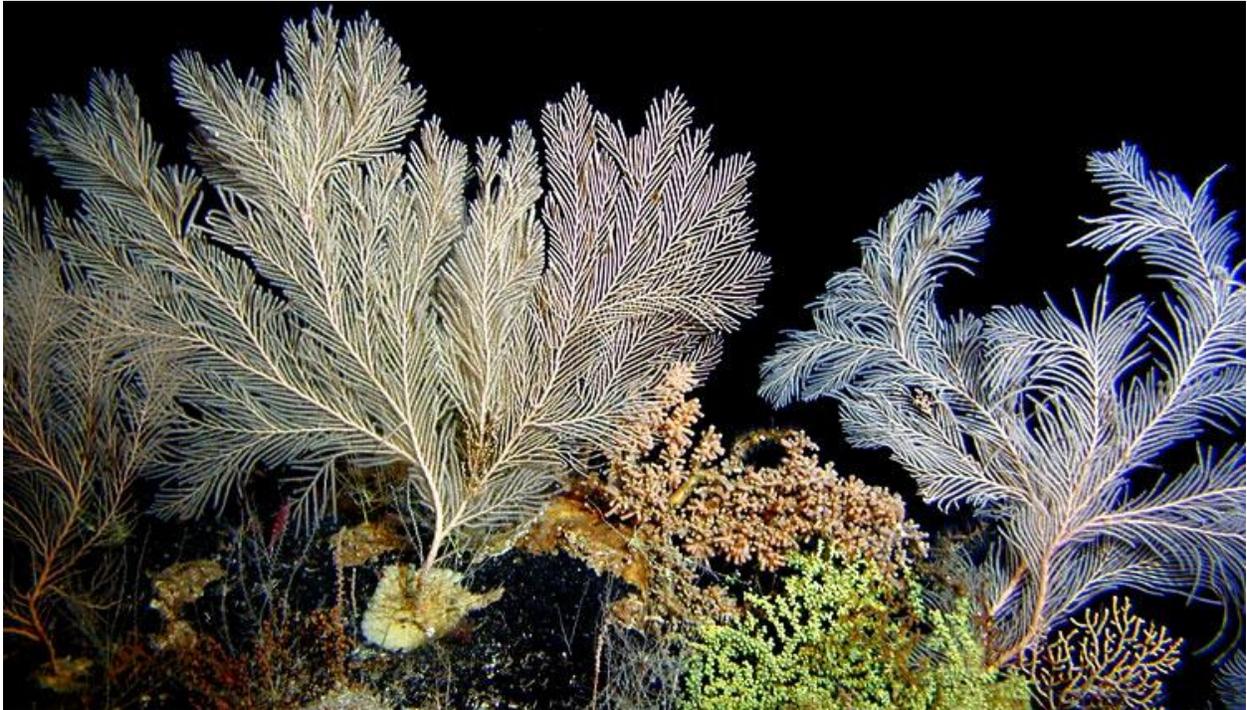


DRAFT SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

For

Phase II of Deep Sea Research within the Northwestern Hawaiian Islands



**Papahānaumokuākea Marine National Monument
Northwestern Hawaiian Islands
Hawai'i**

National Oceanic and Atmospheric Administration
National Ocean Service, Office of National Marine Sanctuaries

Draft August 2016

EXECUTIVE SUMMARY

This Supplemental Environmental Assessment (SEA) was prepared in accordance with the National Environmental Policy Act of 1969 (42 U.S.C. §§ 4321, *et seq.*), as implemented by the Council on Environmental Quality regulations (40 Code of Federal Regulations Parts 1500-1508), and National Oceanic and Atmospheric Administration (NOAA) Administrative Order (NAO) 216-6A, which describes NOAA policies, requirements, and procedures implementing NEPA. This document is meant to build on the Environmental Assessment for Papahānaumokuākea Marine National Monument dated October 2014 and Supplement Environmental Assessment for Deep Sea Research within the Northwestern Hawaiian Islands dated September 2015. For purposes of this EA, the Deep Sea Research project is described in two phases: Phase I: Multibeam mapping, AUV activities, water sampling and deployment of a lander for one year to study the landscape of PMNM and beyond to identify appropriate site locations of deep sea landscapes that have been previously impacted by trawling, are still being impacted by trawling, and were never impacted by trawling activities to study the recovery rates of deep sea coral and sponge communities. Phase II: Water sampling, recovery of the lander, and ROV activities to collect samples of deep sea corals and sponges for genetic and age analysis. The original EA and SEA in 2014 & 2015 respectively addressed Phase I and part of Phase II of the project.

PMNM permits for the Deep Sea Research project were first issued In 2014. At that time, NOAA's Office of National Marine Sanctuaries (ONMS) issued two permits; (1) a research permit (PMNM-2014-028) to the Florida State University (FSU) for mapping and survey reconnaissance to understand the recovery rates of marine life in areas previously impacted by deep-sea trawling, and (2) a conservation and management permit (PMNM-2014-030) to the University of Alaska – Fairbanks (UAF), School of Fisheries and Ocean Sciences, Seward Marine Center allowing vessel operations to support the aforementioned FSU deep sea research, aboard the R/V *Sikuliaq*, utilizing the Autonomous Unmanned Vehicle (AUV) *Sentry* for underwater survey work.

In 2015, the research permittees requested two amendments to their research permit (permit number PMNM-2014-028 issued to FSU) to include new locations to survey for their Phase I research activities. To enhance the originally permitted research activities, ONMS issued two permit amendments (PMNM-2014-028-A1 and PMNM-2014-028-A2) to FSU to add survey locations, extend the depths at which surveys would be conducted to 200 – 700 m, and deploy additional instruments attached to a lander at depths between 300 – 700 m, which would stay in place on site and be recovered one year later (in 2016). In addition, a new conservation and management permit was issued to the University of Hawaii Marine Center (UHMC) to conduct vessel operations aboard the R/V *Kilo Moana* in support of the aforementioned FSU deep sea research (permit number PMNM-2015-028).

ONMS is now proposing to issue one permit and one permit amendment to allow continuation of the above described research project. Activities not previously analyzed include operation of the Remotely Operated Vehicle (ROV) *Jason* for underwater survey work and specimen collections to further the understanding of impacts to the seafloor from trawling activities and potential rates of recovery for these impacted areas. In support of this continued research, ONMS is reviewing, for potential permit issuance (proposed federal action), one research permit (PMNM-2016-021) to Florida State University (FSU) to conduct deep-sea marine research, and

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one conservation and management permit amendment (permit number PMNM-2015-028-A1 issued in 2015 to UHMC) for vessel and operational support for the aforementioned FSU deep sea research, aboard the R/V *Kilo Moana*.

The proposed actions are not expected to result in impacts to the following resource categories: terrestrial biological resources, soils and topography, land use, traffic, ambient noise, visual resources, natural hazards, and utilities and other infrastructure. The proposed action is not expected result in significant impacts to marine biological resources, cultural resources, physical conditions (water quality and air quality), solid waste, marine traffic, and hazardous and regulated materials. The proposed action would not create environmental health and safety risks that may disproportionately affect children and minority or disadvantaged populations, nor would it be expected to result in significant cumulative impacts to any environmental resource category.

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1.0 PURPOSE AND NEED FOR ACTION

1.1 Summary of Proposed Actions

The National Oceanic and Atmospheric Administration (NOAA) proposes to issue one new Papahānaumokuākea Marine National Monument (PMNM or Monument) permit and one permit amendment. This analysis focuses on the following activities for which these proposed permitting actions are necessary to allow access to PMNM to conduct specified activities. Specifically, NOAA's Office of National Marine Sanctuaries (ONMS) would issue a research permit to Florida State University (FSU), PMNM-2016-021, to allow for the use of ROV *Jason* and specimen collections within PMNM. ONMS would also issue a conservation and management permit amendment to the University of Hawaii Marine Center (UHMC) to include additional locations for activities, support and assistance with operations of the ROV *Jason* and gravimeter, and recovery of a lander (deployment of the lander was separately permitted in 2015). All newly permitted activities are a part of Phase II of the research to understand impacts and recovery rates of deep sea areas impacted by trawling.

