	Dates/Time Period And Details
9. Conduct Necropsies	Any	Both	As warranted	1	Necropsy any seal found dead, that died during restraint, or that was euthanized.	Hawaiian Archipelago; Johnston Atoll	Annually at any time of year.
10. Opportunistic Retrieval of samples	Any	Both	Unlimited samples	Unlimited samples	Collect parts (placentae, scats, spews, and molted fur/skin) from haul out areas	Hawaiian Archipelago; Johnston Atoll	Annually at any time of year but predominantly during summer field camps.
11. Import and Export Parts	Any	Both	Unlimited import/ export	Unlimited samples	Export (and re-import) Hawaiian monk seal samples collected under the authority of this permit. Import (and re-export) Mediterranean monk seal specimens for research related to monk seal conservation	World-wide (including but not limited to Canada, the Netherlands, Scotland, Greece, Australia)	Annually at any time of year.
12. Incidental harassment of monk seals	Any	Both	200	2	Incidental harassment during any research and enhancement activity	Hawaiian Archipelago; Johnston Atoll	Total incidental harassment over all activities.
13. Accidental Mortality	Any	Both	2[2]	1	During any research or enhancement activity	Hawaiian Archipelago; Johnston Atoll	[2]Four (4) accidental mortalities over a five-year period is authorized not to exceed 2 deaths in any one year.