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

June 12, 2015

Board of Land and Natural Resources
Honolulu, Hawai'i

Request for Authorization and Approval to Issue a Papahānaumokuākea Marine National Monument Native Hawaiian Practices Permit to Shauna Kēhaunani Springer, Nā Maka o Papahānaumokuākea and Conservation International - Hawai'i, for Access to State Waters to use Traditional Ecological Knowledge to Examine Intertidal Ecosystems Activities

The Division of Aquatic Resources (DAR) hereby submits a request for your authorization and approval for issuance of a Papahānaumokuākea Marine National Monument Native Hawaiian practices permit to Shauna Kēhaunani Springer, Nā Maka o Papahānaumokuākea and Conservation International - Hawai'i, pursuant to § 187A-6, Hawai'i Revised Statutes (HRS), Chapter 13-60.5, Hawai'i Administrative Rules (HAR), and all other applicable laws and regulations.

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

- Nīhoa Island
- Mokumanamana (Necker)
- Mokupapapa (French Frigate Shoals)
- Puhahonu (Gardner Pinnacles)

The activities covered under this permit would occur between June 15, 2015 and June 14, 2016.

The Applicant and the proposed activities are a renewal of work previously permitted and conducted in the Monument. New proposed activities include collecting 'opihi and hā'uke'uke to examine maternal investment of these intertidal species on various areas in the intertidal zone.

INTENDED ACTIVITIES

The Applicant proposes to examine the basic ecology of 'opihi populations and intertidal ecosystems with the NWHI by making keen observations of the environment and

interactions by understanding connections with atmospheric and seasonal cycles from the Native Hawaiian traditional ecological knowledge.

This Applicant would use Native Hawaiian protocol and practice, based on traditional knowledge, to assess the environment, which would be integrated with scientific ecological data. Native Hawaiian observations include using all the senses to note activities in the sky, land, and ocean. A standard ʻopihi monitoring protocol that is inclusive of Hawaiian methods of monitoring has been developed for this proposed project. It would continue to be refined to monitor ʻopihi populations in the Monument and select locations on Hawaiʻi Island and Maui. Documenting activities and recording connections between observations would highlight relationships and possible dependencies between reoccurring events and activities. Observations may focus on the following:

1. Sky observations would include looking at and noting: cloud formations, wind direction/strength and what time it changes, horizon visibility, bird activity, the moon and sun rising an setting, moon phases, stars and other weather-related observations such as rain and rainbows.
2. Land observations would include observing and noting: flowering plants and which are seeding and fruiting, new growth, which animals are reproducing, soil moisture, bird arrivals and departures, and any other animal behaviors.
3. Ocean observations would include noting: tide level and time, waves and currents, invertebrate behavior, limu, fish in the intertidal environments, spawning and/or aggregation of species, and juveniles and/or newly recruited species.

As an extension of the ecological research methods, the Applicant will collect ʻopihi and hāʻukeʻuke to examine maternal investment of these intertidal species on various areas in the intertidal zone. There is no feasible method to successfully spawn ʻopihi or ascertain the sex of ʻopihi other than through dissection. Individual ʻopihi will be collected, the gonad tissue will be extracted, and the eggs will be frozen for future biochemical analyses. For hāʻukeʻuke, the Applicant will spawn individuals on shore to ensure that only females were gathered. Spawning of hāʻukeʻuke will be induced by injecting 0.5 M KCl. Eggs of each female will be counted, then a subset will be placed in filtered seawater on glass slides under cover slips resting on clay feet to prevent flattening. Eggs will be measured on board the research vessel with a large field microscope. ImageJ software will be utilized to measure egg diameter and calculate egg volume from the measurements. Egg samples will be frozen at - 80 ℃ for future biochemical analyses at the University of Hawai'i at Mānoa. To ensure responsible and ethical practices, individuals from small ʻopihi and hāʻukeʻuke populations will not be collected in order to sustain the population.

Additionally, the Applicant intends to consume various intertidal species during the trip. Consumption of intertidal resources including invertebrates and limu will support cultural practice and relationship between participants and the islands of the archipelago. Consumption feeds physical, spiritual, and cultural health, rooting Native Hawaiians in their ancestral ties and customary practices.

Harvest and consumption (within the Monument) of intertidal invertebrates and limu would occur under this permit application. Tables 1-3 outline harvest/consumption details at all four island locations:

Table 1. Intertidal Invertebrate Resource Harvest List

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Table 2. Fish Harvest List

Common Name	Scientific Name	Hawn Name	During Transit	Total
Yellowfin tuna	Thunnus albacares	Ahi	10	10
Dolphinfish	Coryphaena hippurus	Mahimahi		
Wahoo	Acanthocybium solandri	Ono		

Table 3. Limu Harvest List

Common Name	Scientific Name	Hawn Name	Niihau	Moku-manamana	Mokapapapa	Pohakuna	Total
Nori	Porphyra tenuistipata	Limu Konu	100 g	100 g	100 g	100 g	400 g
Sea Lettuce	Ulva fasciata	Porphyra	100 g	100 g	100 g	100 g	400 g

This project would be a collaboration of efforts from Na Mamo o Muole'a, The Nature Conservancy, Hawai'i Institute of Marine Biology, Nā Maka o Papahānaumokuākea, Conservation International-Hawai'i, Texas A&M, and the NOAA Papahānaumokuākea Marine National Monument. This activity would benefit the management of the Monument as it facilitates cultural access, use, and understanding of the place. This proposal serves as an international model for the integration of traditional ecological knowledge base with that of western "scientific method" approach. This highly integrated transdisciplinary approach lies at the core of the Monument management; these proposed activities provide knowledge and experience that moves the Monument management forward and allows for comprehensive decision making.

The activities proposed by the Applicant directly support the Monument Management Plan's priority management need under 3.1 – Understanding and Interpreting the NWHI,

3.1.2 - Native Hawaiian Culture and History Action Plan (NHCH), Activities NHCH-2.2: Support Native Hawaiian cultural research needs and NHCH-2.3: Facilitate cultural field research and cultural education opportunities. Both Activities encourage partnerships and the facilitation of research and educational opportunities with Native Hawaiian organizations (PMNM MMP Vol 1, p. 135).

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

- ☒ Removing, moving, taking, harvesting, possessing, injuring, disturbing, or damaging any living or nonliving monument resource
- ☒ Sustenance fishing (Federal waters only, outside of Special Preservation Areas, Ecological Reserve and Special Management Areas)
- ☒ Subsistence fishing (State waters only)
- ☒ Swimming, snorkeling, or closed or open circuit SCUBA diving within any Special Preservation Area or Midway Atoll Special Management Area

REVIEW PROCESS:

The permit application was sent out for review and comment to the following scientific and cultural entities: Hawai'i Division of Aquatic Resources, Papahānaumokuākea Marine National Monument (NOAA/NOS), NOAA Pacific Islands Regional Office (NOAA-PIRO), United States Fish and Wildlife Service Pacific Islands NW Refuge Complex Office, and the Office of Hawaiian Affairs (OHA). In addition, the permit application was posted on the Monument Web site on March 16, 2015, giving the public an opportunity to comment. The application was posted within 40 days of its receipt, in accordance with the Monument's Public Notification Policy.

cuestions and Comments received from the scientific community are summarized as follows:

1. What intertidal species will be eaten during the "consumption" portion of the cultural practice?

   Please see attached 2015 harvest list, which is an attachment to my permit application for a list of species collected for consumption.

   [Harvest list also provided in Tables 1-3 in this document]

2. 5b. (Page 10) – the applicant has both "sustenance fishing" and "subsistence fishing" both checked.

   The complete list of collections for this permit application is the attached excel file entitled 2015 Harvest List (an appendix to my permit application). Sustenance fishing and Subsistence fishing were both checked because it is my

understanding that sustenance fishing is allowed for in federal waters and subsistence fishing is allowed for, via a PMNM permit, in State waters. Because we intend to fish using a hook and hand line while in transit, I checked both sustenance and subsistence fishing boxes so to ensure we had coverage when we transiting both federal and state waters.

[Harvest list also provided in Tables 1-3 in this document]

3. Will other species be targeted for collection and consumption in addition to the 15 listed on pages 21 and 22?

   No.

4. Activity will occur from shore only? Or also from the vessel?

   Fishing using a hook and handline (ie, trolling/line fishing) will occur during transit aboard the MV Searcher. Collection and consumption of species found in the intertidal area (inverts, crabs, etc) will be collected on location (ie, the intertidal area).

5. Please explain the anticipated cumulative impacts of having 3 groups (Springer, Toonen-Bird, &Thompson) at one site collecting intertidal zone species at Nihoa.

   No more than 10 people would participate in intertidal monitoring activities on any one island and at any given time. This is the same footprint that has occurred in previous years (since 2009) and no known or identifiable negative impacts to the environment have occurred since this projects inception. The addition of the Thompson permit activities, aboard the Hikianalia, will not change the footprint in the intertidal zone. As mentioned previously, no more than 10 individuals will participate in intertidal monitoring efforts at any one time. Collections of invertebrates and other specimens found in the intertidal zone will be limited to what has been requested via my permit application as well as Dr. Chris Bird's application.

6. Total sample collections listed on pages 23, 24 and the matrix are inconsistent. Please clarify the actual target totals for each species for this application.

   The inconsistency was due to leaving out one of the islands we would potentially access for intertidal surveys during my initial calculations on pages 23-24 (e.g., tallied the total based on 3 island areas, not 4, however, we may potentially access 4 of the island areas, Nihoa, Mokumanamana, Pūhāhonu, and Mokupāpapa). The attached matrix (same spreadsheet appended to my permit application) reflects the accurate totals per island and cumulative project totals.

7. How many hā'uke'uke will be injected with Potassium Chloride (KCl) of the 220 requested to collect in the application?

We will be collecting up to 200 hā'uke'uke not 220 (refer to the updated 2015 harvest list). Up to 100 hā'uke'uke of the 200 requested will be injected with KCl. We are looking for female hā'uke'uke, but unfortunately, the sex cannot be determined until we spawn them. From past experiences we had to collect a total of 25 hā'uke'uke to obtain the seven females needed for the study. On the research cruise, we will collect 25 hā'uke'uke on two separate days for each island with a goal to obtain a total of 7 female hā'uke'uke for each island. At the very most, we will inject KCl into 25 hā'uke'uke from each island, totalling up to 100 hā'uke'uke of the 200 requested per island. If the total number of females are obtained before injecting all hā'uke'uke collected, we will consume the remaining.

[Harvest list also provided in Tables 1-3 in this document]

8. Please confirm that no KCL will enter the waters and that the applicants will follow all PMNM BMPs.

   No KCl will enter the waters and all applicants will follow PMNM BMPs.