Purpose and Need

The purpose of the one PMNM permit and one PMNM permit amendment is to allow continue deep sea coral and sponge research to aid in enhancing the understanding of Monument resources and improving resource management decision making (Monument Management Plan, 2008). These proposed actions are needed to support research operations that would provide for a better understanding of the deep-sea biota within the Monument through collection of new records and new species and bathymetric habitat mapping. In addition, this research would provide more insight into the impacts of trawling and the recovery potential for deep-sea coral and sponge bed communities. This information would allow for better management of deep water areas within the PMNM.

1.2 Background

Papahānaumokuākea Marine National Monument – Regulatory Environment

The purposes and management regime for the Monument, as well as restrictions and prohibitions regarding activities in PMNM, are set forth in Presidential Proclamation 8031 (71 Federal Register 36443, June 26, 2006) (Proclamation). Activities within PMNM are subject to permit approval by the National Oceanic and Atmospheric Administration (NOAA), U.S. Fish & Wildlife Service (USFWS), and the State of Hawai'i as Monument Co-Trustees. All Federal permits, including PMNM permits, are subject to National Environmental Policy Act (NEPA) compliance. Proposed activities that impact State jurisdiction may also be subject to State of Hawaii, Hawaii Revised Statutes, Chapter 343 - Environmental Impact Statements. The proposed activities would be conducted in federal waters both in and around the Monument.

According to NAO 216-6A, the purpose for a Supplemental Environmental Assessment (SEA) is to determine whether significant environmental impacts could result from a proposed action. A SEA is appropriate when there is new information, or a change to a federal action that has

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completed environmental review and where environmental impacts from the proposed action are expected, but it is uncertain that those impacts would be significant. Specific factors that the PMNM believes are relevant include the potential effects of the proposed research on unique characteristics of this geographic region. A description of proposed research and vessel support activities was included in the following documents:

- (1) Environmental Assessment for Papahānaumokuākea Marine National Monument dated October 2014 (Appendix A)
- (2) Supplement Environmental Assessment for Deep Sea Research within the Northwestern Hawaiian Islands dated September 2015 (Appendix B)

The previously permitted research and vessel support activities of the deep sea research project co-led by Dr. Baco-Taylor and Dr. Roark were analyzed in the above-referenced Environmental Assessment (EA) and its subsequent Supplemental Environmental Assessment (SEA), which are both incorporated by reference herein. These earlier research and vessel support activities comprised the now complete “Phase I” of Dr. Baco-Taylor’s and Dr. Roark’s research project. The necessary permitting for the “Phase II” activities of the research project, which would include the deployment and operation of ROV *Jason* and collection of specimens within PNMN, is analyzed in this SEA.

2.0 DESCRIPTION OF PROPOSED ACTIONS AND ALTERNATIVES

Introduction

Described and analyzed below are two alternatives for the Proposed Actions: Alternative 1 involves issuing a new PMNM permit and permit amendment to conduct research activities using a lander in deeper depths for a year to better understand the effect of trawling within PMNM (Preferred alternative), and Alternative 2 entails not issuing a new PMNM permit and permit amendment to conduct proposed research activities (No Action Alternative). This chapter presents a description of the Preferred (same as proposed action) and No Action Alternatives. The Proposed Action and the No Action Alternatives are analyzed for their potential effects on the human environment.

The PMNM permit process considers a range of conditions and ways to mitigate effects (e.g., timing, location, methods, and materials) and, where warranted, special terms and conditions are placed on PMNM permits, prior to issuance to ensure protection of natural and cultural resources within PMNM. Special terms and conditions evaluated in this document under the preferred alternative are discussed throughout and include, but are not limited to, actions that would mitigate potential impacts to endangered species and the environment during vessel and research operations.

2.1 **Alternative 1 - Proposed Actions: Issue one research permit and one conservation and management permit amendment to allow for proposed research to occur in PMNM (Preferred Action Alternative)**

ONMS proposes to issue one research permit (PMNM-2016-021) for ROV deployment and operations, lander recovery, and collection of specific marine specimens to Dr. Amy Baco-Taylor; and one conservation and management permit amendment to the University of Hawaii Marine Center (UHMC) to add activity locations, and assist in ROV operations. This Alternative addresses authorization of research activities - including ROV operations and specimen collection - that have not been previously analyzed in earlier environmental assessments.

Previously Analyzed Deep Sea Research Phase I Activities: multi-beam, AUV Sentry, lander, other research activities

All activities proposed in the first phase of the aforementioned deep sea research project have been completed. The purpose of Phase I was to identify suitable locations and survey each identified site to quantitatively assess mega faunal community abundance at each location and to pinpoint large beds of precious corals for sampling during Phase II of the project. All Phase I activities have been previously described and analyzed in the original EA (October 2014) and subsequent SEA (September 2015). Therefore, these previously described activities are not further discussed in this document.

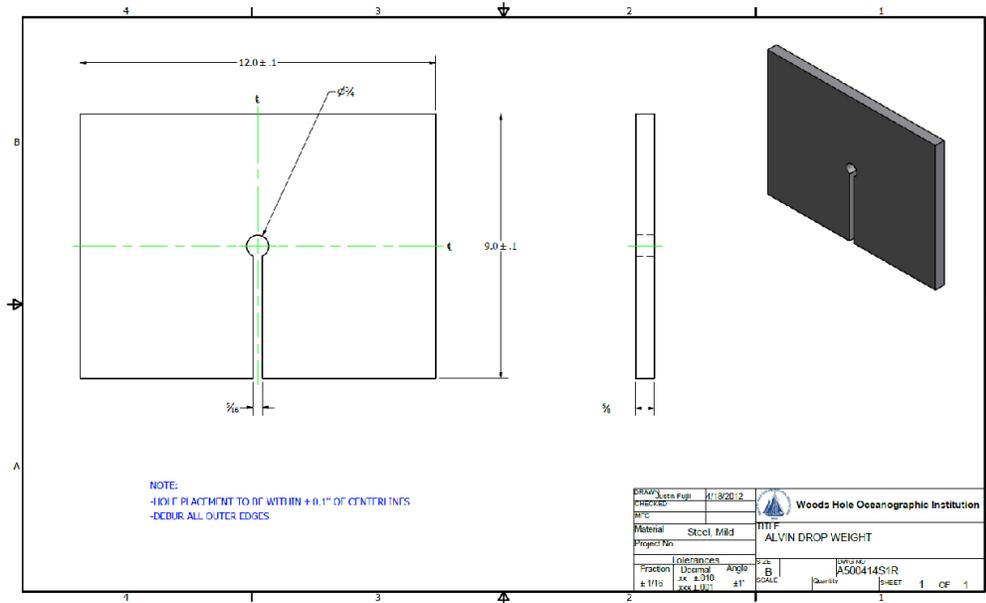
Proposed Alternative 1 Deep Sea Research Phase II Activities: ROV Jason, specimen collection

ROV Jason Operations

During Phase II of the aforementioned deep sea research project, much of the proposed activities would be the same as those conducted in Phase I, such as visual surveys, and collection of CTD data and water samples (radiocarbon, nutrient, isotopic, trace element, and total alkalinity) at each location. New activities proposed for Phase II using the ROV *Jason* include deployment and operation at all permitted locations to continue visual surveys (video and photographic) using ROV *Jason*'s forward-looking camera, and collect coral and sponge samples for genetic and age analysis and identification. Phase II will also include the recovery of the deep sea coral lander deployed in 2015 as part of Phase I and described in the 2015 SEA. A WHOI maintenance crew will be aboard the R/V *Kilo Moana* to ensure proper maintenance and technical support can be provided for ROV operations. Researchers will pilot the ROV during deployments and work with WHOI maintenance crew to ensure appropriate use and care of the ROV *Jason*.

