

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: David Hyrenbach

Affiliation: Hawaii Pacific University

Permit Category: Research

Proposed Activity Dates: January 1, 2016 - December 31, 2020

Proposed Method of Entry (Vessel/Plane): N.A.

Proposed Locations: Two sites are proposed: Midway Atoll and Tern Island, which are located along a North-South gradient of distance to the North Pacific Chlorophyll Front. While we seek samples from these sites, we do not request access to these sites.

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

3

Estimated number of days in the Monument: None requested

Description of proposed activities: (complete these sentences):

a.) The proposed activity would...

Study the incidence and amount of plastic ingestion in eight locally-breeding seabird species and relate these patterns to geographic location (NWHI vs MHI), age classes (chicks vs adults), and life-history characteristics (foraging modes, trophic level, diet). Previously, we used samples collected from French Frigate Shoals between 2008 and 2012 to establish a multi-species baseline of plastic pollution, and to document plastic ingestion in 3 previously undocumented species, albeit with small sample sizes (red-footed booby, brown booby, red-tailed tropicbird).

To this end, we seek opportunistically collected specimens from the following 8 species at 2 sites: Wedge-tailed shearwater (*Puffinus pacificus*), Bulwer's petrel (*Bulweria bulweri*), Black-footed Albatross (*Phoebastria nigripes*), Laysan Albatross (*Phoebastria immutabilis*), Sooty Tern (*Onychoprion fuscatus*), Red-tailed Tropicbird (*Phaethon rubricauda*), Brown Booby (*Sula leucogaster*) and Red-footed Booby (*Sula sula*). This list of focal species was originally requested as part of permit 2010-027 (2011-2015).

While collections at French Frigate Shoals will likely not be feasible in the future, we would still like to include this site in our permit. Yet, we consider Midway Island as the main collection site.

Because the number of specimens and their age classes will vary from year to year, we request a 5-year permit that will allow us to sample any unusual mortality events.

b.) To accomplish this activity we would

We will work with refuge staff at two study sites (Midway Atoll and French Frigate Shoals) to collect deceased chicks and adults for necropsy and lab analysis. Specimens will be stored frozen and delivered to Honolulu. Specimens will be necropsied in the lab at Hawaii Pacific University and the stomach contents and tissue samples will be preserved for analysis of (for pollutants, diet and stable isotopes. These analyses will be performed in collaboration with the following researchers: Michelle Hester (Oikonos - NGO), Michael Fry (USFWS), Kyle Van Houtan (NOAA - PIFSC), Seth Newsome (University of New Mexico), Rei Yamashita (Tokyo University) and Denise Hardesty (CSIRO - Australia).

Specimen analyses will include: (i) stomach contents including diet and plastics, (ii) tissues for isotopic analyses (muscle, toe nails, feathers, liver), and (iii) specimen use in educational activities (e.g., graduate student research projects, undergraduate necropsy lab as part of Hawaii Pacific University seabird course) and distribution of the Bishop Museum for mounting and exhibition. Please note that Hyrenbach already has a special purpose possession / salvage permit from USFWS (MB -180283-0), valid through 03/31/2017 (Please see enclosed USFWS permit).

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

Developing a standardized baseline of plastic ingested by petrels at these two NWHI colonies, comparable to our ongoing study in the MHI (O'ahu). This information will be useful for future monitoring of seabird population status and health studies of petrel populations in the Monument, and will be applied to ongoing educational and outreach efforts to raise awareness about plastic pollution in the marine environment.

Other information or background: This research is part of a study to characterize plastic ingestion by petrels and to understand the individual and population-level effects of this marine debris. More specifically, we are interested in studying the general origin (post-user / industrial) and the mechanisms (color preferences, association with natural prey) by which certain pieces are chosen at sea. While it is widely known that surface feeding tubenose seabirds (order Procellariiformes) ingest and feed floating plastic fragments at sea to their chicks, previous studies have not addressed geographic and species-specific differences in the types and amounts of ingested debris. By comparing the results from species breeding in the Monument and in the Main Hawaiian Islands and with specimens from fisheries bycatch (adult albatrosses), this study will start to test mechanistic hypotheses about the geographic and life-history factors influencing the plastic ingestion in North Pacific petrel populations.