

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

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: Dr. Christopher Winn and Dr. Samuel E. Kahng

Affiliation: Hawaii Pacific University

Permit Category: Research

Proposed Activity Dates: April 2015 to April 2016

Proposed Method of Entry (Vessel/Plane): Vessel or Plane

Proposed Locations: The details of the research trip are not yet planned, this research trip is opportunistic sampling joining another group's cruise. Potential to visit any of the Northwestern Hawaiian Islands: Kure Atoll, Midway Atoll, Pearl and Hermes Atoll, Lisianski Island, Laysan Island, Maro Reef, Gardner Pinnacles, French Frigate Shoals, Necker Island, and Nihoa Island.

Estimated number of individuals (including Applicant) to be covered under this permit: 5

Estimated number of days in the Monument: 30 days

Description of proposed activities: (complete these sentences):

a.) The proposed activity would...

help Monument managers assess and understand the impact of ocean acidification. We are working to develop a simple chemical method to assess changes in reef metabolism. This proposed research will collect preliminary observations using this new method to monitor coral reef metabolism. When implemented, this approach has the potential to provide managers with a simple and inexpensive procedure to assess the response of coral reef ecosystems to changes in ocean chemistry. A secondary aim of this effort is to measure the levels of inorganic and organic metabolism over the coastal reefs to quantify their effects on the inorganic carbon system of coastal waters. This project aims to examine the spatial gradient of carbonate parameters from the shallow fore-reef (~20 m depth) on the island shelves to the deep open ocean (~500 m depth) to investigate the effect of biological processes on the carbon system throughout the diel cycle. The latitudinal gradient of carbonate parameters along the NWHI island chain will also be assessed with respect to the island mass effect.

b.) To accomplish this activity we would
collect water samples at shallow depths (<10m) in the waters inside the atolls and nearshore to the island masses. The procedure involves the collection of water from the nearshore environment as close to sunrise as possible and as close to sunset as possible. Two or three replicate 250 mL subsamples will be collected into Pyrex glass bottles. 100 microliters (about one drop) of a saturated mercuric chloride solution will be added to each bottle and the bottles will be sealed with apeizon grease for transport to our laboratory in Waimanalo, Oahu. The temperature and salinity of the water sample will be measured with a simple hand-held conductivity and temperature meter called a YSI. This sampling method will be conducted in the morning and evening each day for the duration of our time in the PMNM. To better analyze the carbonate chemistry data set surface ocean current data will be measured using a drifter drogue each day of sampling and will be recorded continuously by an ADCP positioned on the sand seafloor adjacent to the sampling location for the duration of sampling. In tandem with the drifter drogue fluorescein disodium salt (fluorescing dye) may be used to determine directionality and speed of surface current. Continuous CTD measurements will be taken from the ship to assess the spatial and temporal gradients of carbonate chemistry parameters surrounding the islands. Discrete water samples will be taken at selected depths during the CTD casts to test in a laboratory setting to verify any trends seen in the CTD data.

c.) This activity would help the Monument by ...
developing a simple method to assess change in reef ecosystems in reponse to changing ocean chemistry. Assessing the island mass effect to determine the spatial gradients effect on the coral reef processes surrounding the coastal waters of the NWHI. Examining the gradients of carbonate parameters from the open ocean to coastal marine habitats is critical for forecasting any future impact of climate change on the coral reef ecosystems of the Papahānaumokuākea Marine National Monument. An additional objective of this project involves developing appropriate standard operating procedures (SOPs) for conducting field sampling and performing analytical laboratory measurements.

Other information or background: