U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Pacific Islands Fisheries Science Center
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Project Instructions

Date Submitted: June 04, 2013

Platform: NOAA Ship *Oscar Elton Sette*

Project Number: SE-13-05

Project Title: Monk Seal Camp Deployment and CRED dive operations

Project Dates: **3 July - 21 July 2013**

Prepared by: _____ Dated: 6/4/13
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Protected Species Division
Pacific Islands Fisheries Science Center

Approved by: _____ Dated: 6/24/2013
Samuel G. Pooley, Ph.D.
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Pacific Islands Fisheries Science Center

Approved by: _____ Dated: 6/27/2013
Commander Robert A. Kamphaus, NOAA
Commanding Officer
Pacific Islands Area Command

I. Overview

A. Brief Summary and Project Period

The NOAA Ship *Oscar Elton Sette* will be engaged as support for a Pacific Islands Fisheries Science Center (PIFSC), National Marine Fisheries Service (NMFS), NOAA, project from July 3 to July 21, 2013 for a total of 19 sea days in the Papahānaumokuākea Marine National Monument (PMNM). Cruise schedule is based on speeds of 10 knots westbound and 9 knots eastbound.

B. Service Level Agreements

Of the 21 DAS scheduled for this project, 0 DAS are funded by the program and 21 DAS are funded by OMAO. This project is estimated to exhibit a high Operational Tempo.

C. Operating Area (See Appendix 1)

The operating area includes transit northwest along the main Hawaiian Islands and Papahanaumokuakea Marine National Monument from Ford Island, Pearl Harbor, to Kure with Hawaiian monk seal surveys and/or camp deployment or recovery at Nihoa Island, Necker Island, French Frigate Shoals, Laysan Island, Lisianski Island, Pearl and Hermes Reef, Midway Atoll, and Kure Atoll.

D. Summary of Objectives

The main objectives for SE 13-05 are:

1. Monk seal camp deployment, resupply, and/or surveys at all sites in the Northwestern Hawaiian Island chain.
2. Office of National Marine Sanctuary survey of French Frigate Shoals, Laysan Island, Lisianski Island, and Pearl and Hermes Reef.
3. Research and monitoring efforts at Kure Atoll and opportunistically at Pearl and Hermes Reef, Lisianski Island, Laysan Island, and French Frigate Shoals by CRED dive teams.
4. Recovery of deep water EARs as time allows at French Frigate Shoals, Lisianksi Island, Pearl and Hermes Reef, and Kure Atoll.

The NOAA ship *Oscar Elton Sette* will be engaged as support for a Protected Species Division (PSD), Pacific Island Fisheries Science Center (PIFSC), National Marine Fisheries Service (NMFS), NOAA, project. The ship will transport personnel, equipment, and supplies to field camps at French Frigate Shoals, Laysan Island, Lisianski Island, Pearl and Hermes Reef, and Kure Atoll. Day surveys will be conducted to census the monk seal population on Midway Atoll, Kure Atoll, Necker Island and Nihoa Island. Office of National Marine Sanctuaries (ONMS) will conduct opportunistic land surveys of French Frigate Shoals, Laysan Island, Lisianski Island, and Pearl and Hermes Reef.

The ship will be supporting dive operations for the Northwestern Hawaiian Island Reef Assessment and Monitoring Program (NWHI RAMP) led by Coral Reef Ecosystem Division (CRED) of Pacific Island Fisheries Center. For this portion of the project, small boats will be deployed from *Oscar Elton Sette* to reach dive survey sites around Kure Atoll and opportunistically at Pearl and Hermes Reef and Lisianski Island. A team of scuba divers will conduct retrieval and deployment of oceanographic instruments. These instruments collect data associated with ocean acidification and general water quality, including water temperature, salinity and other physical and biological characteristics of coral reef environment. In addition, taxonomic diversity of coral reefs will be evaluated by retrieving autonomous reef monitoring structures (ARMS). Data collected during this mission are essential to long term oceanographic monitoring in the Hawaiian Archipelago. The 2013 mission will supplement data collected in previous missions in 2005, 2006, 2007 and 2010.

Additional retrieval of Ecological Acoustic Recorders (EARS) will be conducted at French Frigate Shoals, Lisianski Island, Pearl and Hermes Reef, and Kure Atoll.

The ship will conduct additional shipboard 500 m conductivity-temperature-depth (CTD) casts and water samples opportunistically at designated permanent stations along the Hawaiian Archipelago.

E. Participating Institutions

Hawaiian Monk Seal Research Program of the Protected Species Division of the NOAA Pacific Islands Fisheries Science Center (HMSRP/PSD/PIFSC); Coral Reef Ecosystem Division of the NOAA Pacific Islands Fisheries Science Center (CRED/PIFSC); Joint Institute for Marine and Atmospheric Research (JIMAR); State of Hawaii Department of Land and Natural Resources (DLNR), Department of Fish and Wildlife (DOFAW); NOAA Office of National Marine Sanctuaries (ONMS); and US Fish and Wildlife Service (USFWS)

F. Personnel/Science Party: name, title, gender, affiliation, and nationality

Name (Last, First)	**Title**	**Date Aboard**	**Date Disembark**	**Gender**	**Affiliation**	**Nationality**
Lopez, Jessica	Field Research Supervisor	7/3/2013	7/21/2013	F	JIMAR	USA
Farry, Shawn	Biological Research Technician	7/3/2013	7/6/2013	M	JIMAR	USA

Cook, Benjamin	Biological Research Technician	7/3/2013	7/6/2013	M	JIMAR	USA
McAtee, Carrie	Biological Research Technician	7/3/2013	7/6/2013	F	JIMAR	USA
Kelly, Jeffrey	JIMAR Volunteer	7/3/2013	7/6/2013	M	JIMAR	USA
Sullivan, Mark	Biological Research Technician	7/3/2013 7/18/2013	7/6/2013 7/21/2013	M	JIMAR	USA
Atkins, Paul	Collaborator	7/3/2013 7/18/2013	7/6/2013 7/21/2013	M	Pangolin Pictures	USA
Kwiatkowski, Daniel	Collaborator	7/3/2013 7/18/2013	7/6/2013 7/21/2013	M	Pangolin Pictures	USA
Taylor, Whitney	Biological Research Technician	7/3/2013	7/8/2013	F	JIMAR	USA
Martin, Summer	JIMAR volunteer	7/3/2013	7/8/2013	F	JIMAR	USA
Tabata, Ryan	JIMAR volunteer	7/3/2013	7/8/2013	M	JIMAR	USA
Becker, Brenda	Wildlife Biologist	7/3/3013	7/21/2013	F	NOAA	USA
Wurth, Tracy	Monk Seal Biological Technician	7/3/2013	7/9/2013	F	JIMAR	USA
Matsuoka, Koa	JIMAR volunteer	7/3/2013	7/9/2013	M	JIMAR	USA
Farrer, Jessica	Biological Research Technician	7/3/2013	7/10/2013	F	JIMAR	USA