A total of 27 ROV dives would occur, of which 12 ROV dives would occur within the Monument. The ROV would be used to conduct forward-looking video surveys and to acquire CTD and oxygen data at depths. The primary purpose of the camera surveys is to document the benthic megafauna of each survey location. The ROV would be used to assess coral presence, abundance, and density and habitat parameters, providing data to assess recovery. Researchers may also be able to discern evidence of trawling (e.g. Waller et al. 2007) and images can be used to measure substrate parameters to tie to benthic community data. The user's manual and specifications for the ROV *Jason*, which are incorporated herein by reference, are available online at <http://www.whoi.edu/ndsfVehicles/Jason/>. The ROV carries ten 20-lb steel drop weight plates per dive. Each drop weight plate can be separated for the purpose of allowing the ROV operated to determine the necessary amount of weights to either retain or drop when planning the ROV ascent. When the ROV is ready to ascend, the ROV operator would determine the appropriate amount of steel weight plates to drop based on the overall weight and buoyancy of the ROV when ready to ascend. The ROVs weight and buoyancy will change once collections are brought aboard. These steel drop weight plates are released from the vehicle as needed to adjust the buoyancy of the vehicle as samples are added. Figure 1 below depicts the ROV *Jason* payload weights, single plates as shown below, typically 0-12 per *Jason* dive depending on payload requirements. Since researchers are primarily collecting corals, which are fairly light-weight, no more than 3-4 weights per dive are expected to be released. It is expected that no more than 12 weights would be released per seamount and a maximum of 48 weights total would be left in the Monument and no more than 120 weight plates would be left throughout the entire area surveyed (a linear distance of 1,632 miles between Mokumanamana and Koko Seamount).

Figure 1: ROV Jason Weight Specifications



During ROV surveys, an elevator system used to transport equipment or instruments to the bottom or to recover samples collected by *Jason* may be deployed. The elevator free-falls to the bottom and its location are monitored by a tracking system during descent. The ROV *Jason* is then vectored to the elevator's location using the ship's dynamic positioning system. When ready for ascent, the elevator is acoustically commanded to drop a weight (see Figure 2 below) and rise back to the survey where it is then recovered (Ballard 1993).

Figure 2: *Jason* Elevator Weight



Note: One ROV *Jason* elevator descent weight is used per elevator deployment. An ROV *Jason* elevator descent weight is composed of:

- 16x Alvin plates
- 1x steel eyebolt with shoulder and nut: 3.25inX1/2-13 thread (McMaster part number 3018T17 or equivalent)

Jason is a two-part remotely operated submersible vehicle (ROV) system that can dive up to 6,500 m below the ocean's surface. The system consists of the vehicle and launching garage

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(aka, Medea), a winch/A-frame unit, and the associated power and control consoles. From Medea a cable runs up to a winch on the ship, securing the Medea and ROV *Jason*. The ROV unit is controlled in real time by researchers, who serve to pilot the ROV while deployed, in a control room on the ship's deck. *Jason* navigates using both internal and external navigation. Internal navigation is provided by dead reckoning based on an inertial navigation system and Doppler velocity log sonar system the ROV is equipped with. The internal navigation system receives periodic updates from an external source, which is normally an ultra-short baseline (USBL) acoustic based system (acoustic outputs range between 7-12 kHz). The USBL system will be calibrated for use on this research cruise prior to operations. The ROV *Jason* has a Teledyne Reson SeaBat 7125 multibeam sonar that operates at a frequency range of 200 kHz – 400 kHz with maximum ping rates of up to 50 Hz and beam widths measuring at -3 dB. In preparation for any research cruise, the maintenance crews would wash the ROV with fresh water and Simple Green™ prior to departure and again following any maintenance onboard the R/V Kilo Moana.

In anticipation of the upcoming ROV operations, the ROV *Jason II* was previously described and analyzed in the SEA entitled Deep Sea Research within the Northwestern Hawaiian Islands dated September 2015. (ROV *Jason* is proposed for use in PMNM in 2016, during Phase II of the proposed research project and has the exact same operational capabilities and capacity as the ROV *Jason II*.) While acoustic information is provided above, similar analysis was provided for in the earlier related SEA of 2015 and can be found on pages 2-4 & 2-5 in the aforementioned document.

Collection of Biological Specimens

ROV Collections will be conducted using the manipulators and bio boxes of the ROV *Jason* for the following three objectives:

1. Obtain voucher specimens (unidentified or unidentifiable) for morphological and genetic identifications of species observed in ROV and AUV videos;
2. Obtain specimens of precious coral and sponge specimens for population genetics; and,
3. Obtain specimens of precious coral and sponge specimens for aging.

To meet object 1 above, when possible, partial specimens of the dominant species of deep-sea corals and sponges will be collected at each site, with a maximum of 1-2 individuals of each species. A total of up to 30 individuals of each of the four target species listed in Table 1 below will be collected during each dive and no more than 90 specimens per species at each dive location would be collected. These numbers of specimens represent the necessary sample size for this genetic analysis. Researchers will conduct a visual assessment of the population abundance of the coral and sponge communities surveyed before collecting sample specimens and will ensure that no more than 10-15% of the coral or sponge community targeted for collected is impacted by the collection activities.

Researchers will subsample each of the colonies collected for aging studies (objective 3 above) to reduce the impact to the community as genetic tests only require a small piece of the coral or sponge colony (see figure 3 below as an example of collection method). Coral and sponge samples will be collected using the ROV grab sampler arm. The ROV arm is operator controlled using a computerized navigation and positioning system aboard the main support surface

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vessel (the R/V *Kilo Moana*). To account for movements from ocean currents, the system uses an Ultra Short Baseline (USBL) positioning system that provides accurate horizontal positioning. Once stable, the ROV pilot positions the ROV manipulator arm to grab and precisely clip portions of corals and sponges off the colony. The sample is then placed into collection quivers and subsequently a bio box used to store samples while the ROV continues operations on the seafloor. Bio boxes and, when necessary labeled jars in a bio box, allowing researchers to tie collected fragments to images of the colonies sampled. The remainder of each colony will be donated to the Smithsonian Natural History Museum for archiving and morphological taxonomy.

Figure 3: Example of precious coral collection method



To age coral and sponge colonies, collection of whole specimens is required, as it is the base of the colony which provides the data for aging. The goal of objective 3 is to develop a reference size-age curve for each of the 2 Coralliid species in order to estimate ages from colony heights at each location without the need for additional collections. To develop the size-age curve researchers will determine the size of individual corals by measuring height, width, and basal diameter both in-situ (during ROV survey) and on board the ship (of the collected samples). For in situ colony measurements, a calibrated bar will be placed next to the coral colonies chosen at random intervals within the precious coral areas to determine height and width. Additional colony widths can also be ascertained from the ROV video transects by using the calibrated width between the ROV laser dots as a reference. The onboard measurements of samples collected will provide an estimation of the error associated with the in-situ size measurements.

Ideally, ~25-50 specimens across a range of size classes (small (<10 cm), medium (10-20 cm), large (> 20 cm height)) will be collected from each of the three categories of sample areas (areas that were previously trawled, areas that are still being trawled, and areas that have never been trawled). Samples collected for the size-age curve will also be utilized for reconstructing past oceanographic conditions using biogeochemical measurements.