9. This year's efforts are the seventh time these activities are being conducted. Is there any report from the previous years on what has been found to date?

   For each permit I have received, I have complied with the permitting requirements and submitted an annual permit report each year by 12/31 and a summary report within 30 days of the expiration of each permit received.

10. It appears that your permit and Dr. Bird and Dr. Toonen's permit are very closely linked. Why are these activities being separated into two permits rather than under one permit?

    Yes, both permits are closely related and since this projects inception in 2009, Dr. Bird, Dr. Toonen and I have partnered in this effort to monitor intertidal species, combining methods grounded in western science as well as native Hawaiian practices. However, while the projects are conducted jointly, each project is independent and therefore, two permits are requested. We believe that by collaborating, not only are participants views and perspectives broadened, the footprint in PMNM is minimized and resources are fully utilized (e.g., once Dr. Bird and Dr. Toonen extract the parts of the species they want to research, the participants, consume all remaining edible parts to connect with and honor each species). In addition, per the PMNM sustenance fishing policy, sustenance fishing (within federal waters) and subsistence fishing (within state waters) is only allowed under a Native Hawaiian Practices permit.

11. Is there a projected end or some point when the native practices portion of this effort would not be continued?

No, our culture is living and breathing because kanaka maoli continue to practice and perpetuate the Hawaiian culture and Hawaiian practices. To set an end point to these practices would be the start of the end of our practices.

COMMENTS / RECOMMENDATIONS:

1. Twenty-eight (28) people are covered under this permit? (page 2), please clarify.

   A total of 26 people would be covered under this permit (10 participants onboard Searcher & 16 participants onboard Hikianalia). I have requested that all participants onboard both the Searcher and Hikianalia be covered under my permit application (as did Thompson and Bird in their respective applications). The reason being, this is a joint and collaborative trip with two other permit applicants (Chris Bird and Nainoa Thompson), I request to have all participants covered under my application, in the event participants onboard Hikianalia are able to participate in the intertidal surveys. To re-iterate, no more than 10 individuals would participate in intertidal surveys at any given time.

2. Suggest applicant fully explain the specific cultural aspect being observed and the cultural importance of that activity.

   This explanation is noted in the original application. Please see page 2-4 for the initial reference on the cultural aspects of this proposal.

   Excerpt from pages 2-4:
   "To accomplish this activity we will utilize Native Hawaiian protocol and practice, based on traditional knowledge and methodologies, to assess the environment, which will be integrated with the scientific ecological data. Native Hawaiian observations include using all senses by using your "eight eyes" makawalu (Kanahele) to note activities in the sky, land, and ocean and to connect these elements to our daily lives. Not only is it important to make observations of these elements and how they relate to natural resources, it is also vitally important to reconnect to our cultural spirituality by consuming intertidal resources that are critical to the survival of kanaka maoli. Documenting activities and recording connections between these events will highlight relationships and possible dependencies between reoccurring events and activities over seasons and between years.

   - *Sky observations include looking at cloud formations, noting wind direction/strength and what times it changes, visibility of the horizon, bird activity, other weather related observations such as rain or rainbows, the rising and setting of the moon and sun, the moon phase, and stars.*
   - *Land observations include looking at any plants that are flowering, seeding or fruiting, new growth, animals reproducing, precipitation and soil moisture, bird arrival and departure and any other animal behaviors.*

Land observations from the main Hawaiian Islands during the expedition may also be useful to help remember activities in the NWHI during that time. For example, we notice hala fruiting here on the main islands and can relate that in the Northwestern Hawaiian Islands, this is the season when juvenile iwa are still in the nest.

- *Ocean observations include noting the tide (high/low and time), waves and currents, identifying and looking at the behavior of invertebrates, limu (algae) and fish in the intertidal environments, noting any spawning or aggregation of species, and noting any juveniles and newly recruited species. (see observation datasheet).*

Through these types of observations, one can discover how different the intertidal zone changes between seasons (Kauwela-summer/Ho'oilo-winter). At sites in the MHI, the limu (Crustose Coralline Algae (CCA) and macoalgae) zone expands during the winter, due to the large waves that are generated by winter storms, and decrease during the calm summer months. This allows other organisms such as 'opihi and ha'uke'uke to expand their habitable zone as well. New recruits for 'opihi and ha'uke'uke were observed during the winter season about 1-2 months after a peak spawning event, but wasn't observed during the summer season. The peak spawning period was determined by conducting a gonad study for both 'opihi and ha'uke'uke. These are just a few examples that demonstrate how both western and traditional knowledge can complement each other to obtain both quantitative and qualitative data."

3. Hoku Johnson of NOAA is the resource monitor, if the application is approved, and she is included in the 10 people conducting these proposed surveys at selected sites.

   Noted.

4. Currently the application lists 4 sites: Nihoa, Mokumanamana, FFS & Gardiner Pinnacles. If they accessed all four sites, their wildlife collections would be larger as indicated in their applications, however, they are only planning thus far for Nihoa and Mokumanamana, and realistically those listed number of collections would be much lower.

   As stated in the application, all 4 locations have been requested. However, it is possible that not all locations will be accessed during the trip this Summer.

5. Both Springer and Toonen-Bird will share 10 individuals assisting with these proposals during the survey and collections, so there will be not more than 10 people on site of the intertidal zone.

   Correct.

6. The group sizes are pretty large. Please take great care not to damage the reef during water and intertidal activities. Take extreme care with vessels and equipment to prevent being a vector for invasive species.

   Noted.

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

Cultural reviews support the acceptance of this application. No concerns were raised.

Comments received from the public are summarized as follows:

No comments were received from the public on this application.

Additional reviews and permit history:

Are there other relevant/necessary permits or environmental reviews that have or will be issued with regard to this project? (e.g. MMPA, ESA, EA) Yes ☒ No ☐
If so, please list or explain:

- The proposed activities are in compliance with the National Environmental Policy Act.
- The proposed activities are in compliance with the National Historic Preservation Act.
- An ESA section 7 consultation was completed July 8, 2011 and remains valid through 2015. On July 3, 2012, consultation was re-initiated to account for the presence of hawksbill turtles, update BMPs, and highlight new aspects of the joint Toonen/Bird permit application and S. Kēhaunani Springer's permit application. A NMFS letter of concurrence was issued on August 27, 2012, to remain valid through 2015.
- The Department has made an exemption determination for this permit in accordance chapter 343, HRS, and Chapter 11-200, HAR. See Attachment ("DECLARATION OF EXEMPTION FROM THE PREPARATION OF AN ENVIRONMENTAL ASSESSMENT UNDER THE AUTHORITY OF CHAPTER 343, HRS AND CHAPTER 11-200 HAR, FOR PAPAHĀNAUMOKUĀKEA MARINE NATIONAL MONUMENT NATIVE HAWAIIAN PRACTICES PERMIT TO MS. SHAUNA KĒHAUNANI SPRINGER, NĀ MAKA O PAPAHĀNAUMOKUĀKEA AND CONSERVATION INTERNATIONAL - HAWAI'I, FOR ACCESS TO STATE WATERS TO USE TRADITIONAL ECOLOGICAL KNOWLEDGE TO EXAMINE INTERTIDAL ECOSYSTEMS UNDER PERMIT PMNM-2015-017.")

Has Applicant been granted a permit from the State in the past? Yes ☒ No ☐
If so, please summarize past permits:

- Monument permits have been issued to the Applicant for similar activities in 2011 and 2012 (PMNM-2011-040, PMNM-2012-052, and PMNM-2014-020, respectively).
- Similar activities, including cultural monitoring activities on land and intertidal areas, have been previously permitted in the Monument for different applicants (PMNM-2007-024 Kanahele, PMNM-2008-041 Kikiloi-Graves, PMNM-2009-021 Kikiloi-Graves, PMNM-2009-023 Kanahele, PMNM-2009-047 Kawelo, PMNM-2011-036 Kanahele, PMNM-2011-039 Kikiloi-Graves, PMNM-2011-040 Tom, PMNM-2012-038 Anthony, PMNM-2012-052 Springer, PMNM-2013-026 Anthony, and pending applications PMNM-2015-014 Kikiloi and PMNM-2015-022 Kanahele. Personnel that would be participating in these activities have participated in past approved permitted activities previously listed.

Have there been any	a) violations:	Yes	☐	No	☒
	b) Late/incomplete post-activity reports:	Yes	☐	No	☒

Are there any other relevant concerns from previous permits?	Yes	☐	No	☒

STAFF OPINION

PMNM staff is of the opinion that Applicant has properly demonstrated valid justifications for his application and should be allowed to enter the NWHI State waters and to conduct the activities therein as specified in the application with certain special instructions and conditions, which are in addition to the Papahānaumokuākea Marine National Monument Research Permit General Conditions. All suggested special conditions have been vetted through the legal counsel of the Co-Trustee agencies (see Recommendation section).

MONUMENT MANAGEMENT BOARD OPINION

The MMB is of the opinion that the Applicant has met the findings of Presidential Proclamation 8031 and this activity may be conducted subject to completion of all compliance requirements. The MMB concurs with the special conditions recommended by PMNM staff.

RECOMMENDATION

That the Board authorize and approve a Native Hawaiian Practices Permit to Shauna Kēhaunani Springer, Nā Maka o Papahānaumokuākea and Conservation International - Hawai'i, with the following special conditions:

1. That the Board declare that the actions which are anticipated to be undertaken under this permit will have little or no significant effect on the environment and is therefore exempt from the preparation of an environmental assessment.

2. Upon the finding and adoption of the department's analysis by the Board, that the Board delegate and authorize the Chairperson to sign the declaration of exemption for purposes of recordkeeping requirements of chapter 343, HRS, and chapter 11-200, HAR.

a. To prevent introduction of disease or the unintended transport of live organisms, the permittee must comply with the disease and transport protocol attached to this permit.

b. Tenders and small vessels must be equipped with engines that meet EPA emissions requirements.

c. Refueling of tenders and all small vessels must be done at the support ships and outside the confines of lagoons or near-shore waters in the State Marine Refuge.

d. No fishing is allowed in State Waters except as authorized under state law for subsistence, traditional, and customary practices by Native Hawaiians.

e. If there is any Hawaiian monk seal or any other protected species in the area when performing any permitted activity shall cease until the animal(s) depart the area, except as permitted for specific management of that species.

