Papahānaumokuākea Marine National Monument

RESEARCH 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:
NOAA/Inouye Regional Center
NOS/ONMS/PMNM/Attn: Permit Coordinator
1845 Wasp Blvd, Building 176
Honolulu, HI 96818
nwhipermit@noaa.gov
PHONE: (808) 725-5800 FAX: (808) 455-3093

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

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: Anke Kuegler
Affiliation: Marine Biology Graduate Program, University of Hawaii at Manoa

Permit Category: Research
Proposed Activity Dates: July-September 2017 and July-September 2018
Proposed Method of Entry (Vessel/Plane): Vessel
Proposed Locations: pending on where the cruise goes and instrument availability, we plan to deploy between 2-4 instruments in 2-4 of the following locations:

Kure (Mokupāpapa):	28.42°N	178.33°W
Midway (Pihemanu):	28.20°N	177.35°W
Pearl/Hermes (Holoikauaua):	27.93°N	175.74°W
Lisianski (Papaāpoho):	26.06°N	173.97°W
Laysan (Kauō):	25.77°N	171.73°W
Maro Reef (Nalukākala):	25.42°N	170.59°W
Gardner Pinnacles (Pūhāhonu):	25.02°N	167.98°W
French Frigate Schoals(Kānemiloha‘i):	23.75ºN	166.15°W
Necker (Mokumanamana):	23.57°N	164.70°W
Nihoa (Moku Manu):	23.06°N	161.92°W

Estimated number of individuals (including Applicant) to be covered under this permit: 4

Estimated number of days in the Monument: 365

Description of proposed activities: (complete these sentences):
a.) The proposed activity would…
Involve deploying and retreiving two to four deep water Ecological Acoustic Recorders (EARs) to depths ranging from 100 m to 500 m that will be used to record humpback whale song. The items used with each EAR will be a syntatic foam collar on the EAR, an acoustic release, a garage post concrete block and two to three sandbags. Deployments will last for about one year at each site.

b.) To accomplish this activity we would ….
We will first survey candidate locations with the ship's echosounder for relatively flat, sandy sites. We will then use the ship's J-frame or A-frame to lift the mooring anchor (cement block and sandbag), the acoustic release and deep EAR package along with flotation foam over the side of the ship and then release the entire package and let it drop to the bottom.

c.) This activity would help the Monument by …
Helping to understand humpback whale population-specific habitat use and explore the population status of humpback whales wintering within the Monument. We aim to collect data to compare humpback whale song occuring within the Monument to song from other breeding grounds such as the Main Hawaiian Islands. This way, we aim to establish whether whales wintering within the Monument are part of a discrete stock with the Monument being a distinct breeding ground. We aim to establish a non-invasive tool to study humpback whale habitat use and behaviors in the North Pacific

It is intended that this information will be used in aiding management decisions regarding protection of valuable marine resources such as the Monument.

Other information or background:
Successful conservation of a species relies on understanding how that species interacts with its environment. Humpback whales have been seriously depleted through whaling, and while most populations recovered and are increasing, some populations remain small and are classified as ‘endangered’. Breeding assemplages (stocks) in the North Pacific are estimated to consist of up to 10,000 whales, but can be as small as only a few hundred animals in other ocean basins. With the ongoing gas and oil development in the Arctic in addition to ocean noise, entanglement, and ship strike risks, it is important to identify distinct breeding stocks within populations, especially if they are small, as well as their critical habitats to assess potential anthropogenic impacts and necessary management actions.

At a given breeding ground, all humpback whale males sing the same complex songs. These songs have a hierarchical and repeating series of units, phrases and themes. Songs differ between ocean basins, but there is debate about whether songs are similar between breeding assemblages within one ocean basin or different. In the North Pacific, humpback whales spend the summers in arctic regions such as Alaska and the Bering Sea and migrate to their tropical breeding grounds including Hawaii, Mexico, southern Japan and the Philippines. However, an extensive population study (SPLASH) has revealed that many of the whales feeding in the Aleutian Islands and the Bering Sea are not observed in known breeding areas in the North Pacific. The Northwestern Hawaiian Islands (NWHI), 1,800 km northwest of the main Hawaiian Islands (MHI), have been proposed as a previously undocumented wintering area and recent preliminary findings

suggest that this wintering area may be distinct from the MHI breeding ground. If songs from different breeding groups are sufficiently different from one another, we can use acoustic comparisons to identify whether whales in the NWHI and MHI are part of the same breeding group.

Passive acoustic monitoring allows us to autonomously collect acoustic data over long timeframes. We will use this method to collect song recordings from different major breeding locations including the NWHI during one breeding season to analyze and compare their structures within and among breeding assemblages. Our study aims to improve the knowledge of variation in humpback whale song at the winter breeding grounds, provide a non-invasive tool to study population-specific humpback whale habitat use and behavior in the Monument, and further explore the population status of humpback whales in the NWHI.

EARs have been used to acoustically monior Monument waters since 2006. Over the past several years, acoustic analyses have focused on documenting marine mammal occurence and natural ambient sounds in order to establish baselines of activity for long-term comparisons. Considerable attention has been focused on the sounds produced by snapping shrimp, which are the most ubiquitous source of sound on coral reefs. Data collected in the Monument have so far yielded a wealth of information regarding temporal patterns of activity over periods of days, weeks and seasons.

Finally, deep water EAR deployments made in the past have been successful at recording vessel traffic at several sites. Both shipping and non-shipping traffic has been found in many recordings.