The table below (Table 1) lists the requested collection of specimens (dead and alive) for research purposes. To the extent possible, collected specimens will be utilized for multiple purposes to maximize the use of each specimen collected and ensure minimal to no waste during analysis. The specimens listed for collection to conduct genetics and aging analysis represent ideal collection sizes, however, not all species are expected to be present at all sites. In addition, the number collected as fragments will be reduced by subsampling any whole specimens collected for aging, thus the total number of live colonies of any one species impacted at any one site will not exceed 90 individuals per site (4 sites are sampled within the Monument and 6 sites are studied outside of the Monument boundaries).

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Similarly, the collection of dead samples will be limited to specimens that have fallen over and have no remaining living tissue. Depending on preservation, these samples could contribute to size-age curve and help ascertain if there were specific events that may cause mass mortality. Such samples would also be used for paleoceanographic reconstructions.

Table 1: collection list of biological specimens at locations within PMNM

Genetics Collections - as fragments	Per ROV Dive Location (max 10 sites)	Monument Total	Project Total
<i>Hemicorallium laauense</i>	90	360	900
<i>Pleurocorallium secundum</i>	90	360	900
<i>Kulumanamana haumeeae</i>	90	360	900
Colonial Scleractinian (most likely ID - Solenosmilia)	90	360	900
Voucher Specimens of Misc Other Corals	30	120	300
Aging - as whole live collected colonies	Per ROV Dive Location (max 10 sites)	Monument Total	Project Total
<i>Hemicorallium laauense</i>	9	36	90
<i>Pleurocorallium secundum</i>	9	36	90
<i>Kulumanamana haumeeae</i>	2	8	20
Colonial Scleractinian (Enalopsammia, Solenosmilia, Dendrophylliidae)	4	16	40
Isididae	4	16	40
Misc other DSC focused on Black corals - Antipatharia	4	16	40
Aging - as dead collected colonies	Per ROV Dive Location (max 10 sites)	Monument Total	Project Total
<i>Hemicorallium laauense</i>	9	36	90
<i>Pleurocorallium secundum</i>	9	36	90
<i>Kulumanamana haumeeae</i>	4	16	40
Colonial Scleractinian (Enalopsammia, Solenosmilia, Dendrophylliidae)	4	16	40
Isididae	4	16	40
Misc other DSC focused on Black corals - Antipatharia	4	16	40

Note: None of the species listed above in Table 1 are listed as threatened or endangered under the Endangered Species Act.

Project Locations

Figure 2: Project Locations Map

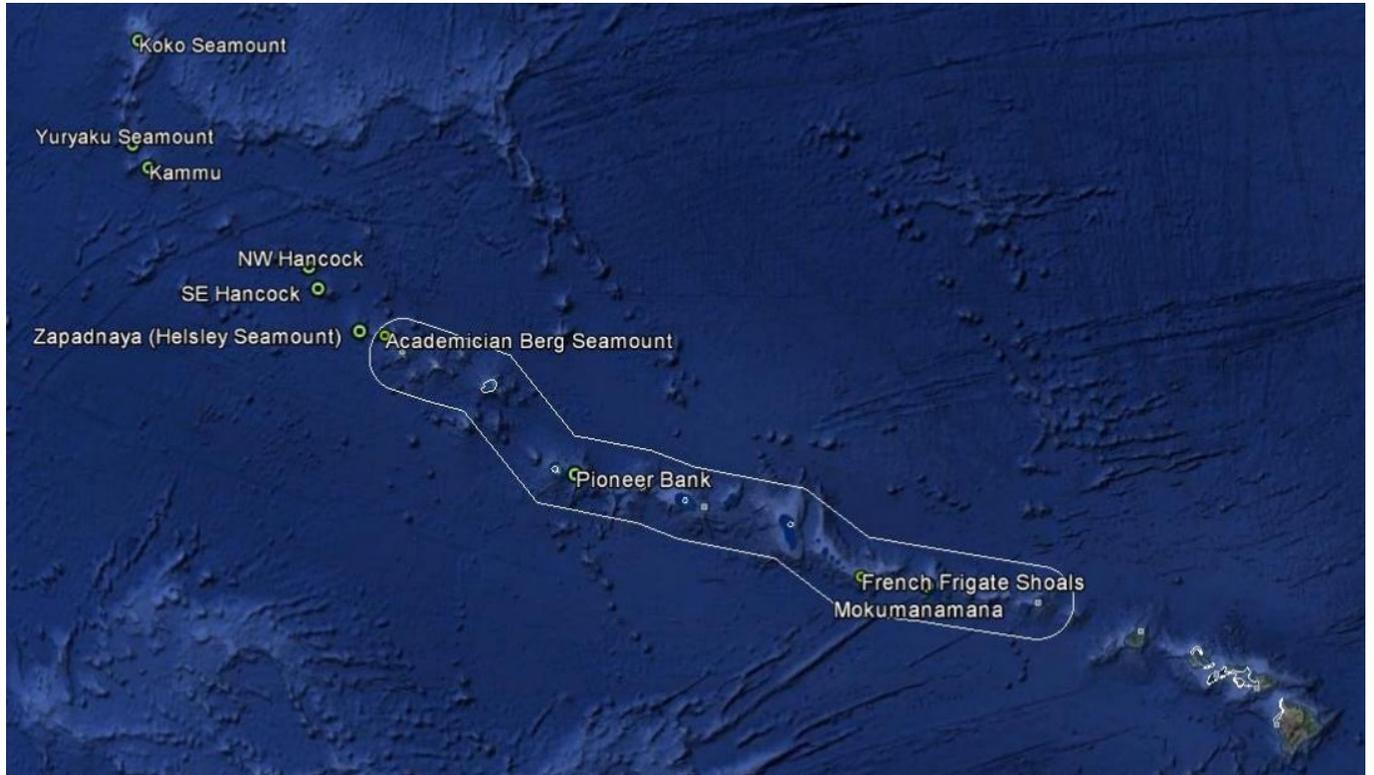


Figure 3: Project Location Coordinates

Feature Name	Lat N	Long E/W	*Last Year Trawled	Coral Observations
Koko	35 15.0	171 35.0	Ong	Yes
Yuryaku	32 40.2	172 16.2	Ong	Yes
Kammu	32 10.0	173 00.0	Ong	Yes
NW Hancock	30 16.2	178 43.2	1986 - ong	Yes
SE Hancock	29 47.4	179 04.2	1986	Yes
Zapadnaya	28 54.0	-179 36.0	1977	Yes
Academician Berg	28 51.0	-178 52.0	Never	Yes
Pioneer Bank	26 00.0	-173 26.0	Never	Yes
Mokumanamana	23 12.9	-164 11.5	Never	Yes
French Frigate Shoals	23 41.3	-166 21.9	Never	Yes

*All positions from SBN earthref.org. *NOAA Report (2008), ong = ongoing.

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Table 2: ROV Jason Specifications

Facility	Specifications	Photo
ROV Jason*	<p>Depth Capacity: 6,500 m</p> <p>Tether: 50 m, 20 mm diameter, neutrally buoyant</p> <p>Size: 3.4 m long; 2.4 m high; 2.2 m wide</p> <p>Max Transit Speed: 1 kts (slower when sampling)</p> <p>Descent/Ascent Rate: 30 m/min</p> <p>Propulsion: 6 thrusters each w/ 250 lbs of thrust</p> <p>Sonar: Teledyne Reson SeaBat 7125 multibeam</p> <p>Sonar frequency range: 200 – 400 kHz</p>	

2.2 Alternative 2 - No Action Alternative

Under the No Action alternative, the activity would not occur. As a result, the permit amendment request for the University of Hawaii Marine Center’s Permit PMNM-2015-028, and the issuance of a separate permit for continued research activities to Dr. Amy Baco-Taylor would not be approved.