Respectfully submitted,

Maria Carnevale
State Co-Manager
Papahānaumokuākea Marine National Monument

APPROVED FOR SUBMITTAL

Suzanne Case
Chairperson

Papahānaumokuākea Marine National Monument

Native Hawaiian Practices Permit Application

NOTE: ***This Permit Application (and associated Instructions) are to propose activities to be conducted in the Papahānaumokuākea Marine National Monument. The Co-Trustees are required to determine that issuing the requested permit is compatible with the findings of Presidential Proclamation 8031. Within this Application, provide all information that you believe will assist the Co-Trustees in determining how your proposed activities are compatible with the conservation and management of the natural, historic, and cultural resources of the Papahānaumokuākea Marine National Monument (Monument).***

ADDITIONAL IMPORTANT INFORMATION:

- Any or all of the information within this application may be posted to the Monument website informing the public on projects proposed to occur in the Monument.

- In addition to the permit application, the Applicant must either download the Monument Compliance Information Sheet from the Monument website OR request a hard copy from the Monument Permit Coordinator (contact information below). The Monument Compliance Information Sheet must be submitted to the Monument Permit Coordinator after initial application consultation.

- Issuance of a Monument permit is dependent upon the completion and review of the application and Compliance Information Sheet.

INCOMPLETE APPLICATIONS WILL NOT BE CONSIDERED

Send Permit Applications to:
Papahānaumokuākea Marine National Monument Permit Coordinator
6600 Kalaniana'ole Hwy. # 300
Honolulu, HI 96825
nwhipermit@noaa.gov
PHONE: (808) 397-2660 FAX: (808) 397-2662

SUBMITTAL VIA ELECTRONIC MAIL IS PREFERRED BUT NOT REQUIRED. FOR ADDITIONAL SUBMITTAL INSTRUCTIONS, SEE THE LAST PAGE.

Papahānaumokuākea Marine National Monument
Permit Application Cover Sheet

This Permit Application Cover Sheet is intended to provide summary information and status to the public on permit applications for activities proposed to be conducted in the Papahānaumokuākea Marine National Monument. While a permit application has been received, it has not been fully reviewed nor approved by the Monument Management Board to date. The Monument permit process also ensures that all environmental reviews are conducted prior to the issuance of a Monument permit.

Summary Information

Applicant Name: Shauna Kēhaunani Springer
Affiliation: Nā Maka o Papahānaumokuākea & Conservation International – Hawai'i

Permit Category: Native Hawaiian Practices
Proposed Activity Dates: July 2015
Proposed Method of Entry (Vessel/Plane): Vessel
Proposed Locations: Nihoa, Mokumanamana, Mokupapapa (French Frigate Shoals), Puhahonu (Gardner Pinnacles)

Estimated number of individuals (including Applicant) to be covered under this permit: Twenty eight (28) individuals are to be covered under this permit, co-listed under the Research application submitted by Dr. Chris Bird and Polynesian Voyaging Society
Estimated number of days in the Monument: 14 days

Description of proposed activities: (complete these sentences):

a.) The proposed activity would…

The proposed activity aims to examine the basic ecology of 'opihi populations and intertidal ecosystems within the NWHI by integrating Hawaiian knowledge systems and modern science. We will make keen observations of the environment and interactions by understanding connections with atmospheric and seasonal cycles from a Native Hawaiian perspective and to reconnect kanaka maoli to these resources. Through a collaboration with Na Mamo o Muole'a, The Nature Conservancy, Hawai'i Institute of Marine Biology, Nā Maka o Papahānaumokuākea, Conservation International-Hawaii, Texas A&M and the NOAA Papahānaumokuākea Marine National Monument; a standard 'opihi monitoring protocol which is inclusive of Hawaiian methods of monitoring, has been developed (and is continuously being refined) to monitor populations within select locales on Hawai'i Island, Maui, Kaho'olawe, Moloka'i, Kaua'i and the NWHI. This would be the seventh year collecting data at locations within the NWHI.

We also aim to examine maternal investment of 'opihi (Cellana exarata, C. sandwicensis) and hā'uke'uke (Colobocentrotus atratus) across the NWHI to better understand natural population dynamics of these culturally-significant marine invertebrate species. We propose to investigate

the environmental factors (temperature, chlorophyll-A, wave exposure) that drive spatial variation in egg number, size, and quality and how these differences in maternal investment contribute to larval fitness. This activity builds on existing population genetics research implemented on previous intertidal cruises to Papahānaumokuākea and will contribute critical information of the relationships between environmental parameters, intertidal habitat quality, and broodstock quality of ʻopihi and hāʻukeʻuke in the NWHI. We will compare the findings to Main Hawaiian Island populations to identify spatial and temporal marine resource management strategies that prioritize protecting populations that produce high quality eggs and larvae. Through long-term monitoring of maternal investment and environmental parameters, we can develop predictions of how spatial and temporal changes in temperature, wave exposure, and chlorophyll-A levels will affect the quality of reproductive output and subsequent recruitment within and among populations.

Consistent with proclamation 8031, these activities will strengthen cultural and spiritual connections to the Northwestern Hawaiian islands and foster the expansion and perpetuation of Native Hawaiian ecological knowledge and research methodologies. This knowledge may be critical as it is observed by local Hawaii residents that 'opihi stocks are generally diminishing in size and number in the main Hawaiian islands, therefore more data in this area may help to curb the decline. The continuation of ʻopihi data collection, and comprehensive intertidal surveys (including fishes, algae and invertebrates) using Native Hawaiian ecological knowledge and methodologies coupled with western science will help to contribute to the overall health of Papahanaumokuakea.

b.) To accomplish this activity we would ....

To accomplish this activity we will utilize Native Hawaiian protocol and practice, based on traditional knowledge and methodologies, to assess the environment, which will be integrated with the scientific ecological data. Native Hawaiian observations include using all senses by using your "eight eyes" makawalu (Kanahele) to note activities in the sky, land, and ocean and to connect these elements to our daily lives. Not only is it important to make observations of these elements and how they relate to natural resources, it is also vitally important to reconnect to our cultural spirituality by consuming intertidal resources that are critical to the survival of kanaka maoli. Documenting activities and recording connections between these events will highlight relationships and possible dependencies between reoccurring events and activities over seasons and between years.

- Sky observations include looking at cloud formations, noting wind direction/strength and what times it changes, visibility of the horizon, bird activity, other weather related observations such as rain or rainbows, the rising and setting of the moon and sun, the moon phase, and stars.

- Land observations include looking at any plants that are flowering, seeding or fruiting, new growth, animals reproducing, precipitation and soil moisture, bird arrival and departure and any other animal behaviors. Land observations from the main Hawaiian Islands during the expedition may also be useful to help remember activities in the NWHI during that time. For

example, we notice hala fruiting here on the main islands and can relate that in the Northwestern Hawaiian Islands, this is the season when juvenile iwa are still in the nest.

- Ocean observations include noting the tide (high/low and time), waves and currents, identifying and looking at the behavior of invertebrates, limu (algae) and fish in the intertidal environments, noting any spawning or aggregation of species, and noting any juveniles and newly recruited species. (see observation datasheet).

Through these types of observations, one can discover how different the intertidal zone changes between seasons (Kauwela-summer/Ho'oilo-winter). At sites in the MHI, the limu (Crustose Coralline Algae (CCA) and macoalgae) zone expands during the winter, due to the large waves that are generated by winter storms, and decrease during the calm summer months. This allows other organisms such as 'opihi and ha'uke'uke to expand their habitable zone as well. New recruits for 'opihi and ha'uke'uke were observed during the winter season about 1-2 months after a peak spawning event, but wasn't observed during the summer season. The peak spawning period was determined by conducting a gonad study for both 'opihi and ha'uke'uke. These are just a few examples that demonstrate how both western and traditional knowledge can complement each other to obtain both quantitative and qualitative data.

The scientific research methods include laying belt transects to assess class size, population density, community structure, species range, distribution, and rugosity for all organisms within the intertidal zone. A minimum of 20 'opihi population/ intertidal surveys at each island / atoll will be conducted. Statistical analysis of the data will be analyzed at the Hawai'i Institute of Marine Biology & Texas A&M labs. Data analyzed will be useful to local and governmental managers to make effective decisions on managing the resources. See Bird's 2015 Research application for reference.

As an extension of the scientific research methods, we will collect 'opihi and hā'uke'uke to examine maternal investment of these intertidal species on various areas in the intertidal zone. There is no feasible method to successfully spawn 'opihi or ascertain the sex of 'opihi other than through dissection. We will collect individual 'opihi, extract the gonad tissue, and freeze the eggs for future biochemical analyses. For hā'uke'uke, we will spawn individuals on shore to ensure that we only collect females. Spawning of hā'uke'uke will be induced by injecting 0.5 M KCl. Eggs of each female will be counted, then a subset will be placed in filtered seawater on glass slides under cover slips resting on clay feet to prevent flattening. Eggs will be measured on board the research vessel with a large field microscope. We will use ImageJ software to measure egg diameter and calculate egg volume from the measurements. Egg samples will be frozen at -80℃ for future biochemical analyses at the University of Hawai'i at Mānoa (Moran lab, Edmondson Hall). To ensure responsible and ethical practices, we will refrain from collecting 'opihi and hā'uke'uke if populations appear too small to sustain collections.

Consumption of intertidal resources including invertebrates, limu will further support cultural practice and relationship between participants and our islands. Consumption feeds physical, spiritual, and cultural health rooting us in our ancestral ties and customary practices. Consumption allows us to be nurtured and nourished by place and genealogy. Our islands and

the resources thriving here are older siblings and customary relationships are based on the reciprocal practice of being fed and cared for by our older siblings while we care for and "feed" them in return. Our presence, activities, oli, observations, surveys, etc feed and care for place further supporting the physical, spiritual and cultural health of our islands and ourselves. Consumption also allows us to interact with place and understanding the network involved to produce a meal, which feeds a community.

Prior to departure to NWHI, the Nā Maka o Papaphānaumokuākea will conduct a cultural orientation which will include the harvesting, preparation and consumption of food to introduce and ground all the participants to the importance of feeding a community and the relationship between the natural environment (genealogy) and ourselves.

The research team will work together to apply this integrated monitoring approach. The research team will be comprised of cultural researchers / practitioners, scientists, and managers. To ensure the success of these field studies, the team will conduct appropriate protocol and offer ho'okupu (cultural offerings) to maintain the spiritual integrity of the sites that are visited.

c.) This activity would help the Monument by …

This activity will not only add to the current knowledge of the marine environment in the NWHI, it will help to gain a better understanding of the resources by looking at the resources through a Native Hawaiian cultural lens ensuring a holistic approach to interaction and care. It will also help the monument by continuing to re-establish Native Hawaiian ancestral consciousnes and awareness with regard to the health and conditon of the marine resources. Native Hawaiian protocol and methodology is integrated with western scientific protocol and methodology to better understand the status of intertidal marine resources and helps the Monument strengthen its management of cultural resources and ensures the strong participation of Native Hawaiians in the region's long-term protection. By providing opportunities to conduct cultural research, (cultural) researchers will assist in the recovery of important Native Hawaiian marine management practices and support the use of Native Hawaiian traditional ecological knowledge. Additionally, the permitted cultural practitioners and researchers will be key to the development of an eventual cultural access and monitoring plan for the NWHI.

