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: Jennifer Lynch
Affiliation: Co-Director, Center for Marine Debris Research (CMRD), Hawaii Pacific University (HPU)

Permit Category: Research
Proposed Activity Dates: 9/15/2020 - 10/8/2020
Proposed Method of Entry (Vessel/Plane): M/V IMUA
Proposed Locations: Kure Atoll, Midway Atoll, Pearl & Hermes Atoll, Lisianski Island, Laysan Island, French Frigate Shoals

Estimated number of individuals (including Applicant) to be covered under this permit: 3

Estimated number of days in the Monument: 24

Description of proposed activities: (complete these sentences):

a.) The proposed activity would…

The proposed activity would identify and collect samples of derelict fishing gear (ghost nets and Fish Aggregation Devices - FADs) that are to be removed during the Papahānaumokuākea Marine Debris Project Fall 2020 collaborative marine debris removal mission (with NOAA PIFSC Ecosystem Sciences Division, NOAA Papahānaumokuākea Marine National Monument Program, State of Hawaii DLNR Division of Forestry and Wildlife, U.S. Fish and Wildlife Services, Papahānaumokuākea Marine Debris Project (non-profit organization)), with the purpose of identifying where the fishing gear has come from, the country and fishery of origin.

b.) To accomplish this activity we would …

To accomplish this activity one research technician from CMDR would participate on the Fall 2020 Northwestern Hawaiian Islands Marine Debris Removal cruise aboard the M/V IMUA with NOAA PIFSC Ecosystem Sciences Division, NOAA Papahānaumokuākea Marine National Monument Program, State of Hawaii DLNR Division of Forestry and Wildlife, U.S. Fish and
Wildlife Services, Papahānaumokuākea Marine Debris Project (non-profit organization). NOAA PIFSC ESD will lead small boat and shoreline marine debris removal operations. Once the debris is removed from the shoreline and transported back to the vessel, or once offloaded in Honolulu, we (HPU CMDR) will conduct the most comprehensive net sampling protocol known to date, which involves distinguishing identifiable features of the nets, plastic polymer identification of net samples, and collaborating with fishermen and regional fishery councils throughout the Pacific to source the nets to their fishery of origin, and develop the framework to mitigate and prevent derelict fishing gear pollution.

c.) This activity would help the Monument by …

This activity would help the Monument by sourcing mega-sized marine debris, including ghost nets and FADs, to the fishery responsible for the discarded/lost gear. This study will establish the framework for identifying the plastic polymer types that these nets are composed of and sourcing the fishing nets back to the fisheries responsible. The outcome of this project is to raise awareness of the natural resource damage caused by the marine debris, particularly ghost nets and FADs, in the Papahānaumokuākea Marine National Monument, to understand the chemical composition of the nets, and to use the best available scientific analysis of the nets paired with social science working with fishermen/fishers and fishery councils throughout the Pacific to find solutions to this continuing issue of derelict fishing gear (DFG) pollution.

Other information or background:

About HPU Center for Marine Debris Research:
MISSION:
The Center for Marine Debris Research develops and applies optimal methods to investigate the sources, transport, fate, and impacts of plastic marine debris. The Center also disseminates this knowledge to inform management and stimulate ocean stewardship.
VISION:
The ultimate goal of all activities of the Center for Marine Debris Research is a trash-free ocean.
GOALS:
Bringing together the scientific community to develop standards and collaboration synergies.
Train the next generation for career opportunities in marine debris science and advocacy.
Stimulate public awareness and engagement in marine debris reduction and mitigation.
Provide policymakers with rigorous scientific findings to underpin legislation to reduce marine debris.
Section A - Applicant Information

1. Applicant

Name (last, first, middle initial): Lynch, Jennifer M.

Title: Co-Director, Center for Marine Debris Research (CMDR), Hawaii Pacific University (HPU)

1a. Intended field Principal Investigator (See instructions for more information):
    Jennifer Lynch, Ph.D.

