

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:

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

Affiliation: Hawaii Pacific University

Permit Category: Research

Proposed Activity Dates: October 4, 2013 through October 18, 2013

Proposed Method of Entry (Vessel/Plane): MV Searcher

Proposed Locations: The waters surrounding Nihoa Island, Mokumanamana and French Frigate shoals.

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

4

Estimated number of days in the Monument: 14

Description of proposed activities: (complete these sentences):

a.) The proposed activity would...
will help Monument managers develop a relatively simple method to assess the impact of changing ocean pH on the reef ecosystems within the monument.

b.) To accomplish this activity we would
collect surface water samples from the research vessel and/or from small boats near and around the coral reefs. These samples will be preserved and returned to Honolulu for analysis. In addition, we will measure surface water temperature and salinity with a simple hand-held device. Surface water samples will be collected at up to 4 times over a complete 24 hour period in order to characterize the relative rate of calcification (the production of new coral reef structure) to photosynthesis (the capture of light energy by plants). Given that ocean acidification is expected to impact the rate of calcification and not photosynthesis, changes in the relative rates of these processes is expected to provide managers with a rubric with which to determine the impact of changing ocean chemistry on the ecosystems within the monument.

c.) This activity would help the Monument by ...

improving our understanding of the the metabolic processes that create and sustain the reef ecosystems within the monument and by developing a relatively simple and inexpensive method for assessing the impact of ocean acidification.

Other information or background:

Section A - Applicant Information

1. Applicant

Name (last, first, middle initial): Samuel E. Kahng and Chrstopher D, Winn

Title: Associate Professor of Oceanography

1a. Intended field Principal Investigator (See instructions for more information):

Sam Kahng/Christopher Winn

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

[REDACTED]
[REDACTED]
[REDACTED]

Phone: [REDACTED]

Fax: [REDACTED]

Email: [REDACTED]

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

3. Affiliation (institution/agency/organization directly related to the proposed project):

Hawaii Pacific University
[REDACTED]
[REDACTED]

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, Research Diver; Jane Doe, Field Technician):

Ms. Andrea Kealoha HPU Graduate Student

Ms. Crystal Coughlin HPU Graduate Student

Mr. Andrew Collins HPU Graduate Student
Mr. Stephen Gonski HPU Graduate Student
Dr. Sam Kahng, HPU Faculty
Dr. Christopher Winn, HPU Faculty

Section B: Project Information

5a. Project location(s):

- | | | | |
|--|-------------------------------------|---|-------------------------------------|
| <input checked="" type="checkbox"/> Nihoa Island | <input type="checkbox"/> Land-based | <input checked="" type="checkbox"/> Shallow water | <input type="checkbox"/> Deep water |
| <input checked="" type="checkbox"/> Necker Island (Mokumanamana) | <input type="checkbox"/> Land-based | <input checked="" type="checkbox"/> Shallow water | <input type="checkbox"/> Deep water |
| <input checked="" type="checkbox"/> French Frigate Shoals | <input type="checkbox"/> Land-based | <input checked="" type="checkbox"/> Shallow water | <input type="checkbox"/> Deep water |
| <input type="checkbox"/> Gardner Pinnacles | <input type="checkbox"/> Land-based | <input checked="" type="checkbox"/> Shallow water | <input type="checkbox"/> Deep water |
| <input type="checkbox"/> Maro Reef | | | |
| <input type="checkbox"/> Laysan Island | <input type="checkbox"/> Land-based | <input type="checkbox"/> Shallow water | <input type="checkbox"/> Deep water |
| <input type="checkbox"/> Lisianski Island, Neva Shoal | <input type="checkbox"/> Land-based | <input type="checkbox"/> Shallow water | <input type="checkbox"/> Deep water |
| <input type="checkbox"/> Pearl and Hermes Atoll | <input type="checkbox"/> Land-based | <input type="checkbox"/> Shallow water | <input type="checkbox"/> Deep water |
| <input type="checkbox"/> Midway Atoll | <input type="checkbox"/> Land-based | <input type="checkbox"/> Shallow water | <input type="checkbox"/> Deep water |
| <input type="checkbox"/> Kure Atoll | <input type="checkbox"/> Land-based | <input type="checkbox"/> Shallow water | <input type="checkbox"/> Deep water |
| <input type="checkbox"/> Other | | | |

Ocean Based

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

Location Description:

Our sampling will be restricted to the water column. We will not be collecting live animals or collecting other types of samples within the monument.

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:*

Our research is designed to evaluate a simple method to assess changes in the rates of calcification relative to photosynthesis within the monument. This approach is expected to provide a tool for managers to use to assess change within the monument coral reef ecosystems in response to ocean acidification.

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?

Our collection small volumes of seawater from the water column surrounding the islands will not impact the emergent islands or submerged reefs in any way. Our personnel will not collect samples via SCUBA and will only obtain samples from the surface ocean.

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?

We are aware of the cultural importance of the Northwestern Hawaiian Islands (NWHI) to Native Hawaiians as being a sacred place. It is understood that Native Hawaiians have always depended on the ocean as a resource (especially in the NWHI) for both sustenance and cultural activities. Coral reefs and the ecosystem surrounding the Hawaiian Archipelago are an important natural resource as well as a cultural asset for Native Hawaiians and all U.S. citizens. These huge calcium carbonate structures may be severely damaged or even completely destroyed by the slowly declining pH in the global ocean. Our research is designed to better understand the carbon chemistry of the ocean waters in and around the Monument and will hopefully be useful in designing strategies for protecting these resources for future generations of Native Hawaiians as well as all people of the Pacific region.