Morioka, James	Biological Research Technician	7/3/2013	7/10/2013	M	JIMAR	USA
Schoebel, Florent	JIMAR volunteer	7/3/2013	7/10/2013	M	JIMAR	France
Yoshinaga, Chad	Program Management Specialist	7/3/2013 7/14/2013	7/10/2013 7/21/2013	M	NOAA	USA
Young, Charles	Oceanographer	7/11/2013	7/21/2013	M	JIMAR	USA
Pomeroy, Noah	Marine Ecosystems Research Specialist	7/11/2013	7/21/2013	M	JIMAR	USA
Gove, Jameson	Oceanographer	7/11/2013	7/21/2013	M	JIMAR	USA
Reardon, Kerry	Marine Ecosystems Research Specialist	7/11/2013	7/21/2013	F	JIMAR	USA
Benally, Ty	Cooperating Scientist	7/3/2013	7/11/2013	M	USFWS	USA
Korrea, Kalewa	Cooperating Scientist	7/3/2013	7/11/2013	M	ONMS	USA
Siddiqi, Afsheen, A	Cooperating Scientist	7/11/2013	7/12/2013	F	DLNR	USA

G. Administrative

1. Points of Contacts:

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2. Diplomatic Clearances

This project involves Marine Scientific Research in waters under the jurisdiction of the United States. Diplomatic clearances are not applicable.

3. Licenses and Permits

This cruise will be conducted under the following permits: Scientific Research and Enhancement Permit No. 10137-07 issued per the Endangered Species Act and Marine Mammal Protection Act, by NMFS Office of Protected Resources to the PIFSC; Conservation and Management Permit PMNM-2013-001 and PMNM-2013-0914 issued by the Papahānaumokuākea Marine National Monument (PMNM) to the PMNM Co-Trustees (NOAA, USFWS, and the State of Hawaii); and Conservation and Management Permit PMNM-2013-002 issued by PMNM to Commanding Officer, R/V *Oscar Elton Sette*.

II. Operations

A. Project Itinerary

The following plans can be considered only a guide as to how the Chief Scientist expects the surveys to progress without being able to predict the weather, operational and scheduling problems, and equipment failures. In particular, it should be noted that the amount of time required at each of the working areas is approximate and may be altered, based on weather or the progress of the survey.

3 July	**Pearl Harbor**: Embark Lopez, Farry, Sullivan, Kelly, Cook, McAtee, Benally, Korrea, Taylor, Martin, Tabata, Farrer, Scoebel, Yoshinaga, Becker, Kwiatkowski Atkins. Depart Ford Island, Pearl Harbor at 1000 en route to Nihoa Island
4 July	**Nihoa Island**: Arrive Nihoa Island 0800. Launch SE-2 and deploy shore team to conduct seal census of island. Launch SE-2 at 1500 and recover shore team.
5 July	**Necke**r **Island**: Arrive Necker Island 0800. Launch SE-2 and deploy shore team to conduct seal census of island. Launch SE-2 at 1500 and recover shore team. 1600 depart en route to French Frigate Shoals.
6 July	**French Frigate Shoals:** Arrive French Frigate Shoals 0800. Disembark Farry, Sullivan, Kelly, Cook, McAtee, Kwiatkowski, and Atkins. Offload equipment and supplies including 2 17-ft Boston Whaler boats. Off-load USFWS supplies. Conduct ONMS survey. Depart French Frigate Shoals 1600 en route to Laysan Island.
8 July	**Laysan Island**: Arrive Laysan Island 0800. Disembark Taylor, Becker, Martin, Tabata. Offload NMFS equipment and supplies. Conduct ONMS survey. Depart Laysan Island 1600 en route to Lisianksi Island.
9 July	**Lisianski Island:** Arrive Lisianski Island 0800. Embark Morioka. Offload equipment and supplies. Conduct ONMS survey. Depart Lisianski Island 1600 en route to Pearl and Hermes Reef.
10 July	**Pearl and Hermes Reef:** Arrive Pearl and Hermes Reef 0800. Disembark Farrer, Morioka, Scoebel, and Yoshinaga. Offload equipment and supplies including one 5-meter inflatable boat, and 5.5 meter rigid hull inflatable boat, and 8 55-gallon drums of gasoline. Conduct ONMS survey. 1700 Depart en route to Midway Atoll.
11 July	**Midway Atoll:** Arrive Midway 0800. Conduct monk seal survey. Load CRED gear including up to 400 gallons of gasoline (up to 300 in 55-gallon drums). 2000 Embark Gove, Young, Reardon, Pomeroy and Siddiqi.
12 July	**Midway Atoll/Kure Atoll:** 0600 Depart Midway atoll en route to Kure Atoll. 1200 Arrive Kure Atoll. Offload NMFS and DLNR gear. Disembark Siddiqi. Recover EAR. Conduct CRED dive ops using 19ft Rubber Duck.
13 July	**Kure Atoll:** Disembark Lopez, to conduct monk seal survey. Conduct CRED dive ops using 19ft Rubber Duck and SE-4.
14 July	**Kure Atoll:** Conduct monk seal survey. Conduct CRED dive ops using 19ft Rubber Duck and SE-4. Load up to 12,000 lbs marine debris. Embark Lopez. Depart 1700 en route to Pearl and Hermes Reef.

15 July	**Pearl and Hermes Reef:** Conduct seal survey. Conduct CRED dive ops using 19ft Rubber Duck. Load minimal supplies. Embark Yoshinaga. Recover EAR. 1700 Depart en route to Lisianski Island.
16 July	**Lisianski Island:** Conduct seal survey. Conduct CRED dive ops using 19ft Rubber Duck. Load minimal supplies. Embark Wurth, Matsuoka. Recover EAR. 1700 Depart en route to Laysan Island.
17 July	**Laysan Island:** Conduct seal survey.Load minimal supplies. Embark Becker. 1700 Depart en route to French Frigate Shoals.
18 July	Transit
19 July	**French Frigate Shoals:** Load minimal supplies. Offload up to 6 55-gallon drums of gasoline. Embark Sullivan, Kwiatkowski, and Atkins. Recover EAR. 1700 Depart en route to Pearl Harbor.
20 July	Transit
21 July	**Pearl Harbor.** Disembark Lopez, Sullivan, Becker, Wurth, Matsuoka, Gove, Young, Reardon, Pomeroy, Kwiatkowski, and Atkins. End of project.