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

Phone:

Fax:

Email:

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

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

Hawaii Pacific University (HPU), Center for Marine Debris Research (CMDR)

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):

Raquel Corniuk, Research Technician
Andrew McWhirter, Research Technician / Graduate Student (pursuing master’s degree)
**Section B: Project Information**

5a. Project location(s):  
- [ ] Nihoa Island  
- [ ] Necker Island (Mokumanamana)  
- [x] French Frigate Shoals  
- [ ] Gardner Pinnacles  
- [ ] Maro Reef  
- [x] Laysan Island  
- [x] Lisianski Island, Neva Shoal  
- [x] Pearl and Hermes Atoll  
- [x] Midway Atoll  
- [x] Kure Atoll  
- [ ] Other  

<table>
<thead>
<tr>
<th>Location Description:</th>
<th>Ocean Based</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Nihoa Island</td>
<td>Land-based</td>
<td>Shallow water</td>
</tr>
<tr>
<td>Necker Island (Mokumanamana)</td>
<td>Land-based</td>
<td>Shallow water</td>
</tr>
<tr>
<td>French Frigate Shoals</td>
<td>Land-based</td>
<td>Shallow water</td>
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<tr>
<td>Gardner Pinnacles</td>
<td>Land-based</td>
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<tr>
<td>Maro Reef</td>
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<tr>
<td>Laysan Island</td>
<td>Land-based</td>
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<tr>
<td>Lisianski Island, Neva Shoal</td>
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<td>Pearl and Hermes Atoll</td>
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<td>Land-based</td>
<td>Shallow water</td>
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<tr>
<td>Kure Atoll</td>
<td>Land-based</td>
<td>Shallow water</td>
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</tbody>
</table>

NOTE: Shallow water is defined by water less than 100 meters in depth.

- [ ] Remaining ashore on any island or atoll (with the exception of Sand Island, at Midway Atoll and field camp staff on other islands/atolls) between sunset and sunrise.

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

Location Description:

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:**

The purpose and scope of this research is to analyze the derelict fishing gear washing ashore in Papahānaumokuākea Marine National Monument in order to trace the fishing gear back to its fishery of origin. There are thousands of pounds of marine debris washing ashore or getting caught in the reefs of the Monument every year. Debris removal efforts do not match the estimated accumulation rate. And, there is currently not enough evidence to determine the sources of the derelict fishing gear that is degrading the natural resources of the Monument and posing hazards of entanglement, ingestion, foreign species invasion, and habitat degradation for the protected, threatened and endangered wildlife that live within the Monument. This research will raise awareness of derelict fishing gear in the Monument, source the derelict fishing gear to the fishery and country of origin, build the most comprehensive identification database on derelict fishing gear to date, and establish the framework for means of accountability in order to collaborate towards sustainable solutions to this issue.

*Considering the purpose of the proposed activities, do you intend to film / photograph federally protected species? Yes ☐ No X

If so, please list the species you specifically intend to target.

NOAA PIFSC, NOAA ONMS PMNM, State of Hawaii, and USFWS will photograph federally protected species.

For a list of terrestrial species protected under the Endangered Species Act visit: [http://www.fws.gov/endangered/](http://www.fws.gov/endangered/)


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?

Plastic pollution is degrading the cultural, natural and historic resources in the Monument. This proposed research involves collecting samples of nets and fishing gear from the FADs and ghost nets that are to be removed by the collaborative group on the Fall 2020 Northwestern Hawaiian
Islands Marine Debris Removal cruise. These samples of nets and other marine debris will allow us to determine the chemical composition and sources of the derelict fishing gear in the Monument, which will enable the establishment of the framework for future mitigation solutions with fisheries throughout the Pacific.

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?

Samples for our research will only be collected from the nets that the collaborative NWHI Marine Debris Removal Project will already be removing. Our sampling protocol will be conducted on the vessel M/V IMUA, or on land in Honolulu, so that there will be no added interactions with the Monument resources.

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.

No, there is not a practicable alternative since our partners with the NWHI Marine Debris Removal Project, particularly Papahānaumokuākea Marine Debris Project, will be removing nets from the Monument in September/October. In order to achieve our research objectives to determine the type and source of the derelict fishing gear found in the Monument, we must obtain net samples from the monument. This collaborative NWHI Marine Debris Removal Project cruise in September is the perfect opportunity for us to obtain samples from the Monument, and aligns perfectly with the grant that CMDR has received to support a graduate student and research technician to conduct this research.