A research or conservation and management permit denial would be based on an applicant’s inability to meet the Findings as defined in PMNM regulations 50 CFR Part 404.11, for the proposed action. Per PMNM regulations, to issue a permit, an applicant must provide information to demonstrate the following: (1) the activity can be conducted with adequate safeguards for the resources and ecological integrity of the Monument; (2) the activity will be conducted in a manner compatible with the purposes of the Proclamation, considering the extent to which the conduct of the activity may diminish or enhance Monument resources, qualities, and ecological integrity, any indirect, secondary or cumulative effects of the activity, and the duration of such effects; (3) there is no practicable alternative to conducting the activity within the Monument; (4) the end value of the activity outweighs its adverse impacts on Monument resources, qualities, and ecological integrity; (5) the duration of the activity is no longer than necessary to achieve its stated purpose; (6) the applicant is qualified to conduct and complete the activity and mitigate any potential impacts resulting from its conduct; (7) the applicant has adequate financial resources available to conduct and complete the activity and mitigate any potential impacts resulting from its conduct; (8) the methods and procedures proposed by the applicant are appropriate to achieve the proposed activity’s goals in relation to their impacts to Monument resources, qualities, and ecological integrity; (9) the applicant’s vessel has been outfitted with a mobile transceiver unit approved by NOAA’s Office of Law Enforcement (OLE) and complies with the requirements of 50 CFR Part 404.5; and (10) there are no other factors that would make the issuance of a permit for the activity inappropriate.

Under this alternative, the activity described in this document would not be carried out within PMNM or the 4 sites that would be studied outside the Monument. No additional scientific information would be collected and no new and potentially beneficial knowledge on NWHI ecology would be gained.

3.0 AFFECTED ENVIRONMENT

3.1 Overview

The proposed activities have the potential to impact marine biological resources, cultural resources, physical conditions (water and air quality), solid waste, marine traffic, and hazardous and regulated materials. The affected environment sections of both the original EA of 2014 (pages 3-1 through 3-9) and the SEA of 2015 (pages 3-1 through 3-5) describe, in detail, resources that have the potential to be impacted as a result of the proposed research activities. This document also considers additional deep water coral resources and federal waters around French Frigate Shoals, two areas of the affected environment that were not previously described or analyzed in the earlier environmental assessments.

As discussed above, of the ten site locations that would be affected by the proposed actions, nine locations were previously discussed and analyzed within the original EA for Deep-water research in the Northwestern Hawaiian Islands, dated October 2014 and the subsequent SEA dated September 2015. Specifically, the 2014 document discussed multibeam mapping, acoustic impacts, AUV activities, and water sampling at the following site locations: Koko, Yurayaku, Kammu, NW Hancock, SE Hancock, Zapadnaya, Pioneer Bank, W Northampton, and E Northampton. The 2015 discussed potential impacts of proposed research activities at the following site locations: Academician Berg and Mokumanamana.

During Phase II, the ten locations described in Figure 2 and 3 above will be studied by the proposed research. French Frigate Shoals is the only site not previously analyzed, and therefore is analyzed below. In addition, the proposed collections of deep water corals and sponges are a newly proposed activity and also described below.

3.1.1 Marine Biological Resources

French Frigate Shoals

The sandy islets of French Frigate Shoals (FFS) are located in the Monument and provide nesting sites for 90 percent of the threatened green turtle (*Chelonia mydas*) population breeding in the Hawaiian Archipelago. In addition, 19 of Hawai'i's 22 seabird species are found on the island, giving it the highest species richness of breeding seabirds within the Monument. Deep waters surrounding FFS are comprised of soft bottom substrate, large precious corals and rocky substrate, all of which is further described in the "Deep Water Corals and Sponges" section below.

Deep Water Corals and Sponges

Submersible surveys at Pioneer Bank and two unnamed seamounts, one east of Laysan Island and the other east of Mokumanamana, established the presence of various substrate types, deposited when these geologic features were at sea level (Smith et al. 2004). Some areas displayed dense communities of corals and sponges at depths approaching 1,000 fathoms (6,000 feet, or 1.8 kilometers). Furthermore, tropical species, species with cold-temperature

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affinities, and species with disjunctive distributions make up the deep water marine ecosystem (McDermid and Abbott 2004).

The 10 sites for the proposed activities are comprised of soft bottom substrate. Large precious corals, such as gold, pink and black corals, are found within the target depth range of this research activity, however, are primarily found on rocky substrate such as submerged banks. Soft bottoms such as the areas targeted for deployment of the lander and its associated ballast discharge upon ascent do not have a suitable surface for the coral to attach to (NOAA, 2006; Drazen, personal communication, May 31, 2007). The bottom habitat surrounding the project drop areas are inhabited by invertebrate fauna, burrowing fish, and bottom-dwelling fish.

Other potentially affected marine biological resources, including banks and seamounts, coral reefs, bottomfish and seabirds, were previously discussed and analyzed for potential impacts in the original EA dated 2014 (pages 3-4 - 3-7). All of the above described species are highly migratory in nature and are known to exist throughout the Monument and beyond and therefore are not further analyzed in this document.

Marine Mammals & Endangered Species

Marine mammals and endangered species are found throughout the Monument. The original EA completed in 2014 for Phase I of this research project analyzes in detail the marine mammals and endangered species that may, but are not likely to be significantly impacted by these proposed research activities and therefore are not further discussed throughout this document. For a detailed description of the affected environment for marine mammals and endangered species see pages 3-6 & 3-7 of the Environmental Assessment for Papahānaumokuākea Marine National Monument dated October 2014.

3.1.2 Cultural Resources

There are no known cultural or historical sites situated within the proposed locations described in Figure 2 above. A complete analysis of the cultural resources potentially affected by this proposed research can be found in the Environmental Assessment for Papahānaumokuākea Marine National Monument dated October 2014 (pages 3-7 & 3-8).

3.1.3 Physical Conditions

Water & Air Quality

The Environmental Assessment for Papahānaumokuākea Marine National Monument dated October 2014 (pages 3-8) described the water and air resources potentially impacted by the proposed research activities.

3.1.4 Solid Waste

The Environmental Assessment for Papahānaumokuākea Marine National Monument dated October 2014 (pages 3-8) described the solid waste resources impacted as a result of the proposed research activities.

3.1.5 Marine Traffic

The Environmental Assessment for Papahānaumokuākea Marine National Monument dated October 2014 (pages 3-9) described the marine traffic potentially impacted as a result of the proposed research activities.

3.1.6 Hazardous and Regulated Materials

The Environmental Assessment for Papahānaumokuākea Marine National Monument dated October 2014 (pages 3-9) described the potential for hazardous and regulated materials to impacted the environment as a result of the proposed research activities.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1 Overview

This chapter evaluates and summarizes the potential environmental consequences to environmental resources associated with implementation of the Proposed Action and the No Action Alternatives. Table 4-1 summarizes the anticipated environmental effects of the Proposed Action and the No Action Alternatives.

Table 4-1 Summary of Anticipated Environmental Effects of the Preferred Alternative and No Action Alternative

Resource Category	Preferred Alternative	No Action Alternative
Marine Biological Resources	<p>No significant adverse impact to marine biological resources is expected, due to implementation of Best Management Practices (BMPs).</p> <p>Collected specimens will be utilized for multiple purposes to maximize the use of each specimen collected and ensure minimal to no waste during analysis. When possible, fragments of coral or sponge colonies would be taken to allow the individual colony to survive into the future (non-lethal collect). Additionally, researchers would ensure that samples are only taken from coral or sponge communities with population abundance such that no more than 10-15% of the coral or sponge community is impacted by collections.</p> <p>If any endangered monk seals or sea turtles are observed, or enter the project area at any time, in-water work would be stopped until they leave the area.</p> <p>Potentially negligible adverse effects from removal of the Lander if it served as habitat to living resources.</p>	Negligible beneficial effects on recruitment on the Lander that would be left.
Cultural Resources	<p>No significant adverse impact is expected to cultural resources.</p> <p>If any indication of a culturally or historically significant site is found during project, work would be halted until the proper authorities are</p>	No impact.

