

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: Matthias Egger, Ph.D.

Affiliation: The Ocean Cleanup Foundation, Rotterdam, The Netherlands

Permit Category: Research

Proposed Activity Dates: September 22, 2019 – October 12, 2019

Proposed Method of Entry (Vessel/Plane): Vessel, MV Lana Rose or Maersk Transporter

Proposed Locations: The scientific surveys are planned for shallow water habitats (<100m water depth) and coastlines around Nihoa, Necker Island, French Frigate Shoals, Maro Reef, Laysan Island, Neva Shoal Reef and Lisianski Island, Pearl and Hermes Atoll, Midway Atoll, and Kure Atoll.

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

11 scientists plus a permanent crew of about 12

Estimated number of days in the Monument: 21

Description of proposed activities: (complete these sentences):

a.) The proposed activity would...

Conduct quantitative surveys of marine debris along the coastlines of the Northwestern Hawaiian Islands (NWHI) ranging from emerged coastal parts to submerged habitats (<100m water depth) using a unique combination of hyperspectral camera technologies and state-of-the-art survey methods. This new approach will increase the prediction accuracy of debris accumulation rates in the Monument and will gain a more mechanistic understanding of marine debris retention on remote islands and atolls. The improved estimations of NWHI debris accumulation will be made publicly available, thus providing crucial knowledge to make sound management decisions related to marine debris in the region, as well as provide a baseline quantification to evaluate future mitigation measures aiming at protecting the Monument's natural and cultural heritage.

b.) To accomplish this activity we would

Conduct quantitative surveys of the shorelines and shallow water habitats, using non-invasive and non-lethal methods. The emerged coastlines will be surveyed with a research UAV (unmanned aerial vehicle) equipped with hyperspectral and RGB cameras, and by sieving beach sand from 60cm x 60cm areas (to a maximum depth of 30cm) for anthropogenic debris (>5mm). The submerged habitats will be inspected using a diver-operated hyperspectral underwater camera (<20m water depth) in combination with sieving of sand samples, and a Trident ROV (<100m water depth). In addition, samples will be taken from the ocean surface during transit between sites using a Manta trawl.

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

Mapping and quantifying its exposure to floating plastic pollution in the North Pacific. Ocean plastic pollution poses a significant risk to marine ecosystems. The Hawaiian Archipelago acts as a natural barrier for floating plastic debris circulating in the North Pacific subtropical gyre, and its coastlines are therefore severely impacted by anthropogenic debris. This study will investigate the nature of coastal plastic pollution in the Monument characterized by size class, polymer type and source origin. It will establish a baseline abundance of marine litter in the region against which changes due to increasing levels of plastic pollution in the North Pacific Ocean and associated impacts can be compared. Such knowledge helps to determine the fate of plastic debris in the ocean and is crucial in order to coordinate and monitor possible mitigation strategies aimed at protecting the natural and cultural heritage of the Monument from adverse effects associated with marine debris.

Other information or background:

The study consists primarily of non-invasive camera-based visual surveys. A limited number of beach and sediment samples will be sieved for anthropogenic debris. Any specimens potentially remaining on the sieves will carefully be removed by hand to ensure that only anthropogenic debris is removed from the Monument.