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

The activities shall not impact the Monument’s integrity since all activities will be performed on a vessel (M/V IMUA) that already intends on being in the Monument. CMDR’s research sampling activities will occur on the vessel or back on land in Honolulu without causing any further impacts to the Monument. The end value will provide knowledge of the polymer composition and identify the source of the derelict fishing gear found in the Monument. The goal is to then partner with fishermen/fishers and regional fishery councils throughout the Pacific to raise awareness of the damage caused by the derelict fishing gear and work towards solutions, which will benefit the Monument.

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

The net sample collection will only occur for as long as the collaborative NWHI Marine Debris Removal Project group is carrying out the marine debris removal mission. This activity will be partnering with Papahānaumokuākea Marine Debris Project, NOAA PIFSC ESD, NOAA ONMS
PMNM, State of Hawaii DLNR DOFAW, and USFWS already removing marine debris and our activities will not prolong their mission.

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

Jennifer Lynch, Ph.D., has been employed by the Department of Commerce, National Institute of Standards and Technology (NIST) for 17 years. She has been the co-director of CMDR at Hawaii Pacific University since inception in Jan 2019. She has published over 50 peer-reviewed scientific manuscripts, many of which in collaboration with NOAA, including the PIFSC scientists. Eight of these publications focus on plastic marine debris in Hawaii. She has been invited to speak about polymer identification methods of micro to mega-plastics at the National Academies of Sciences, Engineering and Medicine. She has mentored over 80 students through research projects, all related to pollution in the ocean. These net samples will be included in a larger study that was funded by the Norwegian Retailers’ Environment Fund, in which Jennifer Lynch is a P.I., and is financially supporting Raquel Corniuk and Drew McWhirter. The net photos and subsamples will be compared to nets also sampled in the Main Hawaiian Islands, Palmyra Atoll, and the North Pacific gyre through additional collaborations with DLNR, The Nature Conservancy, and Ocean Voyages Institute. Samples from five nets from Palmyra and at least six nets from the Main Hawaiian Islands are already collected for this project. HPU has become a member of the Global Ghost Gear Initiative and has shared their proposal and protocols for member input. Lynch has begun partnering with the International Seafood Sustainability Foundation for making connections with the tuna purse seine fishery, especially those operating out of the Eastern Pacific.

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.

All financial resources for the mission of recovering debris from the Monument are provided by partners at the NOAA Restoration Center/Damage Assessment Remediation, and Restoration Program, State of Hawaii DLNR DOFAW, NOAA PIFSC ESD, and USFWS.

The financial resources to fund this specific research project were provided by the Norwegian Retailers’ Environment Fund to HPU (https://www.hpu.edu/about-us/news-and-events/news/2020/04/cmdr-receives-grant-to-protect-reefs.html or https://handelensmiljofond.no/en/projects-to-tackle-plastic-pollution-worldwide-awarded-grants)

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.

Sampling methods of the derelict fishing gear of interest will only occur on the vessel (M/V IMUA) or on land in Honolulu. Further sampling efforts will occur in the laboratory of the HPU Center for Marine Debris Research, Oceanic Institute in Waimanalo, Hawaii. We are
undertaking the most meticulous sampling protocol of ghost fishing gear ever attempted in the Hawaiian Islands, or nearly anywhere in the world. Based on conversations with our GGGI network, there is only one other research protocol that is more extensive, which is in Norway, and in that study they are untangling the entire net mass to measure complete dimensions. We believe that our intensive sampling, polymer identification methods, and extensive social science survey plan will improve our chances of identifying the responsible fisheries. We are adding protocol details to what NOAA performed starting in the 1990s. Those additions include 1) sampling additional gear and gear configurations, rather than only the net webbing, 2) performing polymer identification and including this information on each photo description which will improve surveyors accuracy for gear use, and 3) reaching farther and more diverse fishers or fisheries experts from all regions of the Pacific Ocean, including Central and South American countries.

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.

The only activity proposed is to sample derelict fishing gear that the collaborative NWHI Marine Debris Removal project group will be removing from the Monument. We are not requiring any additional activities from the working group, that they will not already be doing. The goal is to partner with this project so that the Center for Marine Debris Research can analyze these subsamples in the laboratory to understand chemical composition of the fishing gear and source them back to the fisheries of origin.