Our sampling work will be compatible with management practices in the monument in that our work will have no impact on any cultural, historic or natural resources in the monument. Water samples will be collected only from the surface ocean and will not affect any cultural, biological or physical features within the monument.

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.

Our samples must be collected from monument waters in order to improve our understanding of the chemical processes within the monument.

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

One of the most fundamental processes within the monument is the precipitation of calcium carbonate by reef building organisms. Calcium carbonate is precipitated by a variety of reef organisms and calcium carbonate also dissolves through both biological and abiotic processes. At the present time, the rate of precipitation is almost certainly greater than the rate of dissolution throughout most of the Monument. However, as the carbon chemistry of the reef environments change it is anticipated that precipitation will decline and dissolution will increase. This is a result of the changes in the solubility of calcium carbonate resulting from a decrease ocean pH and a simultaneous decrease the concentration of the carbonate ion. Our research will improve our understanding of the precipitation and dissolution of calcium carbonate and help to anticipate the impact of ocean acidification on these processes within the monument.

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

We will participate an approximately two-week expedition to the southern most islands in the monument in October 0f 2013. Our visit is part of ongoing observation and research by the Papahānaumokuākea Marine National Monument.

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

Dr. Winn and Dr. Kahng have considerable experience in this area of research. Dr. Winn has participated in research programs focusing on oceanic carbon chemistry for decades. Relevant experience includes participation as principle investigator on the Department of Energy's Global Carbon Survey as part of the International World Ocean Circulation Experiment (WOCE) and the National Science Foundation's Joint Global Ocean Flux (JGOFS) program. These large scale research programs have included similar research on research cruises in virtually all of the world's oceans.

Dr. Kahng has been working in Hawaii;s coral reef environment for many years. He has worked on mesopelagic coral species and has extensive experience and expertise in coral reef biology and Ecology. In addition, Dr. Kahng has been conduting a time-series carbon system measurement program in near-shore Hawaiian waters for the past year and has provided some of the first data on carbon system dynamics on exposed coral reef environments in Hawaii.

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. We are working closely with the Papahānaumokuākea Marine National Monument on this research effort and the monument is funding our participation.

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.

Our sample collection and analysis procedures have been developed over years of similar research and our expertise in the study of the oceanic carbon system will provide important insight into the impact of ocean acidification of the monument. Our research will not involve the collection of any live animals or other materials from the monument. We will collect a total of less than 40 liters of seawater from the monument in 250ml pyrex bottles. The samples will be preserved with mercuric chloride and returned to Honolulu for analysis in our research laboratories. No mercuric chloride will be released into the environment.

i. Has your vessel been outfitted with a mobile transceiver unit approved by OLE and complies with the requirements of Presidential Proclamation 8031?

Yes

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

We cannot foresee any conditions that would make issuance of this permit inappropriate

8. Procedures/Methods:

Our research work involves collecting water samples from monument waters. Water samples will be collected directly from research vessels and no live animals will be collected. In addition, we will measure the temperature and salinity of the surface ocean at the time of sample collection using a hand-held device.

Our sampling plan involves collecting water at specific locations up to 4 times per day. The sampling locations will be determined on the basis of compatibility with other activities being conducted on this research cruise.

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:

We will not collect any living specimens but we will be collecting seawater samples from the surface water surrounding the islands. We will collect individual water samples of about 250 ml samples for a total of less than 40 liters (approximately 10 gallons). These samples will be returned to Honolulu for analysis and we will not release any chemicals in monument waters.

Scientific name:

& size of specimens:

Collection location:

Whole Organism Partial Organism

9b. What will be done with the specimens after the project has ended?

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

• General site/location for collections:

Surface water samples within and around the coral reefs environments.

• Is it an open or closed system? Open Closed

I don't believe that our sampling fits into either definition. All of our water samples will be drawn from the surface ocean, preserved and returned to Honolulu for analysis

• Is there an outfall? Yes No

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

• Will organisms be released?

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

Samples will be returned to Honolulu with the research vessel

11. Describe collaborative activities to share samples, reduce duplicative sampling, or duplicative research:

We anticipate exchanging a few water samples with other laboratories to ensure analytical accuracy and precision. Dr. Andrew Dickson's laboratory at Scripps Institution of Oceanography.

Contact Information:

Dr. Andrew Dickson



12a. List all specialized gear and materials to be used in this activity:

We will use buckets for water sampling and a hand-held electronic device for the measurement of temperature and salinity

12b. List all Hazardous Materials you propose to take to and use within the Monument:

Small amounts of Mercuric Chloride. This chemical will be used for sample preservation only and will not be released into monument waters. We add this chemical to our water samples in order to preserve them for analysis in shore-based laboratories. This chemical is also used sparingly. We will use less than 30 milliliters during the entire expedition.

13. Describe any fixed installations and instrumentation proposed to be set in the Monument:

No fixed instruments will be deployed

14. Provide a time line for sample analysis, data analysis, write-up and publication of information:

Complete analysis and interpretation will require approximately one year following the completion of the cruise. Our data will be compiled in a data report that will be submitted to the NOAA Monument program. The data report for our 2009, 2010 and 2011 sampling seasons are now complete. The report for 2012 will be assembled once the analytical work for that year is complete. Our data reports will be submitted to the monument approximately 12 months after the completion of our annual sampling. We have already presented the results of our work at several scientific conferences and have written two manuscript for publication in the peer-reviewed literature which are currently under peer-review.

15. List all Applicants' publications directly related to the proposed project:

Please see attached C.V.

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