The scientific research methods will build on the valuable long-term monitoring data collected on previous intertidal research cruises. The additional method will provide baseline knowledge of how environmental factors influence the egg quality of ʻopihi and hāʻukeʻuke populations in the NWHI. These activities align with continuing research of recruitment, intertidal habitat quality, and population connectivity implemented on previous PMNM intertidal cruises. Monitoring maternal investment of these populations in the NWHI will provide critical information about how climate change effects such as sea level rise and increased sea surface temperatures can affect the ability of these populations to produce healthy eggs and larvae. Overall, this study will shed light on the effects of climate change on natural populations of these two culturally-significant marine invertebrates. On a larger scale, this study will allow maternal investment to be investigated across the entire biogeographic distribution of Hawaiian ʻopihi and

hā'uke'uke populations. We will better understand differences of maternal investment between remote populations in the NWHI and the Main Hawaiian Island populations experiencing greater levels of anthropogenic pollution and overharvesting.

Other information or background: We will also be collaborating with the Polynesian Voyaging Society (PVS) on their proposed activities and project titled: Collaboration of Science and Culture: a multidisciplinary expedition to the Northwestern Hawaiian Islands. This collaboration brings together researchers, Native Hawaiian Practitioners, educators, and Hawai'i conservation leaders to conduct activities within PMNM using a modern-day research vessesl (Searcher) and a traditional voyaging canoe (Hikianalia) as a complementary platform. Applicants under the PVS proposal will participate in the activities under this permit and Dr. Bird's research permit and vice-versa. Those under this permit will participate in the activities under the PVS permit which include: increased navigation and wa'a (canoe) training, improved understanding of target reef fish species, raised awareness of interconnectedness through filiming and photographic documentation, amplified expedition experiences through social media and classroom outreach and integrated perspectives of environmental exploration and knowledge.

Additionally this project is also supported by the following activities in the Monument Management Plan, (NHCH-2.1, 2.2, 2.3, 2.5, 2.6, 3.4, 4.2, 5.3 and NHCI – 3.1 and 3.2) all of which call for the identification of Native Hawaiian research priorities and access opportunities.

NHCH-2.1: Continue to compile information and conduct new cultural historical research about the NWHI.
NHCH-2.2: Support Native Hawaiian cultural research needs.
NHCH-2.3: Facilitate cultural field research and cultural education opportunities annually.
NHCH-2.5: Incorporate cultural resources information into the Monument Information Management System.
NHCH-2.6: Continue to facilitate Native Hawaiian cultural access.
NHCH-3.4: Identify and integrate Native Hawaiian traditional knowlegdge and management concepts into Monument management.
NHCH-4.2: Develop and implement specific preservation and access plans, as appropriate, to protect cultural sites at Nihoa and Mokumanamana.
NHCH-5.3: Integrate Native Hawaiian values and cultural information into the Monument permittee education and outreach program.

NHCI-3.1: Engage the Native Hawaiian community to identify how traditional knowledge will be integrated into Monument activities.
NHCI-3.2: Use and integrate Native Hawaiian traditional knowledge in Monument management activities.

Most marine invertebrates go through a microscopic, free-swimming larval stage early in their lives; thousands to millions of these larvae are produced, but few survive to become adults. Recruitment to adult populations is determined by the number and the quality of larvae that survive, arrive, and settle, and there has been considerable interest in identifying and conserving source populations that contribute disproportionately to the larval pool (Cowen et al. 2006). One

factor that can strongly influence adult reproductive output, larval fitness, and subsequent recruitment is maternal investment (Marshall & Keough 2007). There is wide agreement that within species, per-offspring maternal investment varies greatly (Bernardo 1996, Marshall & Keough 2007, Marshall & Keough 2008), but much less is known about how environmental factors drive this variation or how it affects subsequent larval performance (George 1995, Marshall & Keough 2008). Temperature can affect larval survivability, pelagic larval duration, and dispersal distance. Colder temperatures allow for greater maximum dispersal distance ('O Connor et al. 2007). Describing the links between environment, maternal investment, and larval fitness is key to understanding population dynamics, because populations that produce large and high quality larvae may contribute more successful settlers into new areas than populations producing low quality larvae, even if low quality larvae are more numerous (Marshall & Keough 2007). Identifying these links will allow resource managers to identify populations likely to produce high quality eggs that yield high quality larvae that can successfully recruit over broad areas. Our results will inform the optimal design of marine protected areas for conservation of these two ecologically- and culturally significant species.

Literature cited:

Bernardo J (1996) The particular maternal effect of propagule size, especially egg size: patterns, models, quality of evidence and interpretations. American Zoologist 36(2):216-236.
Cowen R, Paris C, Srinivasan A (2006) Scaling of connectivity in marine populations. Science 311(5760):522-527.
George S (1995) Echinoderm egg and larval quality as a function of adult nutritional state. Oceanologica Acta 19:297-308.
Marshall D, Keough M (2007) The evolutionary ecology of offspring size in marine invertebrates. Advances in Marine Biology 53(7):1-60.
Marshall D, Keough M (2008) The relationship between offspring size and performance in the sea. The American Naturalist 171(2):214-224.
'O Connor M, Bruno JF, Gaines S, Halpern B, Lester S, Kinlan B, Weiss J (2007) Temperature control of larval dispersal and the implications for marine ecology, evolution, and conservation. National Academy of Sciences 104(4):1266-1271.

Section A - Applicant Information

1. Applicant

Name (last, first, middle initial): Springer, Shauna Kēhaunani

Title:

1a. Intended field Principal Investigator (See instructions for more information):
Shauna Kēhaunani Springer or Kim Kanoe Morishige

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

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

3. Affiliation (institution/agency/organization directly related to the proposed project):
Nā Maka o Papahānaumokuākea & Conservation International – Hawai'i, University of Hawai'i at Mānoa Department of Biology, University of Hawai'i Mānoa Marine Biology Graduate Program

4. Additional persons to be covered by permit. List all personnel roles and names (if known at time of application) here (e.g. John Doe, Diver):
A maximum of 11 TBD (will be named in the compliance information sheet) individuals comprised of researchers from Hawaii Institute of Marine Biology (HIMB), Texas A&M,

cultural researchers / practitioners from the communities of Hana, Kalapana, and Kalaemanō, Nā Maka o Papahānaumokuākea, Monument management staff, and non-governmental partners including The Nature Conservancy & Conservation International-Hawaii would conduct work under this permit

Section B: Project Information

5a. Project location(s):

		Ocean Based	
☒ Nihoa Island	☒ Land-based	☒ Shallow water	☐ Deep water
☒ Necker Island (Mokumanamana)	☒ Land-based	☒ Shallow water	☐ Deep water
☒ French Frigate Shoals	☒ Land-based	☒ Shallow water	☐ Deep water
☒ Gardner Pinnacles	☒ Land-based	☒ Shallow water	☐ Deep water
☐ Maro Reef			
☐ Laysan Island	☐ Land-based	☐ Shallow water	☐ Deep water
☐ Lisianski Island, Neva Shoal	☐ Land-based	☐ Shallow water	☐ Deep water
☐ Pearl and Hermes Atoll	☐ Land-based	☐ Shallow water	☐ Deep water
☐ Midway Atoll	☐ Land-based	☐ Shallow water	☐ Deep water
☐ Kure Atoll	☐ Land-based	☐ Shallow water	☐ Deep water
☐ Other			

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

Location Description:

Surveys would be conducted below the splash zone within intertidal areas on all basaltic islands that contain 'opihi habitat. The monitoring team would not access any sites beyond the splash zone on all islands.

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

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

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

The central purpose of the expedition is to expand and advance traditional Native Hawaiian knowledge in the field of marine conservation and management and continue to bridge the gap between cultural and western research methodologies. The primary objectives of the cultural expedition are to: (1) collect environmental data related to traditional Native Hawaiian marine management; (2) expand the application of traditional Hawaiian environmental monitoring tools and methodologies; (3) increase the knowledge base pertaining to intertidal ecosystems, including 'opihi / ha'uke'uke / limu abundance, health, and reproductive cycles and (4) re-establishing and strengthening cultural ties through feeding and being fed by our environment (genealogy).

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

The Findings are as follows:

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

All activities contained in this permit application were permitted over prior years (except maternal investment research of 'opihi and hā'uke'uke) and have demonstrated no impact on Monument cultural, natural and historic resources. All consultations (e.g. Section 106 National Historic Preservation Act) and compliance requirements would be completed prior to departure. The activities would adhere to all rules and regulations established by the Monument including adherence to all quarantine requirements, wildlife viewing guidelines, and entry/exit notification procedures where applicable.

The intertidal monitoring / 'opihi team consists of Native Hawaiian practitioners / cultural researchers on this voyage who are experienced in proper protocol and will help to ensure the entire group enters Papahānaumokuākea with proper intent and that all resources are treated with respect and care. Native Hawaiian protocols, including oli and mele, will be conducted to re-establish an awareness between people and place. It

will also serve to reconnect the Northwestern Hawaiian Islands into the Hawaiian consciousness and worldview. This ceremony/protocol is very important because it establishes a sense of respect and reverence for the environment and all things it encompasses. It also supports a cultural interaction between people (younger siblings) and the islands & resources (older siblings) and prepares participants for that interaction. These protocol and ceremony are necessary to tap into an elevated state of awareness which will support cultural research and participants' openness to "see" properly.

A pre-trip cultural orientation will also be conducted by the Na Maka o Papahanaumokuakea to introduce all participants to the cultural practice of harvesting, preparing and feeding a community. The objective of this orientation is to demonstrate the cultural importance of food and environment, the network and investment of time and community into food, and how it feeds us physically, spiritually, and culturally.

The consumption of intertidal resource invertebrates, limu will be conducted with adequate safeguards by not taking more than what is needed to allow particpants to practice their culture but without compromising the ecological integrity and natural resources. For example, when harvesting 'opihi we will be mindful to harvest individuals that are larger than the legal size limit of 1 ¼ inch as well as to leave larger 'opihi alone as they are believed to be more fecund. We will also harvest from various places along the shoreline to be midful of harvest pressure on one rock. 'Opihi are also able to reach reproductive maturity at approximately 7 months after settling onto the rocks (Kay & Magruder 1977), thus we are confident that there will be larval recruitment the following year. When harvesting limu, proper practice of cutting the branches off and leaving the holdfast will be utilized to ensure continual growth after it is harvested. We believe that two traditionally harvested and prepared individuals of each invert species (see Quest #9) per person and a total of one "mini snack-sized zip lock bag" approximately 100 grams of limu (see Quest #9)is appropriate to harvest per island. The

Papahānaumokuākea Native Hawaiian Cultural Working Group will be consulted during their meeting about this permit application to ensure everything is properly planned and implemented.

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

Per 7a above, all activities (except maternal investment research of ʻopihi and hāʻukeʻuke) obtained in this permit application were permitted over prior years and have previously demonstrated no impact on Monument cultural, natural and historic resources. All consultations (e.g. ESA Section 7) and compliance requirements would be completed prior to departure. All personnel named in this permit are experienced with conducting surveys in the intertidal zone and are aware of the risks associated with working in nearshore areas with high wave action. Activities proposed in this application would have no cumulative effect as the applicant is proposing short (1-3 day) survey days at each island, and no negative effects have resulted from previous years surveys within the NWHI.

In addition, this activity is part of the following Monument Management Plan Action Plans:

- NHCH 2.3: Facilitate cultural field research and cultural education opportunities annually;
- NHCH 2.6: Continue to facilitate Native Hawaiian cultural access;
- NHCH-3.1: Assess Monument cultural resource capacity;
- NHCH-3.2: Increase knowledge base of Native Hawaiian values and cultural information through "in-reach" programs for research managers;
- NHCH-4.2: Develop and implement specific preservation and access plans, as appropriate, to protect cultural sites at Nihoa and Mokumanamana;
- NHCH-5.3: Integrate Native Hawaiian values and cultural information into the Monument permittee education and outreach program

In addition, NOAA Office of National Marine Sanctuaries (ONMS) as a managing agency on the Monument Management Board, does and would commit to monitoring the intertidal zones of Nihoa, Mokumanamana, and French Frigate Shoals (FFS). ONMS monitors the the intertidal zones annually in the same areas of Nihoa, Mokumanamana, and FFS in which permitted samping of various invertebrate species occurred the prior year. ONMS funds this monitoring work 100%. The project is led by two experts: Mrs. Shauna Kēhaunani Springer (applicant) and Dr. Chris Bird (scientist). ONMS and permittee will provide survey and report data to the U.S. Fish and Wildlife Service (USFWS) as stipulated in the general conditions of this permit.

Previous permitted intertidal monitoring efforts suggest the take activity is beneficial for the resouce. In 2012, the intertidal data was collected for the fourth consecutive year and Dr. Bird and other intertidal monitoring participants have noted changes over time. For example, the high density of recruits recorded in June 2010, didn't all survive, suggesting that more 'opihi settled on the shore than the habitat could sustain. In 2010 participants recorded numerous small one month old 'opihi (300 per m2), whereas in 2011, there were less 1.5 year old 'opihi (50 per m2) (http://www.papahanaumokuakea.gov/news/opihi/opihi_chris_b.html). Similarly, researchers and participants have noted differences in population distribution, for example, in 2012, 'opihi at Mokumanamana and Nihoa were recorded in the tens of thousands compared to the 3,000 found at La Perouse Pinnacles at FFS (http://www.papahanaumokuakea.gov/research/intertidal_cruise2013_return.html). No 'opihi samples were collected at La Perouse Pinnacles due to the low population size.

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

There is no practicable alternative to conducting the activity within the Monument. There is no other place within the Hawaiian archipelago that can serve as a baseline of abundance for local community-based marine managers due to its remote locale and legal protection status. Because the Northwestern Hawaiian islands are remotely managed, this area serves as an optimal measure to determine expected abundances- as these cultural researchers are engaged in community-based near shore marine management in the main Hawaiian islands. A field study was attempted on Kaho'olawe, however, due to fishing pressures and run-off, the study site was determined to be sub-optimal.

The consumption of intertidal inverts and limu can be conducted outside of Papahānaumokuākea, however their is no alternative to consuming an important cultural resource at a place like Papahānaumokuākea because it allows one to connect to a place on a spiritual level which cannot be done by consuming it elsewhere. This is the reason kanaka maoli can connect to the place they live, because they have a deep and intimate connection to their land, their oceans and to their resources. We cannot whole heartedly connect to Papahanaumokuakea without practicing our culture like we do in other parts of Hawai'i, this is an extension of our daily lives and make up who we are. We will only consume two traditionally harvested and prepared individuals of each invert species, five individuals of Hā'uke'uke and 'opihi (see Quest #9) per person and a total of one "mini snack-sized zip lock bag" approximately 100 grams of limu per island (see Quest #9). The intent is to malama Papahanaumokuakea by re-connecting ourselves to the place, being present, observe & listen to what she tells us and to allow her to spiritually and physically malama us by consuming resources found there and by giving us 'ike and showing us ho'ailona and experiences found no where else on this planet.

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

The end value of the activitiy outweighs any adverse impacts by safeguarding against the loss of opportunity to expand Native Hawaiian knowledge and re-connect kanaka maoli cultrally, physically, and spiritually to Papahanaumokuakea. There is a great need to recover traditional Native Hawaiian marine ecosystem management practices, and as such, the Monument provides an unparalled venue to accomplish this.

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

Fourteen days is the shortest possible duration to conduct intertidal surveys. Fourteen days would allow 1-2 days at each island/atoll to conduct surveys and adequate transit time for the vessel.

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

The applicant, Shauna Kēhaunani Springer is qualified to conduct both traditional and scientific surveys because of her knowledge using both methods in prior research projects. Her knowledge of ocean conditions and environments started at a young age, as she would go to the beach to fish, surf and swim. She continued this connection with the ocean through high school and college where she learned more about Hawaiian protocol and culture along with marine biology. In the past six years she has been a part of larger group, Nā Maka o Papahanaumokuakea, that aims to conduct integrated monitoring using traditional knowledge and western science to explore land and ocean environments. Her studies as a master's student looking at the cultural use and ecology of 'opihi densities at Kalaupapa National Historical Park trained her to conduct intertidal and near shore surveys. Her fellowship with the National Park Service not only gave her hands on experience in research and monitoring, she also learned aspects of fisheries management. She has extensive knowledge about traditional knowledge of ocean conditions from the relationships she established with many respected elders that taught her about seasonal cycles and sustainable resource management. In addition to these relationships, Kehau has spent the last seven years looking at various systems in the MHI of Hawaii conducting integrated monitoring and assessment. These past seven

years is the foundation for Kehau to know her environment as her kupuna have so she can make decisions that relate to these places today.

The cultural researchers that will perform various research activities are all trained in traditional near-shore marine management, fishery management, traditional weather observations and working in dangerous near-shore, high wave action areas.

g. Provide information demonstrating that you have adequate financial resources available to conduct and complete the activity and mitigate any potential impacts resulting from its conduct.
The proposed field activities are funded in full by NOAA, Papahanaumokuakea Marine National Monument. The data workup for all the information collected through this project would also be supported by the Monument Texas A&M and the Hawaii Institute of Marine Biology, University of Hawai'i Mānoa Marko-Moran Lab, and Nā Maka o Papahānaumokuākea.

h. Explain how your methods and procedures are appropriate to achieve the proposed activity's goals in relation to their impacts to Monument cultural, natural and historic resources, qualities, and ecological integrity.
The methods and procedures employed are widely accepted methods for acquiring data in the marine environment by Native Hawaiian marine practitioners and research scientists. The proposed methodology would not require specialized equipment and would also take into full account the fragility of the Monument's resources. We will conduct responsible and ethical practices by refraining from collecting 'opihi or ha'uke'uke if the population numbers appear too low. We will using hook/handline and trolling methods for the sustenance fishing while in federal waters.

i. Has your vessel has been outfitted with a mobile transceiver unit approved by OLE and complies with the requirements of Presidential Proclamation 8031?
It is highly likely that this activity would be carried out aboard the M/V SEARCHER. SEARCHER is outfitted with a mobile transceiver unit approved by OLE and therefore complies with the requirements of Presidential Proclamation 8031.

j. Demonstrate that there are no other factors that would make the issuance of a permit for the activity inappropriate.

All permits required for access and conducting cultural observations of the marine environment will be obtained. Also, several members from the Native Hawaiian cultural working group have been consulted regarding the activities to be permitted under this application. Similiar to all previous Intertidal Cruise's (2011-2014), a presentation will be provided to the working group both before and after the trip.

ADDITIONAL FINDINGS FOR PROPOSED NATIVE HAWAIIAN PRACTICES

k. Explain how the activity is non-commercial and will not involve the sale of any organism or material collected.

The activity is non-commercial. The end-value of the activity is informational and is intended to provide local and governmental managers the information critical to the conservation of these cultural resources.

l. Explain how the purpose and intent of the activity is appropriate and deemed necessary by traditional standards in the Native Hawaiian culture (pono), and demonstrate an understanding of, and background in, the traditional practice and its associated values and protocols.

The purpose and intent of the proposed activity is appropriate and pono by traditional standards in the Native Hawaiian culture in that the expedition is centered on enhancing traditional marine resource management skills through careful observation. The ability to increase or maintain productivity of a particular kai (fishery) is integral to maintaining traditional Native Hawaiian knowledge and marine management systems; and is therefore consistent with pono marine stewardship tenets.

m. Explain how the activity benefits the resources of the Northwestern Hawaiian Islands and the Native Hawaiian community.

The data collected from these field studies will better enable these cultural researchers / practitioners to understand the biological, spiritual and cultural connections bewteen the NWHI and the main Hawaiian islands. In doing so, researchers will be better equipped

to manage their areas in the main Hawaiian islands from which the Northwestern Hawaiian islands will ultimately benefit. Outreach & Education opportunities will be offered and presented to the Native Hawaiian communities and students.

n. Explain how the activity supports or advances the perpetuation of traditional knowledge and ancestral connections of Native Hawaiians to the Northwestern Hawaiian Islands.

The group of cultural researcher / practitioners being selected for this expedition possess intricate knowledge of traditional Native Hawaiian marine management practices in the near shore fishery area within their own ahupua'a. Of equal importance, knowledge gained will be utilized to inform local marine management and conservation education within their home communities. Each practitioner will reflect upon traditional concepts like 'aina momona (bountiful lands), ho'omalu (regulated activities) and kapu (prohibited activities) which are fundamental in traditional Native Hawaiian marine management.

o. Will all Monument resources harvested in the Monument be consumed in the Monument? If not, explain why not.

Yes, under this permit, all of the resources harvested for cultural purposes will be consumed in the monument. The eggs of the ha'uke'uke and 'opihi will be frozen in seawater in a liquid nitrogen dry shipper for future biochemical analyses.