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	notified.	
Physical Conditions (Water Quality)	No significant adverse impact is expected to water quality as steel weights, less than 1,800 lbs per year, would be dropped by the ROV <i>Jason</i> at target locations, of which, only two of the eight target sites are located within PMNM. ROV operators Target sites span in location from the southwestern most boundary of PMNM to beyond Kure Atoll (see Figure 2-1 for map of target sites).	By not recovering the Lander and its Alkaline battery pack (7835-000-01) there is potential for corrosion to compromise the battery cells and release chemicals into the water column resulting in minor adverse effects.
Physical Conditions (Air Quality)	No significant impact is expected to air quality by adding one additional research cruise per year. Other than incidental emissions from the R/V <i>Kilo Moana</i> , no other emission would occur.	No impact.
Solid Waste	No significant adverse impact expected to solid waste is anticipated because the R/V <i>Kilo Moana</i> maintains a NOAA approved Marine Sanitation Device and will treat all effluent before discharge.	Lander would be left; corrosion would continue. Impacts would be below significant because of the small size and scale of device.
Marine Traffic	No significant impact is anticipated by adding one additional research cruise per year.	No impact.

Hazardous and Regulated Materials	No significant impact is expected to the environment as all hazardous and regulated materials would be sealed and contained onboard the R/V <i>Kilo Moana</i> and properly disposed of on land.	No impact
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4.2 Preferred Alternative

4.2.1 Marine Biological Resources

The October 2014 EA and subsequent September 2015 SEA, which this document supplements, describe the environmental consequences likely to occur as a result of the activities described therein and therefore are not further discussed in this document. Under the proposed actions, during the deployment of the ROV and retrieval of the lander, the ROV pilots will be careful to ensure that the ROV unit does not touch the seafloor or live organisms either located on the seafloor or within the water column (i.e., fish or invertebrates swimming nearby). Furthermore, when necessary to drop ballast weights for ascent, ROV pilots will ensure that weights are dropped in areas of sandy substrate or rock rubble on which no live specimens exist to minimize impacts to live specimens during a ballast drop. When collecting specimens for researchers will ensure no more than 10-15% of the coral or sponge community's population is removed from the site location and, where possible, coral or sponge fragments will be clipped from whole coral or sponge colonies, which would be a non-lethal collection. In addition, Monument Best Management Practices (BMPs) such as safe boating operations (see Appendix C) would be employed to minimize the potential to adversely impact the environment or marine biological resources. Implementation of these operational practices would be an explicit condition of the permit and permit amendment considered in this proposed action.

French Frigate Shoals

The proposed research activities would occur in federal waters only, a minimum of 12 nautical miles offshore from any islet or atoll within the Monument. As a result, no impacts to islands or atolls and their unique nearshore ecosystems and habitat would be expected since activities will not occur on or around such areas. Impacts to marine species with a larger foraging and migratory range, such as dolphins, whales, the Hawaiian monk seal, and the green sea turtle, are discussed below in the Marine Mammals & Endangered Species section of this Chapter.

Deepwater Corals

In 2015, a deep sea lander was deployed for a period of one year to collect scientific data over time in furtherance of the proposed research activity goals. Deployment and recovery of the lander was previously discussed in the SEA for Deep Sea Research within the Northwestern Hawaiian Islands, dated September 2015 (page 4-2).

Collection of biological specimens would occur as described in Table 1 above. For genetic analysis, 15% or less of a given colony would be collected and removed from the Monument because the ROV grab sampler would take merely a sample from a specific colony, thus allowing the colony to remain in place and intact into the future. For aging analysis, both dead

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and live coral would be sampled. When collecting dead sponges or corals, the entire coral or sponge specimen would be removed. When collecting live sponge or corals for aging analysis, again, the entire coral or sponge specimen would be removed, however, researchers will ensure that there are an abundance of coral or sponge specimens prior to collection such that sampling activities would not remove more than 10-15% of the target species population at any given site, depending on the estimated size of the population based on visual assessment at each site. For example, a site would need to contain 60 individuals for the harvest of 9 individuals to stay within the 15% limit. For this project, researchers will not exceed more than 9 whole live samples per coralliid species per site with a maximum of 36 whole live samples per corallid species collected within the Monument and 54 whole live samples per corallid species collected outside the Monument. Similarly, collections of colonial scleractinian species would not exceed 4 whole live samples per site, with a total of no more than 16 samples collected in the Monument and 24 samples in study sites outside the Monument. Finally, per the collections table listed above, no more than 2 deep-water black corals would be collected per site, totaling no more than 6 samples collected in the Monument. Again, samples will only be taken from communities that are sufficiently large such that no more than 10-15% of the community is impacted by collections.

Coral and sponge samples (described in Table 1 above) would be collected by the ROV during each ROV dive. When practicable, coral and sponge fragments will be collected, using the ROV grab sampler arm, to ensure minimal disturbance to the coral and sponge colonies (see figure 3 above for a picture of the extraction method using the ROV). The ROV arm is operator controlled using a computerized navigation and positioning system aboard the main support surface vessel (the R/V *Kilo Moana*). To account for movements from ocean currents, the system uses an Ultra Shore Baseline (USBL) positioning system that provides accurate horizontal positioning. Once stable, the ROV pilot positions the ROV manipulator arm to grab and precisely clip portions of corals and sponges off the colony. The sample is then placed into collection quivers and subsequently a bio box used to store samples while the ROV continues operations on the seafloor.

The number collected as fragments will be reduced by subsampling any whole specimens collected for aging, thus the total number of live colonies of corals and sponges would be conducted in such a way to minimize both waste and impact to resources. Similarly, the collection of dead samples will be limited to specimens that have fallen over and have no remaining living tissue. Although these sampling activities are expected to result in some localized direct impacts to sampled corals and sponges, by following all PMNM prescribed BMPs and the protocols described above, impacts are expected to be less than significant and not likely to have long-term adverse effects on the affected environment.

Marine Mammals & Endangered Specials

During Phase II of this research project, multi-beam mapping and ROV activities would be conducted and, as such, a limited amount of acoustic outputs would occur. The R/V *Kilo Moana*'s multibeam system would be turned on once the ship reaches the general location of the target survey sites to identify the appropriate location in which to launch the ROV. Similarly, the ROV activities would occur for a maximum of a 24 hours continuous period at each target location. During ROV operations, acoustic outputs would occur, however, since mapping is not the primary objective of the ROV operations, acoustic operations would be limited to needs for

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communication. All acoustic impacts were previously analyzed in the SEA dated September 2015 (pages 4-2 & 4-3), including the potential operation of ROV *Jason II*. ROV *Jason* is proposed for use in PMNM in 2016, during Phase II of the proposed research project and has the exact same operational capabilities and capacity as the ROV *Jason II*. In summary, the ROV *Jason* operates within a range of 200 – 400 KhZ with maximum ping rates of up to 50 Hz and beam widths measuring at -3 dB. While there is a potential for fish, cetaceans (not including porpoises) and marine mammals hear frequencies below 10 kHz, the range and number of occurrences in which the acoustic release may operate, and the decibel levels at which the pings are emitted are beyond the range of these marine species, and therefore are not likely to have adverse effects on marine biological resources. Thus, potential effects are expected to be less than significant. A

Invasive Species

Invasive species are often spread through ballast water that has been discharged from ships as vessels transit ocean areas. In response to national concerns regarding invasive species, the National Invasive Species Act of 1996 was enacted which reauthorized and amended the Non-indigenous Aquatic Nuisance Prevention and Control Act of 1990. A careful washing and disinfecting regimen for the R/V *Kilo Moana* and ROV *Jason* would be followed to avoid the spread of invasive species. The R/V *Kilo Moana* will undergo a hull and rodent inspection prior to departing for the Monument. The hull inspection will be conducted by an invasive species specialist at NOAA and must provide clearance prior to the R/V *Kilo Moana*'s departure for the Monument. Similarly, the ROV *Jason* will be thoroughly washed with a simple green solution prior to being used in the Monument and after each use while underway.