B. Staging and Destaging

Staging Plan – On 1 July, 0800, begin loading all supplies and equipment including a 20-ft container, 20ft boat platform and cradle, five (5) boats, six (6) 55-gallon drums of gasoline, 400 gallons of fuel, and 30 nitrogen dewars w/liquid nitrogen. On 2 July, continue loading supplies and equipment. Load fresh and frozen food.
Destaging Plan - On 22 July, Ship's crane and operator support will be needed to transfer marine debris into 20-ft roll off bins to transport to Schitzer Steel in preparation for disposal. Additional crane support will be needed to off-load 20-ft container, scientific gear, equipment and 19ft Rubber Duck onto the pier. The Chief Scientist will coordinate in-port off-load operations with the *Oscar Elton Sette*'s Operations Officer.

C. Operations to be Conducted

The Chief Scientist has the authority to revise or alter the technical portion of the instructions as work progresses, provided that, after consultation with the Commanding Officer, it is ascertained that the proposed changes will not (1) jeopardize the safety of personnel or the ship, (2) exceed the overall time allotted for the project, (3) result in undue additional expenses, and (4) alter the general intent of the project instructions. In addition, the Chief Scientist must notify the Office of the Science Director of the Pacific Islands Fisheries Science Center at the earliest opportunity prior to making (1) deviations from the general cruise track or area of operations noted in the project instructions, (2) changes or additions of research operations to those specified in the project instructions, or (3) port calls not specifically identified in the project instructions.

The main projects for SE 13-05 are:

1. Monk seal camp deployment, resupply, and surveys at all sites in the Northwestern Hawaiian Island chain.
2. Office of National Marine Sanctuary (ONMS) survey of French Frigate Shoals, Laysan Island, Lisianski Island, and Pearl and Hermes Reef.
3. Research and monitoring efforts at Kure Atoll and opportunistically at Pearl and Hermes Reef, Lisianski Island, Laysan Island, and French Frigate Shoals by CRED dive teams.
4. Recovery of deep water EARs as time allows at French Frigate Shoals, Lisianksi Island, Pearl and Hermes Reef, and Kure Atoll.

PSD teams will be establishing field camps at French Frigate Shoals, Laysan Island, and Pearl and Hermes Reef, resupplying and picking up a monk seal camp at Lisianski Island, conducting seal surveys at Midway Atoll and Kure Atoll, and resupplying existing DLNR camp at Kure Atoll. Personnel and equipment transport to the islands will be conducted with SE-2 and SE-4 primarily. Opportunistic monk seal surveys will be conducted on Nihoa and Necker Islands by PSD personnel.

ONMS and USFWS personnel will survey land sites at French Frigate Shoals, Laysan Island, Lisianski Island, and Pearl and Hermes Reef opportunistically while on site for field camp deployments.

Research and monitoring efforts at Kure Atoll and opportunistically at Pearl and Hermes Reef, Lisianski Island, Laysan Island, and French Frigate Shoals will require extensive diving operations (both scuba and snorkeling) to be supported by *Oscar Elton Sette*. Up to two small boats will be operating simultaneously during the CRED dive operations. The *Oscar Elton Sette* 16ft Northwind and the CRED provided 19ft SAFE boat. The scientific objectives of this portion of the project are to:

1. Perform conductivity, temperature and depth recorder (CTD) casts to gather continuous profiles of temperature and salinity against depth in shallow water environments.
2. Conduct water sampling (which includes dissolved inorganic carbon (DIC), total alkalinity (TA), salinity, dissolved inorganic nutrients, and chlorophyll-a) at CAU sites and benthic survey sites to provide a measure of the carbonate system upon the reef ecosystems CRED visits.
3. Complete removal, maintenance, replacement and/or installation of various oceanographic instruments, biological platforms, and acoustic monitoring devices at study sites to provide valuable long-term oceanographic and ecological data sets.

Sub-surface temperature recorders (STR) are used to construct a time series of water temperature data at various locations on a reef for the duration of their deployment. These small instruments are placed on the sea floor and in coral reefs and provide high resolution data sets of ocean temperature. STRs are cylindrical bodies measuring 2.5 cm in diameter and 30 cm in length. Two cylinders are typically strapped together, one is the instrument, and the other is a weight.

Sea Surface Temperature (SST) Buoys float on the sea surface and are moored to a weight. The instrument provides high resolution SST which is transmitted to the Pacific Islands Fisheries Science Center via satellite. SST are a 0.5 m diameter buoy attached to a floating mooring line preventing contact with the sea floor and secured to a 250lb anchor weight which is deployed with a lift bag onto a sand substrate.

Calcification Accretion Units (CAUs) and Bioerosion Monitoring Units (BMUs) are used to monitor calcification and bioerosion rates across reefs and islands experiencing different physical oceanography and local human impacts. CAUs study the in situ ecological impacts of ocean acidification by measuring variations in the calcification rates of stony corals and crustose coralline algae. A CAU is a small device and is typically deployed in a set of five at a REA site. The device consists of a pair of 10cm x 10cm poly vinyl chloride plates that are attached to the reef with permanent stainless steel transect markers and underwater epoxy. The BMU is a tool used to quantify biological erosion rates on coral reefs. The BMU is made of a 1cm x 2cm x 5cm block of calcium carbonate rock mounted on a similarly sized piece of polyvinylchloride plate. It is attached to the same permanent stainless steel transect marker upon which the CAU is mounted. The BMU rests flush with the seafloor and upon retrieval will be measured for changes in weight and density using a CT Scan. Only a subset of CAUs will have BMUs collocated, as CRED plans to only deploy 50 BMUs throughout the Papahanaumoluakea Marine National Monument.

Conductivity-Temperature-Depth (CTD) casts are used to collect information about the vertical salinity and temperature structure of the water column. An instrument array is lowered and retrieved above the sea floor by hand and line from a small boat or carried by a diver. Shipboard CTD casts may be performed for night operations.

