

State of Hawaii  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
Division of Aquatic Resources  
Honolulu, Hawaii 96813

May 23, 2008

Board of Land  
and Natural Resources  
Honolulu, Hawaii

Request for Authorization and Approval to Issue a Papahānaumokuākea Marine National Monument Research Permit to Stephen Karl, University of Hawaii, Hawaii Institute of Marine Biology, for Access to State Waters to Conduct Coral Genetics Research Activities.

The Division of Aquatic Resources (DAR) hereby submits a request for your authorization and approval for issuance of a Papahānaumokuākea Marine National Monument research permit to Stephen Karl, associate researcher, University of Hawaii, Hawaii Institute of Marine Biology, pursuant to § 187A-6, Hawaii Revised Statutes (HRS), chapter 13-60.5, Hawaii Administrative Rules (HAR), and all other applicable laws and regulations.

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

- Pearl and Hermes Atoll

The activities covered under this permit would occur from June 1, 2008 through August 31, 2008.

The proposed activities are a renewal of work previously permitted and conducted in the Monument.

INTENDED ACTIVITIES

The purpose of these activities is to physically map all individuals of the coral species *Porites lobata* and *Pocillopora damicornis* on a patch reef at Pearl and Hermes Atoll, and to genetically fingerprint each individual. The goal of this project is to provide information on the genetic diversity of corals and coral reefs to better predict the health and robustness of the living resources in the Monument.

To perform these activities, the applicant would use meter transects to physically map the colony location on the reef. The coordinates of each individual colony would be globally positioned by using an underwater GPS system which floats on the surface. All individuals and the surrounding area would be photographed to be included in a GIS database, using high-resolution digital photography.

Small coral samples (less than or equal to 3 cm<sup>2</sup>) of each individual would be collected during the mapping effort and would be subsequently genotyped and used to assess the degree of genetic variation present in coral reefs. Samples would be placed in non-toxic preservative (95% Ethyl alcohol or salt saturated DMSO) and would be non-viable upon preservation.

Sampling is expected to amount to no more than 500 individuals of *P. lobata* and 1,500 individuals of *P. damicornis*. The applicant began sampling the patch reef at Pearl and Hermes in 2007. He collected 500 samples (the maximum number permitted) but surveyed only about one quarter of the reef. He hopes to complete the survey this year, and it is anticipated that the maximum number of individuals indicated above would not need to be collected, but it is important that, if necessary, the permit allow for collection of every individual on the reef. Great care would be taken to minimally impact the individual.

Samples would be transported at the end of the cruise to the Hawaii Institute of Marine Biology. DNA will be extracted following standard procedures in the laboratory at HIMB.

The applicant notes that all researchers at HIMB have coordinated to share samples where appropriate.

This research would help assess the genetic diversity of coral in the Papahānaumokuākea Marine National Monument. The level of genetic variation present in the coral reef has direct bearing on the coral's ability to withstand changing environments, anthropogenic impacts, and disease. Understanding the genetic makeup of coral reefs is invaluable when restoration efforts are needed. These data would also serve as baseline information for monitoring the health of coral reefs.

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
- Anchoring a vessel
- Touching coral, living or dead
- 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 entities: Hawaii Division of Aquatic Resources, Hawaii Division of Forestry and Wildlife, Papahānaumokuākea Marine National Monument (NOAA/NOS), NOAA Pacific Islands Regional Office (NOAA-PIRO), and United States Fish and Wildlife Service Pacific Islands NW Refuge Complex Office. The Office of Hawaiian Affairs (OHA), and the Kaho'olawe Island Reserve Commission (KIRC) were also consulted.

**Comments received from the scientific community are summarized as follows:**

Scientific reviews support the acceptance of this application.

Concerns raised were:

1. What protocols the applicant would be following to ensure the safe storage and transport of the coral he is requesting to collect
2. What plans the applicant has to present his research and results to the public

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

Cultural reviews support the acceptance of this application.

No concerns were raised, but the following suggestion was made:

3. A ho'o kupu, Wai (fresh water) or awa (liquid form) should be offered at the site of first sampling.

**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.

Has Applicant been granted a permit from the State in the past?      Yes       No

If so, please summarize past permits:

- The applicant was granted permits DLNR/NWHI/06R009 and PMNM-2007-042 to conduct similar work in 2006 and 2007.

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

**RESPONSE:**

1. DAR and Monument staff have been working with HIMB researchers to address staff concerns and develop a Monument transport protocol. Currently, the protocol is subject to external peer review. The results of this review will be known by the May 23<sup>rd</sup> Land Board meeting. The method of storage and transport of coral being proposed by the applicant would be addressed in the Monument transport protocol.

2. The Applicant states that public outreach is one of his top priorities. In the past year, he has presented on his research to high school students, HIMB education volunteers, and at the East-West Center, as well as at scientific conferences. He plans to continue these types of public and professional presentations.
3. A cultural briefing was given to HIMB staff and researchers by the cultural reviewer who made this request. That briefing included a discussion on how best to incorporate and implement this practice into Monument activities that require the taking of samples.

STAFF OPINION:

DAR staff is of the opinion that Applicant has properly demonstrated valid justifications for his application and, conditional on development of a peer-reviewed Monument transport protocol, should be allowed to enter the NWHI State waters and to conduct the activities therein as specified in the application with the following special instructions and conditions, which are in addition to the Papahānaumokuākea Marine National Monument Conservation and Management Permit General Conditions. The following special conditions have been vetted through the legal counsel of the Co-Trustee agencies.

1. This permit is not to be used for nor does it authorize the sale of collected organisms. Under this permit, the authorized activities must be for noncommercial purposes not involving the use or sale of any organism, by-products, or materials collected within the Monument for obtaining patent or intellectual property rights.
2. The permittee may not convey, transfer, or distribute, in any fashion (including, but not limited to, selling, trading, giving, or loaning) any coral, live rock, or organism collected under this permit without the express written permission of the Co-Trustees.
3. To prevent introduction of disease or the unintended transport of live organisms, the permittee must comply with the disease and transport protocols attached to this permit.
4. Tenders and small vessels must be equipped with engines that meet EPA emissions requirements.
5. 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
6. No fishing is allowed in State Waters except as authorized under State law for subsistence, traditional and customary practices by Native Hawaiians.

MONUMENT MANAGEMENT BOARD OPINION:

The MMB is of the opinion that the Applicant has met the findings of Presidential Proclamation 8031 and this activity, conditional on development of a peer-reviewed Monument transport

protocol, may be conducted subject to completion of all compliance requirements. The MMB concurs with the special conditions recommended by DAR staff.

RECOMMENDATION:

“That the Board authorize and approve, with stated conditions, a Research Permit to Stephen Karl, University of Hawaii, Hawaii Institute of Marine Biology.”

Respectfully submitted,



DAN POLHEMUS  
Administrator

APPROVED FOR SUBMITTAL



LAURA H. THIELEN  
Chairperson