8. Procedures/Methods:

The cultural research team would make visual assessments of intertidal areas where 'opihi and ha'uke'uke are located. The research team would record substrate type, limu type/density, crustose/turf/macro algae proportions, other species proportions/ratio, clumping of 'opihi, ha'uke'uke, and other intertidal species, presence of natural predators, freshwater input, etc. The team would take wet/dry notes and use digital cameras to record observations (Will remain within the BMO distance for any filming or

photography of protected species). At the end of each day, a discussion will be held to share observations and relationships made with the group. One person will be designated and write all the observations made by the group on one data sheet in order to facillitate the analysis process while observations are still fresh and can be clarified. To complete all of these activities, cultural practitioner / researchers would require access to nearshore areas (below the splash zone) that contain ʻopihi habitat (e.g. intertidal zone at Mokumanamana). Cultural practitioners / researchers would adhere to all Monument requirements while undertaking this project.

Cultural harvesting protocols for intertidal invertebrates and limu will be conducted with adequate safeguards by not taking more than what is needed to allow particpants to practice their culture but without compromising the ecological integrity and natural resources. Appropriate oli/mele will be conducted prior to arrival and departure on each island to introduce ourselves and our pono intentions as well as to thank each island for their contributions. We believe that two traditionally harvested and prepared individuals of each invert species per person, five hāʻukeʻuke and ʻopihi (see Quest #9) per person, two heʻe per island and a total of one "mini snack-sized zip lock bag" approximately 100 grams of limu (see Quest #9) is appropriate to harvest per island. Harvesting will supplement meals and may consist of ʻopihi, ha'uke'uke, limu, ʻaʻama, pipipi, makaloa, heʻe and pupu ʻawa. ʻOpihi will be gathered by hand using an ʻopihi knife, and we will be mindful to harvest individuals that are larger than the legal size limit of 1 ¼ inch as well as to leave larger ʻopihi alone as they are believed to be more fecund. We will also harvest from various places along the shoreline to be midful of harvest pressure on one rock. ʻOpihi are also able to reach reproductive maturity at approximately 7 months after settling onto the rocks (Kay & Magruder 1977), thus we are confident that there will be larval recruitment the following year. When harvesting limu, proper practice of cutting/ pinching off the branches off and leaving the holdfast will be utilized to ensure continual growth after it is harvested. All other invertebrates will be gathered by hand. All inverts will be consumed raw, except leho, pipipi and pūpū ʻawa which will be boiled

then consumed. Limu will be "cured" and prepared to supplement meals. He'e will be harvested by using a metal rod to attract the he'e out of its house and then be gathered by hand. We will not harvest he'e that is under one pound, in accordance to the State of Hawai'i fishing regulations. The he'e will either be prepared by either drying or boiling before consumption Hook, handline and trolling methods will be used to sustenance fish while in federal. Refer to attached table for list of species.

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

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

Common name:

1. Thin-Shelled Rock Crab
2. Spotted Drupe
3. Black Nerite
4. Open Drupe
5. Helmet Urchin
6. Black-Foot 'Opihi
7. Yellow-Foot 'Opihi
8. Day Octopus
9. Humpback Cowry
10. Intermediate Drupe
11. None, Bonnemaisoniaceae Family
12. Sea lettuce, Ulvaceae Family
13. Yellowfin tuna
14. Dolphinfish
15. Wahoo

Scientific name:

1. Grapsus tenuicrustatus
2. Drupa ricina
3. Nerita picea
4. Thais aperta (formally Purpura aperta)
5. Colobocentrotus atratus
6. Cellana exarata
7. Cellana sandwicensis
8. Octopus cyanea
9. Cypraea mauritiana
10. Thais intermedia
11. Asparagopsis taxiformis
12. Ulva faciata
13. Thunnus albacares
14. Coryphaena hippurus
15. Acanthocybium solandri

Hawaiian name:

1. ʻAʻama
2. Makaloa
3. Pipipi
4. Pūpū ʻAwa
5. Hāʻukeʻuke
6. Makaiauli
7. ʻĀlinalina
8. Heʻe Mauli
9. Leho ahi
10. Pūpū
11. Limu Kohu

12. Pālahalaha
13. Ahi
14. Mahimahi
15. Ono

& size of specimens:

1. ʻAʻama:
    a. Up to 24 per island/location for a total up to 88
    b. 3 inches or larger
2. Makaloa
    a. Up to 24 per island/location for a total up to 88
    b. ½ inch or larger
3. Pipipi
    a. Up to 24 per island/location for a total up to 88
    b. ½ inch or larger
4. Pūpū ʻAwa
    a. Up to 24 per island/location for a total up to 88
    b. ½ inch or larger
5. Hāʻukeʻuke
    a. Up to 60 per island/location for a total up to 220
    b. 2 inches or larger
6. Makaiauli
    a. Up to 60 per island/location for a total up to 220
    b. 1 ¼ inch or larger
7. ʻĀlinalina
    a. Up to 60 per island/location for a total up to 220
    b. 1 ¼ inch or larger
8. Heʻe Mauli
    a. Up to 2 individuals per island/location for a total up to 8

b. 1 lb or heavier

9. Leho Ahi

a. Up to 24 per island/location for a total up to 88

b. 2 inches or larger

10. Pūpū - Thais

a. Up to 24 per island/location for a total up to 88

b. 1 inch or larger

11. Limu Kohu

a. Up to 1 small "snack size" ziplock full (approx. 100g)

12. Pālahalaha

a. Up to 1 small "snack size" ziplock full (approx. 100g)

13. Ahi, Mahimahi, Ono

a. Up to 10 individuals of the species listed while in transit.

Collection location:
Nihoa, Mokumanamana, Mokupapa and Puhahonu

☒ Whole Organism ☐ Partial Organism

9b. What will be done with the specimens after the project has ended?
All specimens will be consumed while in PMNM.

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

• General site/location for collections:
n/a

• Is it an open or closed system? ☐ Open ☐ Closed
n/a

• Is there an outfall? ☐ Yes ☐ No
n/a

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

no

• Will organisms be released?

no

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

n/a

11. Describe any fixed or semi-permanent structures or installations, or cultural offerings you plan to leave in the Monument:

Offerings of pa'akai(salt) and wai (water) may remain in the Monument.

12. List all specialized gear and materials to be used in the proposed activities:

Snorkeling gear, transect line, data sheets, 'opihi knives, handline, hook & trolling equipment.

13. List all Hazardous Materials you propose to take to and use within the Monument:

none

14. Describe collaborative activities to share samples, cultural research and/or knowledge gained in the Monument:

This permit application has been submitted in conjunction with a joint permit application submitted Dr. Chris Bird of Texas A&M University, Corpus Christi. All samples and methodologies discussed in this permit application are directly related Dr. Bird's respective permit application. This project will continue to bridge the gap between cultural and western research.

In addition, cultural researchers will present preliminary findings to their respective communities (Hana, Kalapana, Kipahulu etc.) and marine resource mangers under this permit will continue to inform and update the public (e.g. at NWHI Coral Reef

Ecosystem Reserve Advisory Council meetings) and the Native Hawaiian Cultural Working Group on all findings.

15a. Will you produce any publications, educational materials or other deliverables?
☒ **Yes** ☐ **No**

15b. Provide a time line for write-up and publication of information or production of materials:

16. If applicable, list all Applicant's publications directly related to the proposed project:
Tom, S.K. An investigation of the cultural use and population characteristics of 'opihi (Mollusca: Cellana spp.) at Kalaupapa National Historical Park. University of Hawaii MS Thesis. May 2011.

Presentations to the OHA CWG (2010-2014)

Presentation at the 2015 Hawai'i Conservation Conference

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

Signature Date

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

Papahānaumokuākea Marine National Monument Permit Coordinator
6600 Kalaniana'ole Hwy. # 300
Honolulu, HI 96825
FAX: (808) 397-2662

DID YOU INCLUDE THESE?
☒ Applicant CV/Resume/Biography
☒ Intended field Principal Investigator CV/Resume/Biography
☒ Electronic and Hard Copy of Application with Signature

☐ Statement of information you wish to be kept confidential
☐ Material Safety Data Sheets for Hazardous Materials

Invertebrate Species List

Common Name	Scientific Name	Hawn Name	Nihoa	Moku-manamana	Mokupapapa	Puhahonu	Total	Notes
Thin-Shelled Rock Crab	Grapsus tenuicrustatus	‘A‘ama	20	20	20	20	80	2 per person
Spotted Drupe	Drupa ricina	Makaloa	20	20	20	20	80	2 per person
Black Nerite	Nerita picea	Pipipi	20	20	20	20	80	2 per person
Open Drupe	Thais aperta	Pupu ‘awa	20	20	20	20	80	2 per person
Helmet Urchin	Colobocentro tus atratus	Ha‘uke‘uke	50	50	50	50	200	5 per person
Black-foot opihi	Cellana exarata	Makaiauli	20	20	20	20	80	2 per person
Yellow-foot opihi	Cellana sandwicensis	‘Alinalina	20	20	20	20	80	2 per person
Day Octopus	Octopus cyanea	He‘e Mauli	2	2	2	2	8	2 per person
Humpback Cowry	Cypraea mauritiana	Leho ahi	20	20	20	20	80	2 per person
Intermedia te Drupe	Thais intermedia	Pūpū	20	20	20	20	80	2 per person

Limu Species List

Common Name	Scientific Name	Hawn Name	Nihoa	Moku-manamana	Mokupapapa	Puhahonu	Total
None	Asparagopsis taxiformis	Limu Kohu	100 g	100 g	100 g	100 g	400 g
Sea Lettuce	Ulva faciata	Palahalaha	100 g	100 g	100 g	100 g	400 g

Fish Species

Common Name	Scientific Name	Hawn Name	During Transit	Total
Yellowfin tuna	Thunnus albacares	Ahi	10	10
Dolphinfish	Coryphaena hippurus	Mahimahi		
Wahoo	Acanthocybium solandri	Ono		

Papahānaumokuākea Marine National Monument
Compliance Information Sheet

1. Updated list of personnel to be covered by permit. List all personnel names and their roles here (e.g. John Doe, Diver; Jane Doe, Field Technician, Jerry Doe, Medical Assistant):
1) Hoku Johnson (NOAA Chief Scientist)
2) Tia Brown (NOAA Staff)
3) Kim Kanoe Morishige (Field PI for NH Cultural Permit)
4) Christopher Bird (PI for Research Permit)
5) Misaki Takabayashi
6) Trish Cockett
7) Na Maka o Papahanaumokuakea Rep (Researcher)
8) Hana Rep (Researcher)
9) Kipahulu Rep (Researcher)
10) Kaua'i Rep (Researcher)

2. Specific Site Location(s): (Attach copies of specific collection locations):
Nihoa Island, Necker Island (Mokumanamana), French Frigate Shoals (Mokupapapa), Gardner Pinnacles (Puhahonu)

3. Other permits (list and attach documentation of all other related Federal or State permits): This permit will be conducted alongside Research Permit Number PMNM-2015-XXX (Bird)

3a. For each of the permits listed, identify any permit violations or any permit that was suspended, amended, modified or revoked for cause. Explain the circumstances surrounding the violation or permit suspension, amendment, modification or revocation.
None

4. Funding sources (Attach copies of your budget, specific to proposed activities under this permit and include funding sources. See instructions for more information): This trip is fully supported by NOAA / NOS / Office of National Marine Sanctuaries, Papahanaumokuakea Marine National Monument and the Texas A&M.