Oceanographic Water Sampling: Niskin bottles are used by SCUBA divers to collect water samples. Three water samples will be associated with each REA site that has CAU's deployed. Two samples of surface water will be collected near the REA site and one water sample will be collected at the reef, alongside the deployed CAUs. An additional water sample will be collected at the reef by the Benthic Team on each dive that team conducts. The standard sampling depths will be 1m depth (or surface sample) and ~15m depth (or reef sample). For the DIC/TA water sample, 200µL of saturated

Mercuric Chloride (HgCl2) solution will be used to halt biological activity in the water sample, as per directed by the Guide to Best Practices for Ocean CO2 Measurements. Water samples may also be collected with a remote auto-sampler (RAS) where near reef samples can be collected over a variety of times. Collecting water samples autonomously allows for the investigation of diel variability in the carbonate system. The RAS units will be deployed for 2-3 days and removed before CRED departs an island or region. The remote auto-samplers are diver portable and do not require lift bags or working divers.

Autonomous Reef Monitoring Structures (ARMS): ARMS are small, long-term collecting devices designed to mimic the structural complexity of a coral reef and attract colonizing invertebrates. They are a standard and systematic device used to measure and understand cryptofauna biodiversity. ARMS are composed of nine 23 cm x 23 cm gray, type 1 PVC plates staked in an alternating series of open and obstructed formats attached to a 35 cm x 45 cm base plate. ARMS are retrieved from the bottom by placing them within a mesh-lined container to prevent escape of motile organisms and then transported back to the Sette for processing. Onboard the ship, each ARMS unit is disassembled plate by plate, with both sides photo-documented for spatial analyses of species coverage. The motile fraction is sieved using 2 mm, 500 µm, and 100 µm geologic sieves to create three size fractions that are preserved in 95% ethanol. After photography, plates are soaked in 95% ethanol and then scraped with a spatula and preserved in ethanol. The largest fraction (> 2mm) is processed via standard voucher-based molecular barcoding techniques. The two smaller motile fractions are crushed via mortar and pestle for DNA extraction and metagenomic analysis and the scraped encrusting fraction is homogenized with a Breville blender for future metagenomic analysis to be conducted by our partners at the Smithsonian, San Diego State University, Moss Landing Marine Laboratories and the Hawaii Institute of Marine Biology.

Acoustic Doppler Current Profilers (ADCP) and Wave and Tide Recorders (WTR) collect information on water velocity, water level, and waves. These are typically a cylindrical body approximately 10 cm in diameter and 80 cm in length. The instrument is typically deployed in conjunction with a ~250 lb anchor weight. ADCP Deployments involve lowering an instrument(s) attached to a weight. A lift bag is used in this procedure.

Ecological Acoustic Recorder (EAR) units: The EAR is a digital, low power system that records ambient sounds at frequencies up to 30 kHz on a programmable schedule. They collect information on ocean sounds (natural and anthropogenic). EAR units are attached to weights and deployed on the seafloor. There are two types of EARs presently deployed in the Monument, shallow EARs and deep EARs. Shallow EARs consist of a cylindrical body approximately 10 cm in diameter and 80 cm in length. They are typically deployed

in conjunction with a ~250 lb anchor weight. A lift bag is used in this procedure. Deep EARs are composed of the same cylindrical body described above, as well as a syntactic foam float measuring approximately 40 cm in diameter and 50 cm in length, a cylindrical acoustic release measuring approximately 10 cm in diameter and 60 cm in length, and approximately 150 lbs of anchoring weight in the form of a concrete block and natural fiber sand-filled bags. The recovery of the deep EAR takes place from the ship or via small boat and does not involve diving. While the vessel is in vicinity of the deep EAR location, a deckhand places a transducer over the side of the boat that is attached to a command box on deck. An enable code is entered to locate instrument and determine its range from the boat. Once the instrument is confirmed to be on site via a response to the command box, the release command is entered. The instrument will start ascending. On average ascending time is about one meter per second. The instrument package will be visible on surface by an orange syntactic foam collar and flag. Deck crew will then bring the instrument onboard.

Shipboard CTD casts will opportunistically be conducted to a depth of 500 m at the permanent CTD cast stations to examine oceanographic conditions and water quality.

D. Dive Plan

All dives are to be conducted in accordance with the requirements and regulations of the NOAA Diving Program (http://www.ndc.noaa.gov/dr.html) and require the approval of the ship's Commanding Officer.

The Dive Plans for SE13-05 are presented in *Appendix 2* (attached file).

E. Applicable Restrictions

Conditions which preclude normal operations: Poor weather conditions, equipment failure, safety concerns, and/or unforeseen circumstances, may alter or prohibit operations as planned. At these times the Chief Scientist, Operational Lead, and Commanding Officer will determine the appropriate plan of action.

1. "Take" of Protected Species
    a. Under the Marine Mammal Protection Act and Endangered Species Act it is unlawful to take a protected species. The MMPA defines take as "harass, hunt, capture, kill or collect, or attempt to harass, hunt, capture, kill or collect." 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." An incidental take is one that incidental to, but not the purpose of, otherwise lawful activities.
    b. In the event of an incidental take of a marine mammal or federally listed threatened or endangered species during the cruise, the chief scientist will report the incident to the PIFSC Director and Deputy Director IMMEDIATELY via

IRIDIUM, INMARSAT, and email. Samples should not be collected from any incidentally taken marine mammals, sea turtles, or seabirds. Photos of the incidentally caught animal should be taken to properly identify the species, but the process of taking the photos must not contribute to the further injury of the animal. These photos are for the purposes of internal NMFS verification only, and must not be shared outside of PIFSC or the Office of Protected Resources (i.e., do not post the photos on the internet).

c. PIFSC has developed mitigation measures for our fisheries and ecosystem research cruises to avoid take and comply with the Lecky, Murawski, and Merrick guidance. A copy of these documents is available at https://sites.google.com/a/noaa.gov/pifsc-science-operations/home/nepa-permits/protected-species-mitigation-measures and on the ship's bridge.

III. Equipment

A. Equipment and Capabilities provided by the ship (itemized)

Equipment: To successfully meet the project objectives, the scientific compliment aboard will need the ship to provide the items listed below. Prior to sailing, the ship's crew will inspect these items to ensure they are in proper working order for the project:

120 cu ft freezer and 120 cu ft refrigerator space for food and quarantine equipment
Aft Deck Crane
J Frame
CTD Equipment
15-ft SAFE boat
16-ft Achilles inflatable boats
Handheld VHF radios for ship's small boats
Global Positioning System units for small boats
Storage of Unleaded Fuel
Scientific Computer System
Adequate fresh water for gear wash down and filling up to 300 6-gallon water jugs
Iridium phone
Field lunches for scientific personnel not disembarking to field camps
Air compressor
Dive Air compressor
Scientific freezer for storage of food, specimens, equipment, CAUs, water quality samples, and ARMS samples

Capabilities: It is requested that the ship provide the following:

1. Permission for Scientists to set up gear the week of departure, as well as assistance from the ship's Deck Department in craning and staging large gear during loading.

2. Permission for scientists to schedule and complete Dive Neurological Assessments with the Ship Medical Officer before departure from Pearl harbor.
3. An experienced survey technician is requested to conduct day and nighttime shipboard CTDs operations.

Small boat and coxswain support using SE-2 and SE-4 will be needed for transfer of personnel and equipment to islands and additional ship coxswain for CRED Safeboat dive operations at Kure Atoll and Pearl and Hermes Atoll.

Operational dive compressor and operator that has been air tested within the last 12 months.

One NOAA diver to participate in scientific operations, as manning allows.

To support ARMS processing, salt water access and compresses air sources and connections are needed in location where ARMS processing occurs and live well is staged.

B. Equipment and Capabilities provided by the scientists (itemized)

HMSRP:
1000 lbs bait
~1200 5-gal buckets
5 freezers
1 pallet plastic tables and cot boards
~ 25 pelican cases (various sizes)
2 rack tent poles
1 pallet tent stakes
16 large pallet tubs field gear (4 ft by 4 ft)
5 5-gal buckets refrigerated food
8 80-qt. coolers frozen food
25 36-liter nitrogen dewars
20 12-v deep cycle batteries (in pallet tubs)
5 Honda generators
3 empty 55-gallon drums for gasoline
700 gallons non-ethanol gasoline (6 full 55-gallon drums 400 gallons - hip tanks)
1 18-ft RHIB (PHR)
1 5-meter inflatable boat (PHR)
2 17-ft Boston Whaler boat (FFS)

CRED:
1 19-ft Rubber Duck safe boat

1 20-ft frame and 20ft cradle for SAFE boat
3 full totes (49”x45”x31”)
5 half totes (43”x30”x29”)
1 Hazmat Container (34”x34”x65)
6 Large Action Packers (26”x18”x16”)
2 Small action packer (19”x14”x22”)
10 Clear food storage tote for sample storage (18”x9”x12”)
3 20L Carboys
12 Plastic totes (21”x15”x12”)
2 White large coolers (42”x18”21”)
2 White water sample coolers (18”x24”x18”)
1 Bucket (24”diameter)
2 Gray plastic totes (24”x36”x24”)
1 Microbial minifridge (24”x24”x24”)
1 Microbial Nitrogen dewar (14”dia x33”)
32 2lb weights (12”x12”)
16 STR, in milk crate (13”x13)
2 Seabird 19+ (shallow CTD) ~(42”x12”x12”)
2 Aquadopp Current Profilers (4”x36”)
1 Tool box for diving equipment (26”x11”x12”)
1 55 Gallon trash can for dive gear rinse

IV. Hazardous Materials

A. Policy and Compliance

The Chief Scientist is responsible for complying with FEC 07 Hazardous Materials and Hazardous Waste Management Requirements for Visiting Scientific Parties (or the OMAO procedure that supersedes it). By Federal regulations and NOAA Marine and Aviation Operations policy, the ship may not sail without a complete inventory of all hazardous materials by name and the anticipated quantity brought aboard, MSDS and appropriate neutralizing agents, buffers, or absorbents in amounts adequate to address spills of a size equal to the amount of chemical brought aboard, and a chemical hygiene plan. Documentation regarding those requirements will be provided by the Chief of Operations, Marine Operations Center, upon request.

Per FEC 07, the scientific party will include with their project instructions and provide to the CO of the respective ship 60 to 90 days before departure:

- A list of hazardous materials by name and anticipated quantity
- A list of neutralizing agents, buffers, and/or absorbents required for these hazardous materials, if they are spilled
- A chemical hygiene plan.

Upon embarkation and prior to loading hazardous materials aboard the vessel, the scientific party will provide to the CO or their designee:

- An inventory list showing actual amount of hazardous material brought aboard
- An MSDS for each material
- Confirmation that neutralizing agents and spill equipment were brought aboard

Upon departure from the ship, scientific parties will provide the CO or their designee an inventory of hazardous material indicating all materials have been used or removed from the vessel. The CO's designee will maintain a log to track scientific party hazardous materials. MSDS will be made available to the ship's complement, in compliance with Hazard Communication Laws.

Scientific parties are expected to manage and respond to spills of scientific hazardous materials. Overboard discharge of scientific chemicals is not permitted during projects aboard NOAA ships.

B. Radioactive Isotopes

The Chief Scientist is responsible for complying with OMAO 0701-10 Radioactive Material aboard NOAA Ships. Documentation regarding those requirements will be provided by the Chief of Operations, Marine Operations Center, upon request.
At least three months in advance of a domestic project and eight months in advance of a foreign project start date the shall submit required documentation to MOC-CO, including:

1. NOAA Form 57-07-02, Request to Use Radioactive Material aboard a NOAA Ship
2. Draft Project Instructions
3. Nuclear Regulatory Commission (NRC) Materials License (NRC Form 374) or a state license for each state the ship will operate in with RAM on board the ship.
4. Report of Proposed Activities in Non-Agreement States, Areas of Exclusive Federal Jurisdiction, or Offshore Waters (NRC Form 241), if only state license(s) are submitted).
5. MSDS
6. Experiment or usage protocols, including spill cleanup procedures.
   Scientific parties will follow responsibilities as outlined in the procedure, including requirements for storage and use, routine wipe tests, signage, and material disposal as outline in OMAO 0701-10.
   All radioisotope work will be conducted by NRC or State licensed investigators only, and copies of these licenses shall be provided per OMAO 0701-10 at least three months prior to the start date of domestic projects and eight months in advance of foreign project start dates.

