

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: Daniel Wagner

Affiliation: Ocean Exploration Trust (OET)

Permit Category: Research

Proposed Activity Dates: August 29 - September 25, 2023

Proposed Method of Entry (Vessel/Plane): Vessel (E/V *Nautilus*)

Proposed Locations: Deep waters (>200 meters) in expansion zone of the Papahānaumokuākea Marine National Monument towards the northwestern Monument boundary

Estimated number of individuals (including Applicant) to be covered under this permit:
50 (33 science and operations and 17 ship's crew)

Estimated number of days in the Monument: 29

Description of proposed activities: (complete these sentences):

a.) The proposed activity would...

Our overall goal is to increase our scientific understanding of previously unexplored deep-sea habitats in the Monument, while also engaging the public in telepresence-based exploration. For this purpose we propose to conduct an expedition that will use the E/V *Nautilus* mapping and remotely operated vehicle (ROV) systems to survey deep-sea habitats (>200 meters) within the Monument, focusing on the Monument expansion zone towards the northwestern boundary. The expedition will be planned and executed in close collaboration with the resource management and scientific community, including staff of the Papahānaumokuākea Marine National Monument (PMNM). Video and information from the expedition will be live streamed to engage the public in telepresence-based exploration. Data and samples collected during the mission will be deposited in publicly-available repositories in order to provide a rich foundation to enable follow-on science, exploration, and management activities.

b.) To accomplish this activity we would

We aim to conduct a 29-day telepresence-enabled expedition aboard E/V *Nautilus* that will use the ship's mapping and remotely operated vehicle (ROV) systems to survey deep-sea habitats located primarily towards the northwestern expansion zone of the Monument between Lili'uokalani Ridge and the northwestern Monument boundary. This area includes numerous previously unexplored seamounts of biological and geological significance, as well as several underwater cultural heritage sites associated with the Battle of Midway.

Our ROV systems (rated to 4,000 and 6,000 meters) will be equipped with high-definition video and photo cameras, lights, parallel lasers for scale, CTD and oxygen sensors, scanning and multibeam sonars, Niskin bottles, push core tubes, manipulator arms, and a suction sampling system. During exploratory dives, ROVs will record high-resolution video, oceanographic, and seafloor mapping data, as well as collect limited biological, geological, and water samples. We request permission to collect a maximum of 15 rock samples, 5 sediment push cores, 15 biological samples, and 6 water samples per ROV dive to support studies on the biogeographic patterns of species distributions, carbonate chemistry, and the geological context of the region. Biological specimen collections will target possible new species, range expansions, or other samples with high potential to increase our scientific understanding of the biodiversity and biogeography of the region. Water samples will be collected via Niskin bottles mounted on the ROV for eDNA and carbonate chemistry analyses. A limited number of sediment samples may also be collected via pushcore or scoop for analysis of infauna and for geological archiving; rock samples will be collected by the ROV manipulators for studies on the geological age and context of the region. In particular, geological samples collected during this project will seek to identify whether specific seamounts are cretaceous or formed over the Hawaiian Hotspot.

In addition to ROV dives focused on the geology and biology, the project may also include limited deep-sea surveys on submerged archaeological sites associated with the Battle of Midway. Should such underwater cultural sites be explored via ROV, the team will adhere to OET's policies for documenting archaeological sites, which include (but are not limited to):

- Submerged cultural heritage sites will not be explored without explicit and communicated intent, and permission to do so from all relevant permitting agencies. This will include coordination with archaeologists from NOAA and the Naval History and Heritage Command who can participate in the expedition through telepresence.
- Coordinates of submerged cultural sites will not be broadcast over any of the channels that can be accessed by scientists ashore or the public.
- Under no circumstances will submerged cultural materials be touched or recovered.
- The ROVs will not be piloted directly over the site to avoid accidentally setting down on the site, getting the vehicle snagged on part of the site, and to avoid disturbance by down thrust.
- In the event human remains are sighted, all live video and audio feeds going to shore will be ceased. YouTube live streams will also be temporarily deactivated to prevent rewind capabilities and confirm that affected dives are not publicly published.
- Data from cultural heritage sites will be given to the Monument. Further distribution and use of the data will be subject to all constraints outlined by the permits required to conduct the work.

In addition to ROV dives, the expedition will include mapping operations using the hull-mounted acoustic sonars of E/V *Nautilus* (i.e., Kongsberg EM302 multibeam, Knudsen 3260 sub-bottom profiler, and Simrad EC150-3C acoustic Doppler current profiler and echosounder). Mapping operations will target previously unmapped areas of the Monument, particularly around seamounts and areas suspected to contain underwater cultural heritage sites associated with the Battle of Midway.