5. Time frame:
Activity start: June 2015
Activity completion: Ongoing

Dates actively inside the Monument:
From: June 25, 2015
To: July 7, 2015

Describe any limiting factors in declaring specific dates of the proposed activity at the time of application:
None

Personnel schedule in the Monument:
A complete itinerary is forthcoming. The project is aiming to spend 1-3 days at each of the aforementioned sites (Nihoa, Mokumanamana, Mokupapa, and Puhahonu) depending on weather conditions.

6. Indicate (with attached documentation) what insurance policies, bonding coverage, and/or financial resources are in place to pay for or reimburse the Monument trustees for the necessary search and rescue, evacuation, and/or removal of any or all persons covered by the permit from the Monument:
This project is fully supported by the Monument. The Federal Government is self-insured. In addition the cruise participants will carry emergency evacuation insurance (e.g. DAN insurance or something comparable).

7. Check the appropriate box to indicate how personnel will enter the Monument:

☒ Vessel
☐ Aircraft

Provide Vessel and Aircraft information: Searcher

8. The certifications/inspections (below) must be completed prior to departure for vessels (and associated tenders) entering the Monument. Fill in scheduled date (attach documentation):

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

9. Vessel information (NOTE: if you are traveling aboard a National Oceanic and Atmospheric Administration vessel, skip this question):

Vessel name: Searcher
Vessel owner: The Medical Foundation for the Study of the Environment
Captain's name: Jonathan Littenberg
IMO#:192
Vessel ID#:U.S. Coast Guard 1103056
Flag: U.S.
Vessel type: Steel Hull
Call sign: WDA 6100
Embarkation port: Honolulu
Last port vessel will have been at prior to this embarkation: Honolulu
Length: LOA 96ft/ Registered 78.1ft
Gross tonnage: 197
Total ballast water capacity volume (m3): n/a
Total number of ballast water tanks on ship: n/a
Total fuel capacity: 9,600 gallons
Total number of fuel tanks on ship: 6
Marine Sanitation Device: Yes
Type: II

Explain in detail how you will comply with the regulations regarding discharge in the Monument. Describe in detail. If applicable, attach schematics of the vessel's discharge and treatment systems:
All materials and fluids shall be properly stored in holding tanks while the vessel is in Monument waters and will be properly disposed of upon our exit from the Monument.

Other fuel/hazardous materials to be carried on board and amounts:
Approximately 30 gallons of unleaded fuel in jerry cans for use in the skiffs.

Provide proof of a National Oceanic and Atmospheric Administration (NOAA) Office of Law Enforcement-approved Vessel Monitoring System (VMS). Provide the name and contact information of the contractor responsible for installing the VMS system. Also describe VMS unit name and type:
Vessel Monitoring System - Thrane & Thrane Sailor TT-3606XP

VMS Email: 436998398@c12.stratoemobile.net
Inmarsat ID#:4TT072E62B15
Contact: Jonathan Littenberg (808.225.8982) or Barbara Littenberg (808.221.6156)

* Individuals MUST ENSURE that a type-approved VMS unit is installed and that its automatic position reports are being properly received by the NOAA OLE system prior to the issuance of a permit. To make sure your VMS is properly configured for the NOAA OLE system, please contact NOAA OLE at (808) 203-2503 or (808) 203-2500.

* PERMITS WILL NOT BE ISSUED TO INDIVIDUALS ENTERING THE MONUMENT VIA VESSEL UNTIL NOAA OLE HAS CONTACTED THE MONUMENT PERMIT COORDINATOR WITH A 'POSITIVE CHECK' READING.

10. Tender information:

On what workboats (tenders) will personnel, gear and materials be transported within the Monument? List the number of tenders/skiffs aboard and specific types of motors:
One 16 foot RHIB Zodiac with Yamaha 4 stroke emgine or one new 16 foot inflatable Avon with Yamaha 4 stroke tiller engine.

Additional Information for Land Based Operations

11. Proposed movement of personnel, gear, materials, and, if applicable, samples:
none

12. Room and board requirements on island:
none

13. Work space needs:
none

DID YOU INCLUDE THESE?
- ☐ Map(s) or GPS point(s) of Project Location(s), if applicable
- ☐ Funding Proposal(s)
- ☐ Funding and Award Documentation, if already received
- ☐ Documentation of Insurance, if already received
- ☐ Documentation of Inspections
- ☐ Documentation of all required Federal and State Permits or applications for permits

DAVID Y. IGE
GOVERNOR OF HAWAII

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

KEKOA KALUHIWA
FIRST DEPUTY

W. ROY HARDY
DEPUTY DIRECTOR - WATER

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

STATE OF HAWAI'I
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAI'I 96809

June 12, 2015

TO: Division of Aquatic Resources File

THROUGH: Suzanne Case, Chairperson

FROM: Maria Carnevale
Papahānaumokuākea Marine National Monument

DECLARATION OF EXEMPTION FROM THE PREPARATION OF AN ENVIRONMENTAL ASSESSMENT UNDER THE AUTHORITY OF CHAPTER 343, HRS AND CHAPTER 11-200 HAR, FOR PAPAHĀNAUMOKUĀKEA MARINE NATIONAL MONUMENT NATIVE HAWAIIAN PRACTICES PERMIT TO SHAUNA KĒHAUNANI SPRINGER, NĀ MAKA O PAPAHĀNAUMOKUĀKEA AND CONSERVATION INTERNATIONAL - HAWAI'I, ACCESS TO STATE WATERS TO USE TRADITIONAL ECOLOGICAL KNOWLEDGE TO EXAMINE INTERTIDAL ECOSYSTEMS UNDER PERMIT PMNM-2015-017

The following permitted activities are found to be exempted from preparation of an environmental assessment under the authority of Chapter 343, HRS and Chapter 11-200, HAR:

Project Title:
Papahānaumokuākea Marine National Monument Native Hawaiian Practices Permit to Shauna Kēhaunani Springer, Nā Maka o Papahānaumokuākea and Conservation International - Hawai'i, for Access to State Waters to use Traditional Ecological Knowledge to Examine Intertidal Ecosystems Activities.

Permit Number: PMNM-2015-017

Project Description:
The Native Hawaiian practices permit application, as described below, would allow entry and activities to occur in Papahānaumokuākea Marine National Monument, including the NWHI State waters between June 15, 2015 through June 14, 2016.

New proposed activities include maternal investment research of 'opihi and hā'uke'uke.

The primary purpose of the proposed project would be: (1) collect environmental data related to traditional Native Hawaiian marine management; (2) expand the application of traditional Hawaiian monitoring tools and methodologies; (3) increase the knowledge base pertaining to intertidal ecosystems, including 'opihi / hā'uke'uke / limu abundance, health, and reproductive cycles; and

(4) re-establishing and strengthening cultural ties through feeding and being fed by the natural environment.

Surveys would be conducted below the splash zone within intertidal areas on all basaltic islands that contain ʻopihi habitat. The monitoring team would not access any sites beyond the splash zone on all islands. Researchers would document and record sky, land, and ocean observations looking for connections and relationships between reoccurring events and activities over seasons and between years. Scientific research methods would include belt transects to assess size class, population density, community structure, species range, distribution, and rugosity for all organisms within the intertidal zone. Invertebrates and limu would be consumed in the Monument to further support cultural practice and the relationship between participants and the islands. The research team would record substrate type, limu type/density, algae proportions, other species proportions, clumping of ʻopihi, hāʻukeʻuke, and other intertidal species, presence of natural predators, freshwater input, and so forth. The team would take notes and use digital cameras to record observations. When harvesting ʻopihi the Applicant would be mindful to harvest individuals larger to the legal size limit of 1 ¼ inch as well as leave larger more fecund ʻopihi alone. To harvest limu, the Applicant would cut the branches off and leave the holdfast to ensure continual growth after harvest. Offerings of paʻakai (salt) and wai (water) may remain in the Monument.

The time period requested, fourteen (14) days, would allow one (1) to two (2) days at each island/atoll to conduct surveys and allow adequate transit time for the vessel. Permitted personnel would be escorted at all times by an approved U.S. Fish and Wildlife (USFWS) escort, experienced and trained to safely access all four island locations with no adverse impact to native species or cultural sites. Appropriate oli (chant) and mele (song) would be conducted prior to arrival and departure on each island to introduce the crew to the place.

New activities include collecting ʻopihi and hāʻukeʻuke to examine maternal investment of these intertidal species on various areas in the intertidal zone. There is no feasible method to successfully spawn ʻopihi or ascertain the sex of ʻopihi other than through dissection. The Applicant will collect individual ʻopihi, extract the gonad tissue, and freeze the eggs for future biochemical analyses. For hāʻukeʻuke, individuals will be spawned on shore to ensure that only females are collected. Spawning of hāʻukeʻuke will be induced by injecting 0.5 M KCl. Eggs of each female will be counted, then a subset will be placed in filtered seawater on glass slides under cover slips resting on clay feet to prevent flattening. Eggs will be measured on board the research vessel with a large field microscope. ImageJ software will be used to measure egg diameter and calculate egg volume from the measurements. Egg samples will be frozen at - 80 ℃ for future biochemical analyses at the University of Hawai'i at Mānoa. To ensure responsible and ethical practices, the Applicant will refrain from collecting ʻopihi and hāʻukeʻuke if populations appear too small to sustain collections.

The activities proposed by the Applicant directly support the Monument Management Plan's priority management need under 3.1 – Understanding and Interpreting the NWHI, 3.1.2 - Native Hawaiian Culture and History Action Plan (NHCH), Activities NHCH-2.2: Support Native Hawaiian cultural research needs and NHCH-2.3: Facilitate cultural field research and cultural education opportunities. Activities to support coordinated field operations in the NWHI are

addressed in the Monument Management Plan Environmental Assessment (December 2008) which resulted in a FONSI (Finding of No Significant Impact). This EA recognizes that "identifying research needs, supporting Native Hawaiian cultural access, and incorporating Native Hawaiian traditional knowledge and associated practices into Monument management" could have beneficial effects on Monument resources (PMNM MMP Vol 2, p.192).