C. Inventory (itemized)

Common Name	Concentration	Amount	Notes
PSD:			
Gasoline		700 gal	
Propane		16 cylinders	various sizes
Formaldehyde	37%	10 gallons	
Isopropyl Alcohol	91%	24 pints	
Liquid Nitrogen		850 liters	in 34 liter dewars
Betadine		6 gallons	
Clorox Bleach		6 gallons	
Accel disinfectants		6 gallons	
12 volt batteries		10	
CRED:			
Commercial Bleach		4L	Store in Hazmat cabinet
DMSO buffer		4L	Store in Hazmat cabinet
Dynamic descaler (Aqueous Hydrogen Chloride)		38L	Biodegreadable: neutralize with water
95% Ethyl Alcohol	190 proof	114 L	Store in Hazmat cabinet. Daily use quanitty store in secondary containment in wet lab or fantail while in use
Gasoline		150 gallons	2 (55 gallons drums) to be loaded in

			Midway Atoll
Mercuric Chloride (200µl of $HgCl_2$ added to 500ml of seawater)		120 ml	Scientific samples consist of 200µl of $HgCl_2$ solution in 500ml of seawater
Pool Time Shock XtraBlue 6 in 1 Pool shock (Primary Sodium Dichloro-S-Triazinetrione-Dihydrate)		2.3 kg	Corrosive, Contained in 1-lb bags with lidded 5-gal bucket in Hazmat Container

V. Additional Projects

A. Supplementary ("Piggyback") Projects

The cruise will transfer supplies to Kure Atoll for DLNR. See appendix for cooperating agencies' cargo.

B. NOAA Fleet Ancillary Projects

VI. Disposition of Data and Reports

A. Data Responsibilities

B. Pre and Post Project Meeting

Prior to departure, the Chief Scientist will conduct a meeting of the scientific party to train them in sample collection and inform them of project objectives. Some vessel protocols, e.g., meals, watches, etiquette, etc. will be presented by the ship's Operations Officer.

Post-Project Meeting: Upon completion of the project, a meeting will normally be held at 0830 (unless prior alternate arrangements are made) and attended by the ship's officers, the Chief Scientist and members of the scientific party to review the project. Concerns regarding safety, efficiency, and suggestions for improvements for future projects should be discussed. Minutes of the post-project meeting will be distributed to all participants by email, and to the Commanding Officer and Chief of Operations, Marine Operations Center.

C. Ship Operation Evaluation Report

Within seven days of the completion of the project, a Ship Operation Evaluation form is to be completed by the Chief Scientist. The preferred method of transmittal of this form is via email to omao.customer.satisfaction@noaa.gov. If email is not an option, a hard copy may be forwarded to:

Director, NOAA Marine and Aviation Operations
NOAA Office of Marine and Aviation Operations
8403 Colesville Road, Suite 500
Silver Spring, MD 20910

VII. Miscellaneous

A. Meals and Berthing

The ship will provide meals for the scientists listed above. Meals will be served 3 times daily beginning one hour before scheduled departure, extending throughout the project, and ending two hours after the termination of the project. Special dietary requirements for scientific participants will be made available to the ship's command at least seven days prior to the survey.

Berthing requirements, including number and gender of the scientific party, will be provided to the ship by the Chief Scientist. The Chief Scientist and Commanding Officer will work together on a detailed berthing plan to accommodate the gender mix of the scientific party taking into consideration the current make-up of the ship's complement. The Chief Scientist is responsible for ensuring the scientific berthing spaces are left in the condition in which they were received; for stripping bedding and linen return; and for the return of any room keys which were issued. The Chief Scientist is also responsible for the cleanliness of the laboratory spaces and the storage areas utilized by the scientific party, both during the project and at its conclusion prior to departing the ship.

All NOAA scientists will have proper travel orders when assigned to any NOAA ship. The Chief Scientist will ensure that all non NOAA or non Federal scientists aboard also have proper orders. It is the responsibility of the Chief Scientist to ensure that the entire scientific party has a mechanism in place to provide lodging and food and to be reimbursed for these costs in the event that the ship becomes uninhabitable and/or the galley is closed during any part of the scheduled project.

All persons boarding NOAA vessels give implied consent to comply with all safety and security policies and regulations which are administered by the Commanding Officer. All spaces and equipment on the vessel are subject to inspection or search at any time. All personnel must comply with OMAO's Drug and Alcohol Policy dated May 7, 1999 which forbids the possession and/or use of illegal drugs and alcohol aboard NOAA Vessels.

B. Medical Forms and Emergency Contacts

The NOAA Health Services Questionnaire (NHSQ, Revised: 02 JAN 2012) must be completed in advance by each participating scientist. The NHSQ can be obtained from the Chief Scientist or the NOAA website http://www.corporateservices.noaa.gov/~noaaforms/eforms/nf57-10-01.pdf. The

completed form should be sent to the Regional Director of Health Services at Marine Operations Center. The participant can mail, fax, or scan the form into an email using the contact information below. The NHSQ should reach the Health Services Office no later than 4 weeks prior to the project to allow time for the participant to obtain and submit additional information that health services might require before clearance to sail can be granted. Please contact MOC Health Services with any questions regarding eligibility or completion of the NHSQ. Be sure to include proof of tuberculosis (TB) testing, sign and date the form, and indicate the ship or ships the participant will be sailing on. The participant will receive an email notice when medically cleared to sail if a legible email address is provided on the NHSQ.
Contact information:

Regional Director of Health Services
Marine Operations Center – Pacific
2002 SE Marine Science Dr.
Newport, OR 97365
Telephone 541-867-8822
Fax 541-867-8856
Email MOP.Health-Services@noaa.gov

Prior to departure, the Chief Scientist must provide an electronic listing of emergency contacts to the Executive Officer for all members of the scientific party, with the following information: contact name, address, relationship to member, and telephone number.

C. Shipboard Safety

Wearing open-toed footwear or shoes that do not completely enclose the foot (such as sandals or clogs) outside of private berthing areas is not permitted. Steel-toed shoes are required to participate in any work dealing with suspended loads, including CTD deployments and recovery. The ship does not provide steel-toed boots. Hard hats are also required when working with suspended loads. Work vests are required when working near open railings and during small boat launch and recovery operations. Hard hats and work vests will be provided by the ship when required.

D. Communications

A progress report on operations prepared by the Chief Scientist may be relayed to the program office. Sometimes it is necessary for the Chief Scientist to communicate with another vessel, aircraft, or shore facility. Through various means of communications, the ship can usually accommodate the Chief Scientist. Special radio voice communications requirements should be listed in the project instructions. The ship's primary means of communication with the Marine Operations Center is via e-mail and the Very Small

Aperture Terminal (VSAT) link. Standard VSAT bandwidth at 128kbs is shared by all vessels staff and the science team at no charge. Increased bandwidth in 30 day increments is available on the VSAT systems at increased cost to the scientific party. If increased bandwidth is being considered, program accounting is required it must be arranged at least 30 days in advance.

E. IT Security

Any computer that will be hooked into the ship's network must comply with the *NMAO Fleet IT Security Policy* 1.1 (November 4, 2005) prior to establishing a direct connection to the NOAA WAN. Requirements include, but are not limited to:

1. Installation of the latest virus definition (.DAT) file on all systems and performance of a virus scan on each system.
2. Installation of the latest critical operating system security patches.
3. No external public Internet Service Provider (ISP) connections.