8. Procedures/Methods:
Sampling Procedures

Our goal is to obtain at least 10 large net samples for our research from this NWHI Marine Debris Removal Project cruise. When a large net is found washed ashore on an island or atoll during the marine debris removal effort, a GPS waypoint will be taken at the net and photos will be taken of the net in its original state, which includes 4 photos around the net and one photo above the net. After the net sample is removed from the shoreline and transported to the vessel by the collaborative NWHI Marine Debris Removal Project group (NOAA PIFSC ESD will lead shoreline removal and small boat operations), the sample will be tagged with a metal dog-tag and brightly colored tape. The net will dry on the back deck of the vessel until it is ready to be bagged into a commercial lift bag, or if it is too large to fit in a lift bag it will be contained in a cargo net. The lift bag (or cargo net) will be flagged with bright tape or spray paint and labeled with the sample number, island or atoll where found, and date found. The net and all components of the net will remain intact as it was in its original state until it can be meticulously analyzed back on land at HPU CMDR or the NOAA IRC, Honolulu, Hawaii.
Back on land in Honolulu, the net will be divided into four sections. Starting with one section, using a sharp knife we will remove samples by cutting one-foot pieces of line, rope, or net from the mass for all distinct net types and features. If there is a unique feature about the line (i.e. tied in a unique knot, merged with another type of line, or has metal attached, hard plastic floats or buoys) we will sample this portion. Special care will be taken to look for gear tags, such as threads that are spliced into lines or metal/plastic tags with identifying markings. We will record information about the sample and what it was originally attached to within the mass. Each sample collected will be photographed, labelled, and additional information will be taken (biofouling scale, color, type). These samples will be bagged accordingly and brought back to the Center for Marine Debris Research for further analysis. Further analysis includes measurements of line and mesh, polymer identification, creation of a database and survey of subsample photos with accompanying measurements and polymer composition, and a survey of experts to identify the fisheries of origin.

NOTE: If land or marine archeological activities are involved, contact the Monument Permit Coordinator at the address on the general application form before proceeding.

9a. Collection of specimens - collecting activities (would apply to any activity): organisms or objects (List of species, if applicable, attach additional sheets if necessary):
N/A

Common name:

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:
• Is it an open or closed system?  ☐ Open  ☐ Closed

• 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?
Net samples will be collected from those removed by the collaborative NWHI Marine Debris Removal Project group aboard the M/V IMUA. Back on O’ahu net samples will either be transported to the Center for Marine Debris Research for analysis, or analyzed after the mission offload at the NOAA IRC in Honolulu, Hawaii.

11. Describe collaborative activities to share samples, reduce duplicative sampling, or duplicative research:
We will share our sampling and analysis with NOAA PIFSC, NOAA PIRO, NOAA Marine Debris Program, Global Ghost Gear Initiative, Papahānaumokuākea Marine Debris Project, Ocean Voyages Institute, DLNR DAR, and the International Seafood Sustainability Foundation. We will continue to build this derelict fishing gear database and share our data with any collaborators involved in this research.

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

12b. List all Hazardous Materials you propose to take to and use within the Monument:
NONE

13. Describe any fixed installations and instrumentation proposed to be set in the Monument:
NONE

14. Provide a timeline for sample analysis, data analysis, write-up and publication of information:
September 2020: Sample collection
October 2020 to December 2020: Sample analysis (i.e. polymer identification using Fourier-Transformed Infrared Spectroscopy (FTIR)), social science survey creation
January 2021 to February 2021: Surveys are sent out
February to May 2021: Data analysis and write up
December 2021: Peer reviewed manuscript published of polymer identification and sourced fisheries of fishing gear types

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


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.

April 29, 2020

Signature       Date

SEND ONE SIGNED APPLICATION VIA MAIL TO THE MONUMENT OFFICE BELOW:

NOAA/Inouye Regional Center
NOS/ONMS/PMNM/Attn: Permit Coordinator
1845 Wasp Blvd, Building 176
Honolulu, HI 96818
FAX: (808) 455-3093

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