Consulted Parties:
The permit application was sent out for review and comment to the following scientific and cultural entities: Hawai'i Division of Aquatic Resources, Hawai'i Division of Forestry and Wildlife, Papahānaumokuākea Marine National Monument (NOAA/NOS), NOAA Pacific Islands Regional Office (NOAA-PIRO), United States Fish and Wildlife Service Hawaiian and Pacific Islands National Wildlife Refuge Complex Office, and the Office of Hawaiian Affairs (OHA). In addition, the permit application was posted on the Monument Web site on March 16, 2015 giving the public an opportunity to comment. The application was posted within 40 days of its receipt, in accordance with the Monument's Public Notification Policy.

Exemption Determination:
After reviewing HAR § 11-200-8, including the criteria used to determine significance under HAR § 11-200-12, DLNR has concluded that the activities under this permit would have minimal or no significant effect on the environment and that issuance of the permit is categorically exempt from the requirement to prepare an environmental assessment based on the following analysis:

1. All activities associated with this permit; including the use of traditional ecological knowledge in combination with western science methodologies to examine intertidal ecosystems, have been evaluated as a single action. As a preliminary matter, multiple or phased actions, such as when a group of actions are part of a larger undertaking, or when an individual project is precedent to or represents a commitment to a larger project, must be grouped together and evaluated as a single action. HAR § 11-200-7. Since this permit involves an activity that represents a commitment to a larger undertaking and precedent to a later planned activity, i.e. the continuation of nearshore traditional and western based ecological monitoring and the associated gonad and genetic studies (application currently in review for Bird- Toonen, PMNM-2015-026), the categorical exemption determination here will treat all planned activities as a single action, to the extent possible.

2. The Exemption Class for Basic Data Collection with no Serious or Major Environmental Disturbance Appears to Apply. Chapter 343, HRS, and § 11-200-8, HAR, provide for a list of classes of actions exempt from environmental assessment requirements. HAR §11-200-8.A.5. exempts the class of actions which involve "basic data collection, research, experimental management, and resource evaluation activities which do not result in a serious or major disturbance to an environmental resource." The proposed activities appear to fall squarely under the exemption class #5, exempt item #2 as described under the division of Forestry and Wildlife exemption list published on June 12, 2008. This exemption class has been interpreted to include "new transect lines, recording, sampling, and collection…", such as those to be supported by the proposed activities. It has also been interpreted to include Native Hawaiian natural resource observations, such as those proposed. As discussed below, no significant disturbance to any

environmental resource is anticipated in observing and sampling of Monument resources. Thus, so long as the below considerations are met, an exemption class should include the action now contemplated.

To mitigate any impacts of collection activities, the Applicant would: When harvesting 'opihi the Applicant would be mindful to harvest individuals larger to the legal size limit of 1 ¼ inch as well as leave larger more fecund 'opihi alone. To harvest limu, the Applicant would cut the branches off and leave the holdfast to ensure continual growth after harvest. The Applicant would follow Monument Best Management Practice (BMP) 016 – Activities on Nīhoa and BMP 006 – General Storage and Transport to minimize any impacts from activities.

3. Cumulative Impacts of Actions in the Same Place and Impacts with Respect to the Potentially Particularly Sensitive Environment Will Not be Significant. Even where a categorical exemption appears to include a proposed action, the action cannot be declared exempt if "the cumulative impact of planned successive actions in the same place, over time, is significant, or when an action that is normally insignificant in its impact on the environment may be significant in a particularly sensitive environment." HAR § 11-200-8.B. To gauge whether a significant impact or effect is probable, an exempting agency must consider every phase of a proposed action, any expected primary and secondary consequences, the long-term and short-term effects of the action, the overall and cumulative effect of the action, and the sum effects of an action on the quality of the environment. HAR § 11-200-12. Examples of actions which commonly have a significant effect on the environment are listed under HAR § 11-200-12.

Proposed activities would be a continuation of a proposed project in its seventh year. Activities directly under this permit would be observational and involve collections for consumption. No measurable impacts to the intertidal ecosystem have been observed in previous years and none would be expected from proposed activities.

The cumulative impacts of this permit, in conjunction with western ecological methodologies and collections (application currently in review for Bird-Toonen, PMNM-2015-026). Past projects which have included similar collections and techniques have had no adverse impact. Similar nearshore biodiversity monitoring activities have been permitted and performed within the NWHI. The species targeted for collection in the associated project are ones identified as being abundant and common on every island surveyed to date, for which the estimated population sizes are so large that collection of less than one (1) percent of the population at any site would be sampled. Collections of this size would have no detectable impact. With this in mind, significant cumulative impacts are not anticipated as a result of this activity, and numerous safeguards further ensure that the potentially sensitive environment of the project area will not be significantly affected.

The proposed project would be supported by the NOAA contracted vessel, R/V SEARCHER (PMNM-2015-001).

The Applicant's other proposed activities with Bird-Toonen (PMNM-2015-026) would take place in the intertidal areas of these islands at the same time. Bird-Toonen proposes to use western scientific

methods to examine biodiversity of the Hawaiian intertidal and shallow subtidal ecosystem, and study the basic ecology of 'opihi populations at the four island locations. The two proposed permits, while differing in their approach to understanding this habitat, are the result of collaborations with the same goal of adding to a greater total knowledge base for this region. Thompson (PMNM-2015-021) is also in collaboration with Bird-Toonen and Springer to meet up at Nīhoa and assist in research activities. As such, there would be no duplicative sampling of resources or organisms. These partnerships with Monument permittees is an example of the intent to understand the Monument resources from different perspective to enhance the meaning and connection to PMNM in new ways. Collaborations like these add to the total knowledge base of the Monument.

There will be multiple vessels in the Monument during Summer 2015. However, there are no anticipated negative impacts from overlap in activities and therefore no associated cumulative impacts between activities from the SEARCHER and activities from the other vessels. At this time, no other concurrent activities are known. The culmination of this permit, occurring throughout the Monument over several months, is not anticipated to have significant cumulative impacts. See Tables 1-6 for concurrent activities in the Monument:

Table 1. Concurrent projects aboard NOAA Ship SEARCHER

Permit	**Purpose and scope**	**Location**
PMNM-2015-026 Bird-Toonen (proposed)	The permit would allow intertidal biodiversity activities to occur in the Monument	Nīhoa, Mokumanamana, French Frigate Shoals, Gardner Pinnacles

Table 2: Concurrent projects aboard NOAA Ship OKEANOS

Permit	**Purpose and scope**	**Location**
PMNM-2015-025 Wetzler OKEANOS	The permit would allow NOAA Ship OKEANOS into the Monument to support separately permitted activities	All locations
PMNM-2015-018 Elliott (proposed)	The proposed action would conduct bathymetric mapping activities to characterize deepwater areas and coral communities	Nīhoa, Mokumanamana, French Frigate Shoals, Gardner Pinnacles, Maro Reef, Laysan, Lisianski and Neva Shoal, Pearl and Hermes

Table 3: Concurrent projects aboard SSV MAKANI'OLU

Permit	**Purpose and scope**	**Location**
PMNM-2015-014 Kikiloi (proposed)	The proposed action would conduct archaeological research activities with an emphasis on agricultural lands	Nīhoa, Mokumanamana

Table 4: Concurrent projects aboard HIKIANALIA

Permit	Purpose and scope	Location
PMNM-2015-021 Thompson (proposed)	The proposed action would involve traditional wayfinding activities for young navigators	Nīhoa, Mokumanamana

Table 5: Concurrent projects aboard NOAA Ship HI'IALAKAI.

Permit	Purpose and scope	Location
PMNM-2015-006 Simon HI'IALAKAI (approved)	This permit allows the NOAA Ship HI'IALAKAI entry into the Monument. Personnel aboard the vessel would be permitted under separate permits	All locations
PMNM-2015-001 Co-Trustee (approved)	This permit allows monk seal field camp operations	Kure Atoll, Midway Atoll, French Frigate Shoals
PMNM-2014-009 Parrish-Garrett (proposed)	The proposed action would involve the selective removal of up to 20 Galapagos sharks from French Frigate Shoals to mitigate predation on Hawaiian monk seals	French Frigate Shoals
PMNM-2015-013 Couch (proposed)	This proposed action would be to assess health and community structure of corals on shallow-water reefs	All locations
PMNM-2015-012 Godwin (proposed)	This proposed action would be conduct to Pacific Reef Assessment and Monitoring Program	All locations
PMNM-2015-016 Wall (proposed)	This proposed action would be to document the coral bleaching of shallow-water reefs	All locations
PMNM-2015-015 Gleason (proposed)	This proposed action would conduct maritime heritage monitoring and surveying activities	All locations
PMNM-2015-019 Littnan (proposed)	This proposed action would be to conduct monitors and surveys of various areas using an Unmanned Aerial System (UAS)	Laysan, Lisianski, Pearl and Hermes, Midway Atoll
PMNM-2015-020 Meyer (proposed	This permit would allow research activities regarding top predator feeding and movement	All locations

Table 6: Concurrent projects about NOAA ship SETTE.

Permit	Purpose and scope	Location
PMNM-2015-004 Koes SETTE (approved)	This permit allows the NOAA SETTE entry into the Monument. Personnel aboard the vessel would be permitted under separate permits	All locations
PMNM-2015-001 Co-Trustee (approved)	This permit allows monk seal field camp operations	French Frigate Shoals, Lisianski Island, Pearl and Hermes Atoll, Midway Atoll, Kure Atoll

Since no significant cumulative impacts or significant impacts with respect to any particularly sensitive aspect of the project area are anticipated, the categorical exemptions identified above should remain applicable.

4. Overall Impacts will Probably be Minimal and Insignificant Any foreseeable impacts from the proposed activity will probably be minimal, and further mitigated by general and specific conditions attached to the permit. Specifically, all conservation and management activities covered by this permit will be carried out with strict safeguards for the natural, historic, and cultural resources of the Monument as required by Presidential Proclamation 8031, other applicable law and agency policies and standard operating procedures.

Conclusion. Upon consideration of the permit to be approved by the Board of Land and Natural Resources, the potential effects of the above listed project as provided by Chapter 343, HRS and Chapter 11-200 HAR, have been determined to be of probable minimal or no significant effect on the environment and exempt from the preparation of an environmental assessment.

_____ _____

Suzanne Case Date
Chairperson, Board of Land and Natural Resources