Completion of these requirements prior to boarding the ship is required. Non-NOAA personnel using the ship's computers or connecting their own computers to the ship's network must complete NOAA's IT Security Awareness Course within 3 days of embarking.

F. Foreign National Guests Access to OMAO Facilities and Platforms

All foreign national access to the vessel shall be in accordance with NAO 207-12 and RADM De Bow's March 16, 2006 memo (http://deemedexports.noaa.gov). National Marine Fisheries Service personnel will use the Foreign National Registration System (FRNS) to submit requests for access to NOAA facilities and ships. The Departmental Sponsor/NOAA (DSN) is responsible for obtaining clearances and export licenses and for providing escorts required by the NAO. DSNs should consult with their designated NMFS Deemed Exports point of contact to assist with the process.

The following are basic requirements. Full compliance with NAO 207-12 is required. Responsibilities of the Chief Scientist:

1. Provide the Commanding Officer with the e-mail generated by the FRNS granting approval for the foreign national guest's visit. This e-mail will identify the guest's DSN and will serve as evidence that the requirements of NAO 207-12 have been complied with.
2. Escorts – The Chief Scientist is responsible to provide escorts to comply with NAO 207-12 Section 5.10, or as required by the vessel's DOC/OSY Regional Security Officer.
3. Ensure all non-foreign national members of the scientific party receive the briefing on Espionage Indicators (NAO 207-12 Appendix A) at least annually or as required by the servicing Regional Security Officer.

4. Export Control - Ensure that approved controls are in place for any technologies that are subject to Export Administration Regulations (EAR).

The Commanding Officer and the Chief Scientist will work together to implement any access controls necessary to ensure no unlicensed export occurs of any controlled technology onboard regardless of ownership.

Responsibilities of the Commanding Officer:

1. Ensure only those foreign nationals with DOC/OSY clearance are granted access.
2. Deny access to OMAO platforms and facilities by foreign nationals from countries controlled for anti-terrorism (AT) reasons and individuals from Cuba or Iran without written NMAO approval and compliance with export and sanction regulations.
3. Ensure foreign national access is permitted only if unlicensed deemed export is not likely to occur.
4. Ensure receipt from the Chief Scientist or the DSN of the FRNS e-mail granting approval for the foreign national guest's visit.
5. Ensure Foreign Port Officials, e.g., Pilots, immigration officials, receive escorted access in accordance with maritime custom to facilitate the vessel's visit to foreign ports.
6. Export Control - 8 weeks in advance of the project, provide the Chief Scientist with a current inventory of OMAO controlled technology onboard the vessel and a copy of the vessel Technology Access Control Plan (TACP). Also notify the Chief Scientist of any OMAO-sponsored foreign nationals that will be onboard while program equipment is aboard so that the Chief Scientist can take steps to prevent unlicensed export of Program controlled technology. The Commanding Officer and the Chief Scientist will work together to implement any access controls necessary to ensure no unlicensed export occurs of any controlled technology onboard regardless of ownership.
7. Ensure all OMAO personnel onboard receive the briefing on Espionage Indicators (NAO 207-12 Appendix A) at least annually or as required by the servicing Regional Security Officer.

Responsibilities of the Foreign National Sponsor:

1. Export Control - The foreign national's sponsor is responsible for obtaining any required export licenses and complying with any conditions of those licenses prior to the foreign national being provided access to the controlled technology onboard regardless of the technology's ownership.
2. The DSN of the foreign national shall assign an on-board Program individual, who will be responsible for the foreign national while on board. The identified

individual must be a U.S. citizen, NOAA (or DOC) employee. According to DOC/OSY, this requirement cannot be altered.

3. Ensure completion and submission of Appendix C (Certification of Conditions and Responsibilities for a Foreign National

Appendices

1. Figures, maps, tables, images, etc.

Appendix 1: Operating Area for SE-13-05

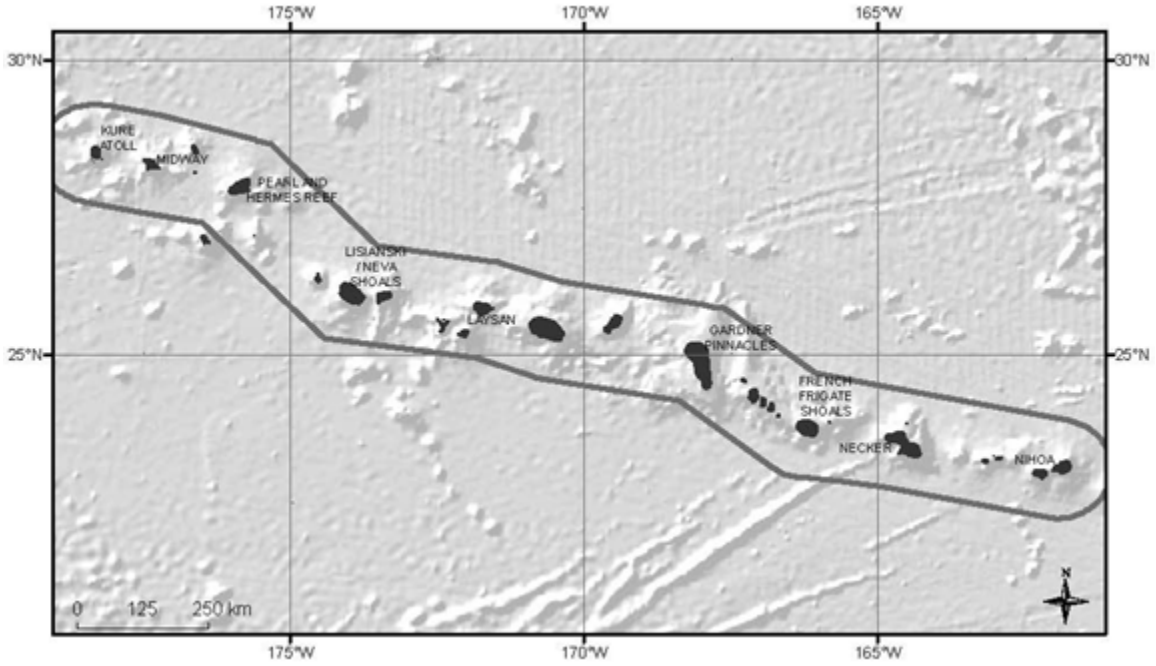

Figure 1.—Operating area for SE-13-05.