With proper attention to these guidelines, the Proposed Action would not introduce or contribute to the spread of invasive species. By following all established guidelines, mitigations and operating practices described above, the Proposed Action would not significantly affect marine biological resources.

4.2.2 Cultural Resources

There are no known cultural or historical sites situated within the proposed locations described in Figure 2 above, and therefore, no impact to these resources is expected. However, if any indication of a culturally or historically significant site is found during project activities, work would stop in the surrounding area and coordinates would be recorded and reported to the proper Monument management authorities. In addition, the proposed activities are temporary in nature and would not significantly impact historic or cultural resources, nor interfere with traditional Hawaiian practices.

4.2.3 Physical Conditions

Water Quality & Air Quality

All the types of activities proposed under the preferred alternative with the potential to impact water quality or air quality were previously analyzed in the original EA dated October 2014 (pages 4-2 & 4-3) and subsequent September 2015 SEA (pages 4-4 & 4-5) and it was determined that by ensuring operational and Monument best practices are followed, the

proposed activities would not significantly degrade the water quality or air quality within PMNM. As such, no significant impacts to air or water quality are expected to occur as a result of the proposed activities. Proposed ROV operations and collection of biological samples does not require further analysis because neither activity would significantly change the water quality of PMNM and water quality impacts due to AUV and vessel operations was previously analyzed (as noted above). ROV activities during Phase II would occur in lieu of AUV activities and potential impacts from ROV operations would be identical to those of AUV operations. Proposed ROV operations are also not expected to affect air quality as this vehicle does not produce any air emissions.

4.2.4 Solid Waste

Potential solid waste impacts were previously analyzed in the original EA dated October 2014 (pages 4-3 & 4-4) and subsequent September 2015 SEA (pages 4-2 through 4-6) as it relates to the deployment and recovery of the lander, AUV, and vessel operations. In both instances, we determined that the effects would be less than significant. As the activities proposed under the preferred alternative are analogous to those previously analyzed activities, no significant impacts from disposal of solid waste are expected as a result of the proposed project. With the exception of sampling activities, the ROV *Jason* operations are functionally identical to AUV operations and therefore entail the same analysis as was described in previous environmental assessment documents. In addition, collection of samples will not lead to solid waste impacts because all specimens would be stored aboard the R/V *Kilo Moana* and transported to FSU for further analysis, where any material remaining, which will not be more than 90 lbs, and thus, is expected to have a negligible effect on contribution to solid waste.

4.2.5 Marine Traffic

Vessel operations and its impacts to marine traffic were previously analyzed in prior environmental assessment documents (original EA dated October 2014 (pages 4-4) and subsequent SEA dated September 2015 (pages 4-6) and in both instances the impacts were considered less than significant. On average, less than 10 vessels are permitted to operate annually in the Monument, resulting in very little marine traffic within the Monument. In addition, the site locations northwest of the Monument are further in distance and remoteness than the NWHIs from the Main Hawaiian Islands (1,961 nm distance) and over 3,000 nm from Japan. The site locations' remoteness helps to ensure that marine traffic remains limited in the action area and operations in support of the proposed research activities would not significantly impact the already limited marine traffic throughout the action area. ROV operation would be conducted aboard the R/V *Kilo Moana* and would entail the same control capabilities as was used during AUV operations, which were previously analyzed. As such, the anticipated effects of this preferred alternative are expected to likewise be less than significant.

4.2.6 Hazardous and Regulated Materials

In the unlikely event of an oil or toxic chemical spill, vessel crew would follow all established procedures detailed in the USCG approved Shipboard Oil Pollution Emergency Plan and Safety Management System Manual. With these mitigation measures in place, no significant impacts to resources are likely to occur as a result of the proposed action. In addition, impacts as a result of hazardous or regulated materials were previously analyzed in prior environmental

assessment documents (original EA dated October 2014 (pages 4-4) and subsequent SEA dated September 2015 (pages 4-6)).

4.3 No Action Alternative

Most of the impacts as a result of employing the No Action Alternative were previously analyzed in the original EA dated October 2014 and subsequent EA dated September 2015. Because Phase I of this project has been completed in the action area, not issuing the requested permits would pose significant delays and possibly cancellation of the second half of this research project (e.g., Phase II). By not retrieving the lander, there may be negligible positive benefits to biological resources by creating new habitat. However, by leaving the lander, there is a risk of chemicals leaching into the water column and contribution to solid waste, resulting in less than significant adverse effects.

4.4 Cumulative Impacts

Cumulative impacts to environmental resources result from incremental effects of the proposed activities evaluated in conjunction with the effects of other government and private past, present and reasonably foreseeable actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time.

Cumulative impacts were previously analyzed in the EA for PMNM dated October 2014 and subsequently in the accompanying SEA dated September 2015. No new activities are known to have occurred at the target locations since the earlier analyses, and no additional planned future activities have been identified, therefore, our conclusion has not changed. Similarly, ROV specifications are similar to AUV specifications previously analyzed and would entail the same analysis as previously described. As such, further analysis of cumulative impacts from ROV operations is not further discussed here, except to update the cumulative impacts table below. The following analysis is based on the collection of biological specimen samples during ROV operations.

Cumulative Effects of Marine Biological & Physical Resources

ROV activities proposed under Phase II of this research would permanently deposit steel dive weights (also known as "Alvin weights" weighing 20 lbs each) in the Monument during each ROV dive. The exact amount of ballast permanently dropped in the Monument is dependent on the buoyancy needs of the ROV during ascent. The ROV's weight when ready to ascent will determine the amount of ballast to be discharged. Typically, between 0-10 plates are dropped per dive, however, based on previous experience collecting deep-seal corals with the ROV *Jason*, researchers anticipate the need to drop 1-4 plates per dive. Discharge of ballasted steel plates was previously permitted and analyzed in the original EA dated October 2014 and accompanying SEA dated September 2015 for activities that occurred during Phase I of this project. AUV *Sentry* weight plates ranged in weight between 48-64 lbs each. Here, the ROV *Jason* plates weigh less than each *Sentry* weight. Furthermore, less ballast is anticipated for each ROV dive than was previously permitted for each AUV dive. Due to the weight and size of the steel weight under the proposed action (ROV activities utilized during Phase II research activities), the care taken by the ROV pilot to identify appropriate drop locations with no live

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specimens present, and the large size and scale of the Monument, the proposed activities would not be expected to significantly impact marine biological or physical resources.

Access to PMNM to conduct many activities - including research - and requires a permit. On average, 17 research expeditions are conducted in the Northwestern Hawaiian Islands each year and no significant impact to biological resources has been found. Based on this previous data, no significant adverse marine biological impacts are anticipated because this is the only research cruise that has proposed to collect the target species listed in the collections table above and no more than 360 fragments of coral or sponge colonies would be removed and less than 36 whole coral and sponge colonies would be collected within the Monument. Given the scope of this project and the size of the area covered within the Monument alone, a less than significant impact is expected on marine biological resources. Similarly, collections in locations outside of the Monument will be taken on the same scale, such that no more than 90 fragments and 9 whole colonies would be collected at each target location, regardless of whether the site is in or out of the Monument boundaries.