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

Due to its natural and cultural significance, the Northwestern Hawaiian Islands and surrounding waters have undergone a long history of science, conservation, and resource management. Despite historic efforts, a large portion of the Monument remains unexplored, particularly in the Monument expansion zone, hindering efforts to effectively manage its unique resources. The expedition will be planned and executed to fill knowledge gaps in support of science priorities of the Monument and its partner agencies. Expedition operations will be conducted in previously unsurveyed Monument areas, thus contributing directly to the priorities identified in the PMNM Management Plan, PMNM Natural Resources Science Plan, PMNM Maritime Heritage Research, Education and Management Plan, National Strategy for Mapping, Exploring, and Characterizing the United States Exclusive Economic Zone (NOMEZ), Seabed 2030, and the UN Decade of Ocean Science for Sustainable Development. Expedition activities will also be designed to advance NOAA mission priorities, particularly in terms of understanding ocean changes, sharing that knowledge with others, and conserving marine ecosystems. Data and samples collected on this mission will be deposited in publicly-available repositories, therefore providing the essential precursor needed to enable follow-on science, exploration, and management activities.

In addition to the science objectives, this mission will have a large focus on education and outreach activities, thereby addressing the Monument's mission of bringing the place to the people. Building on ongoing collaborations, OET will continue to work closely with NOAA, US Fish and Wildlife Service, State of Hawai'i, Office of Hawaiian Affairs, and educators from the region to co-develop meaningful, culturally-relevant outreach and education experiences, particularly those targeting schools and communities throughout Hawai'i and across the Pacific Islands Region. This will include working closely with Native Hawaiian language practitioners to develop an expedition name reflecting Hawaiian relationships with mission themes, as well as incorporating Hawaiian cultural values and worldview into the implementation of the expedition.

Specific outreach products will include the development of media centered on the excitement of discovery and the science objectives of the expedition; website resources (blogs and photo albums) targeting the general public and K-12 learners; live ship-to-shore broadcasts with schools and communities worldwide hosted in 'Ōlelo Hawai'i and English; press opportunities; and promoting expedition content via OET's social media accounts (i.e., [Twitter](#), [Instagram](#), [Facebook](#), [YouTube](#), [LinkedIn](#), and [TikTok](#)). The expedition will also involve participants from [OET's Science & Engineering Internship Program](#) and [Science Communication Fellowship](#), which provide paid professional workforce training for students and educators. Finally, OET will work closely with PMNM to involve permit monitors and community cultural liaisons in outreach planning and onboard E/V *Nautilus*.

Other information or background:

The Ocean Exploration Trust is a non-profit organization established in 2007 with the aim of exploring the ocean, seeking out new discoveries while pushing the boundaries of technological innovation, education, and outreach. Expeditions center on scientific exploration of the seafloor, collaborating with the broader research community to identify priority regions and phenomena, and sharing results publicly via telepresence technology to inspire the next generation of ocean

explorers, scientists, and stewards. Since its establishment, OET's missions have been closely guided by the 2000 President Panel for Ocean Exploration, the US Ocean Exploration Program, as well as science priorities of NOAA and other government agencies.

To date, OET has led over 145 multi-disciplinary expeditions for a total of 1,748 days at sea aboard E/V *Nautilus* that explored deep-sea habitats throughout the Pacific, Caribbean, Atlantic Mediterranean, and Black Sea. These scientific expeditions included a total of 930 successful ROV dives that explored deep ocean habitats for close to 105,000 hours, as well as acquired high-resolution mapping data across over 870,000 square kilometers of seafloor. Results of these exploratory expeditions have been summarized in over 200 peer-reviewed scientific publications to date, covering a wide range of scientific disciplines, including deep-sea geology, biology, archaeology, chemistry, and the social sciences.

The 2023 expedition to the Monument will be funded by NOAA Ocean Exploration via the Ocean Exploration Cooperative Institute. This consortium of oceanographic institutions includes OET, University of Rhode Island, University of New Hampshire, Woods Hole Oceanographic Institution, and University of Southern Mississippi, which work together to advance the core priorities of NOAA Ocean Exploration. Specifically, the Ocean Exploration Cooperative Institute aims to explore unknown areas within the US exclusive economic zone, integrate emerging technologies into exploration operations, and expand opportunities for the next generation of ocean explorers.

Scientific Applications of Technology