2. Station/Waypoint List (coordinates in Latitude, Longitude: degree-minutes)

Table 1: Oceanographic instruments and biological platforms to be recovered at Kure.

Atoll	Instrument	Latitude	Longitude	Depth(ft)
Kure	EAR	28.32761666	-178.2206833	224.4
Kure	STR	28.42924406	-178.3684171	3.3
Kure	STR	28.44760646	-178.3062184	3.3
Kure	STR	28.41821607	-178.3432223	0
Kure	SST-STR	28.41812789	-178.3432572	0
Kure	WTR	28.39066685	-178.2826889	59.4
Kure	STR	28.39066685	-178.2826889	59.4
Kure	WTR	28.45151955	-178.3562116	66

Kure	STR	28.45151955	-178.3562116	66
Kure	STR	28.41821607	-178.3432223	33
Kure	EAR	28.38171724	-178.325718	42.9
Kure	STR	28.41675653	-178.3784283	52.8
Kure	STR	28.45365015	-178.3439881	39.6
Kure	STR	28.42664827	-178.2858767	39.6
Kure	3 ARMS, 5 CAUs, 5 BMUs	28.453633	-178.344017	39
Kure	5 CAUS, 5 BMUs	28.42665	-178.28587	40
Kure	5 CAU, 5 BMUs	28.38678	-178.34792	40
Kure	3 ARMS, 5 CAUs, 5 BMUs	28.38230758	-178.3244794	35
Kure	3 ARMS, 5 CAUs, 5 BMUs	28.416767	-178.378433	50

Table 2: Oceanographic instruments and biological platforms to be deployed at Kure Atoll.

Atoll	**Instrument**	**Latitude**	**Longitude**	**Depth(ft)**
Kure	STR	28.42924406	-178.368417	3.3
Kure	STR	28.44760646	-178.306218	3.3
Kure	4 STR transect	28.39066685	-178.282689	59.4
Kure	4 STR transect	28.45151955	-178.356212	66
Kure	STR	28.41821607	-178.343222	33
Kure	EAR	28.38171724	-178.325718	42.9
Kure	STR	28.41675653	-178.378428	52.8
Kure	STR	28.45365015	-178.343988	39.6
Kure	STR	28.42664827	-178.285877	39.6
Kure	5 CAUS	28.453633	-178.344017	39
Kure	5 CAUS	28.42665	-178.28587	40

Kure	5 CAUS	28.38678	-178.34792	40
Kure	5 CAUS	28.38230758	-178.324479	35
Kure	5 CAUS	28.416767	-178.378433	50

Table 3: Oceanographic instruments and biological platforms to be deployed/retrieve opportunistically at Lisianski Island and Pearl and Hermes Atoll.

Location	Instrument	Latitude	Longitude	Depth (ft)
Lisianski Island	ANCHOR	26.10010042	-173.9979861	74
Lisianski Island	ANCHOR	26.10017301	-173.9979678	76
Lisianski Island	ANCHOR	25.96761991	-173.9158715	30
Lisianski Island	ANCHOR	25.94301567	-173.8841434	68
Lisianski Island	SST-STR	25.96761161	-173.9158361	0.6
Lisianski Island	STR	25.96761991	-173.9158715	1
Lisianski Island	STR	25.96761991	-173.9158715	30
Lisianski Island	STR	25.98699016	-173.9943768	48
Lisianski Island	STR	25.94301567	-173.8841434	68
Lisianski Island	STR	25.94461746	-173.9536197	44
Lisianski Island	STR	26.07838458	-173.9970317	48
Lisianski Island	WTR	25.94301567	-173.8841434	68
Pearl and Hermes Reef	ADP	27.78211948	-175.881429	64
Pearl and Hermes Reef	ANCHOR	27.8539269	-175.8158758	26
Pearl and Hermes Reef	ANCHOR	27.781683	-175.88088	126
Pearl and Hermes	ANCHOR	27.790972	-175.862992	35

Atoll				
Pearl and Hermes Reef	ANCHOR	27.94056687	-175.8617143	54
Pearl and Hermes Reef	ANCHOR	27.78211948	-175.881429	64
Pearl and Hermes Reef	BATTERY	27.78211948	-175.881429	64
Pearl and Hermes Reef	EAR	27.94060316	-175.8617209	38
Pearl and Hermes Reef	EAR	27.94060316	-175.8617209	56
Pearl and Hermes Reef	SBE37	27.78211948	-175.881429	64
Pearl and Hermes Reef	SST-STR	27.8539269	-175.8158758	0.6
Pearl and Hermes Reef	STR	27.8539269	-175.8158758	1
Pearl and Hermes Reef	STR	27.77473921	-175.9787157	6
Pearl and Hermes Reef	STR	27.91184284	-175.8943118	10
Pearl and Hermes Reef	STR	27.95767928	-175.780838	4
Pearl and Hermes Reef	STR	27.80261943	-175.779335	7
Pearl and Hermes Reef	STR	27.89800524	-175.8313905	4
Pearl and Hermes Reef	STR	27.8539269	-175.8158758	26

Pearl and Hermes Reef	STR	27.78206181	-175.8809973	75
Pearl and Hermes Reef	STR	27.7816469	-175.8809328	125
Pearl and Hermes Reef	STR	27.78250186	-175.882137	44
Pearl and Hermes Reef	STR	27.94235422	-175.8634055	81
Pearl and Hermes Reef	STR	27.94431634	-175.8649835	117
Pearl and Hermes Reef	STR	27.78193952	-175.7834911	76
Pearl and Hermes Reef	STR	27.86619642	-175.7311846	73
Pearl and Hermes Reef	STR	27.78571439	-175.7804599	45
Pearl and Hermes Reef	STR	27.75312882	-175.9489414	50

Table 4: Additional EAR recovery locations and details

Site	Ear ID	Acoustic Release	Location
French Frigate Shoals	9300590B149	R: 346635 E: 391562 D: 361600 S/N: 33419	Lat: 23 deg 38.238' N Lon: 166 deg 15.793' W
Lisianski Island	9300420B150	R: 346702 E: 361737 D: 361752 S/N: 33422	Lat: 25 deg 54.110'N Lon: 173 deg 46.570' W
Pearl and Hermes Reef	9300412B006	R: 345542 E: 357742	Lat: 27 deg 45.269’ N Lon: 175 deg 53.645’ W

		D: 360004 S/N: 33385	
Kure Atoll	9300591B148	R: 346673 E: 361665 D: 361714 S/N: 33421	Lat: 28 deg 19.657’ N Lon: 178 deg 13.241’ W