Furthermore, the proposed research locations under the proposed activities are at a much greater depth than areas targeted by other research projects occurring within the PMNM. From 2009 – 2016, 26 research expeditions targeted depths within the range of 200 - 700 m have occurred in PMNM. Majority of marine research activities occurred at depths of <30 m.

Finally, given the remote nature of the areas selected for the Phase II research, human activity and the resulting impacts to the environment, are relatively low. As such, the proposed activities are not likely to result in significant cumulative impacts to biological and physical resources.

Cumulative effects of Cultural & Maritime Heritage Resources

Locations of underwater work would occur at depths ranging from 200 – 700 m and all study locations targeted during Phase II of this project are the exact same locations surveyed during Phase I of the project, with the exception of French Frigate Shoals which will be newly surveyed in 2016. These underwater areas are not known to contain culturally or historically significant sites. In addition, the proposed activities are temporary in nature and would not significantly impact historic or cultural resources, nor interfere with traditional Hawaiian practices. Therefore, no cumulative impacts to cultural resources are anticipated as a result of the proposed research.

5.0 ENVIRONMENTAL PERMITS, APPROVALS, AND COMPLIANCE

5.1 Permits

The University of Hawaii Marine Center submitted a conservation and management permit amendment (PMNM-2015-028-A1) to include one additional location, consistent with site locations for the research project in which it will support.

The Florida State University submitted a research permit application to conduct Phase II of its research project and conduct ROV operations and collect biological specimens in the Monument. This research would be supported by the University of Hawai'i Marine Center pursuant to the amended conservation and management permit discussed above.

No other permits are required for these activities, as the activities contained herein are not expected to result in incidental disturbance or take of Hawaiian monk seals or cetaceans.

5.2 Other Laws and Authorities Considered

5.2.1 Magnuson-Stevens Fishery Conservation and Management Act

Targeted coral and sponge species are found within the target depth range of this research activity and attach and grow on exposed, hard-bottom substrate (Tooker, et al 2005). Although the R/V *Kilo Moana* and ROV *Jason* will transit through other areas of the marine environment, the majority of any impacts from the proposed action would be expected at the bottom habitats of the research sites. Soft bottoms such as the areas targeted for deployment of the lander, and ROV ballast discharge upon ascent, do not have a suitable surface for the target species to attach (NOAA, 2006; Drazen, personal communication, May 31, 2007). The bottom habitat surrounding the project drop areas, however, may be inhabited by invertebrate fauna, burrowing fish, and bottom-dwelling fish. The aspects of the proposed action with the potential to affect this bottom habitat are the vehicle transit of the ROV *Jason*, collection of the coral and sponge species and recovery of the lander. To evaluate compliance with Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat (EFH) protections, on June 7, 2016, ONMS initiated informal consultation with NMFS to identify any potential impacts to EFH from the proposed action. On June 14, 2016, NMFS concurred with ONMS' conclusion that due to the limited scope of the proposed action, no adverse impacts to EFH are anticipated. Also, cumulative impacts are not expected as a result of the proposed activities because a vast amount of similar habitat lies within the PMNM.

5.2.2 Endangered Species Act

On July 25, 2016, PMNM initiated an informal consultation with NMFS Pacific Islands Regional Office (PIRO) on the operation of the ROV *Jason* and specimen collection.

The National Marine Fisheries Service (NMFS) has determined that the proposed activities would not adversely affect Hawaiian Monk Seals (*Monachus schauinslandi*), green sea turtles (*Chelonia mydas*), hawksbill sea turtles (*Eretmochelys imbricata*), North Pacific distinct

population segment of loggerhead sea turtles (*Caretta caretta*), olive ridley sea turtles (*Lepidochelys olivacea*), leatherback sea turtles (*Dermochelys coriacea*), Main Hawaiian Islands false killer whale distinct population segment (*Pseudorca crassidens*), humpback whales (*Megaptera novaeangliae*), sperm whales (*Physeter macrocephalus*), fin whales (*Balaenoptera physalus*), blue whales (*Balaenoptera musculus*), sei whales (*Balaenoptera borealis*), and north pacific right whales (*Eubalaena japonica*). The proposed activities would take place greater than 3nm from shore at a depth range of 200 - 700m. As described in previous EA documents, staff aboard the R/V *Kilo Moana* would maintain a rotation of staff that would serve as observers aboard the vessel during research operations. In particular, observer staff would look for the presence of endangered or threatened marine species to ensure minimal to no disturbance or interaction with such species. Should a protected species be sighted within 100 feet of the vessel during operations, to the extent practicable, the vessel would slow and stop if necessary until the animal left the area.

In the analysis, NMFS PIRO concurred with the determination by ONMS PMNM that the proposed activities may affect, but are not likely to adversely affect ESA-listed marine species or designated critical habitat. NMFS' concurrence was received on [DATE] and was based on the finding that the effects of the proposed activities are expected to be insignificant, discountable, or beneficial as defined in the joint USFWS-NMFS Endangered Species Consultation Handbook (NMSF & USFWS 1998).

5.2.3 National Historic Preservation Act (NHPA)

Under the provisions of Section 106 of the National Historic Preservation Act of 1966, the Secretary of the Interior has compiled a national register of sites and buildings of significant importance to America's history. Sites in the NWHI include cultural sites on Nihoa Island and Mokumanamana Island, and historic sites on Midway Atoll. The proposed activities would not be expected to cause any negative impacts to known historic properties, including registered sites or buildings on shore or any such submerged site, such as shipwrecks, because activities would not be conducted within the vicinity of known historic resources.

5.2.4 Marine Mammal Protection Act

The Marine Mammal Protection Act authorizes NMFS to take measures to protect marine mammals that may involve setting aside habitat required by various life stages, although the chief provision is the prohibition of "taking" marine mammals directly or indirectly. None of the activities proposed herein should directly or indirectly result in interactions with monk seals or other protected marine mammals such as dolphins or whales. While there is a very remote chance of the vessel colliding with a marine species during operations, the vessel and research permittees are required to follow all applicable Monument Best Management Practices (such as BMP #4: BMP for Boat Operations and Diving Activities; included as part of Appendix C: PMNM Best Management Practices) and, in doing so, would further minimize the already remote chance of a collision with a marine mammal. Furthermore, during Phase I of the project, permittees were required to have someone on watch at all times during multi-beam operations to watch for marine mammals in the vicinity of the vessel. Should a marine mammal appear to be within 100 yards of the vessel, the vessel would be required to cease activities until the nearby marine mammal left the area, which would further less the likelihood of a marine mammal take. This mitigation measure would also be required as part of Phase II of the project.

5.2.5 Executive Order 12898 on Environmental Justice

Consistent with the President's Executive Order on Environmental Justice (February 11, 1994) and the Department of Commerce's Environmental Justice Strategy, the proposed research activities would not have any disproportionately high and adverse human health or environmental effects on minority or low income populations.

5.2.6 Executive Order 12866

Implementation of the activities herein described does not constitute a "significant regulatory action" as defined by Executive Order 12866 because (1) it would not have an annual effect on the economy of \$100 million or more, or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities; (2) it would not create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; (3) it would not materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; and (4) it would not raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

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7.0 LIST OF PREPARERS

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8.0 APPENDICES

Appendix A: Environmental Assessment for Papahānaumokuākea Marine National Monument dated October 2014

Appendix B: Supplement Environmental Assessment for Deep Sea Research within the Northwestern Hawaiian Islands dated September 2015

Appendix C: PMNM Best Management Practices relevant to proposed research

Appendix D: ROV *Jason* Fact Sheet