Papahānaumokuākea Marine National Monument

CONSERVATION AND MANAGEMENT Permit Application

Updated: 11/3/2023

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: James Motoharu Morioka

Affiliation: Papahānaumokuākea Marine Debris Project (PMDP) – U.S. 501(c)(3) non-profit organization

Permit Category: Conservation and Management

Proposed Activity Dates: March 1 – October 30, 2024

- PMDP-2024-01 (2024 Mission #1) – Shore-based mission at Kuaihelani (Midway Atoll)
  - Tentative Dates: **April 19 – May 3, 2024**
    - Flight from Honolulu to Kuaihelani: TBD Chartered Flight April 19, 2024
    - Flight from Kuaihelani to Honolulu: TBD Chartered Flight May 3, 2024
  - Gear Transport from Honolulu to Kuaihelani: M/V Imua February 1-14, 2024
    - Gear delivered to Kuaihelani ~February 7, 2024
  - Gear Transport from Kuaihelani to Honolulu: M/V Imua May 9-20, 2024
    - Gear picked up from Kuaihelani ~May 14, 2024
- PMDP-2024-02 (2024 Mission #2) – Ship-based mission at all islands and atolls of Papahānaumokuākea
  - Tentative Dates: **August 3 – September 1, 2024**
    - Departure from Honolulu: M/V Imua August 3, 2024
    - Arrival in Honolulu: M/V Imua September 1, 2024
    - Gear Loading in Honolulu: August 2, 2024
    - Gear Offloading in Honolulu: September 3, 2024
- PMDP-2024-03 (2024 Mission #3) – Ship-based mission at all islands and atolls of Papahānaumokuākea
  - Tentative Dates: **September 10 – October 9, 2024**
    - Departure from Honolulu: M/V Imua September 10, 2024
    - Arrival in Honolulu: M/V Imua October 9, 2024
    - Gear Loading in Honolulu: September 9, 2024
    - Gear Offloading in Honolulu: October 10, 2024

Proposed Method of Entry (Vessel/Plane):

- PMDP-2024-01: Chartered Plane (TBD)
- PMDP-2024-02: Chartered Vessel (M/V Imua)
- PMDP-2024-03: Chartered Vessel (M/V Imua)

Proposed Locations: Marine debris survey and removal efforts will occur across the following islands and atolls in the Northwestern Hawaiian Islands in the Papahānaumokuākea Marine National Monument (listed in order from east to west):

- Lālo (French Frigate Shoals)
- Kamokuokamohoali'i (Maro Reef)
- Kamole (Laysan Island)
- Kapou (Lisianski Island)
- Manawai (Pearl and Hermes Atoll)
- Kuaihelani (Midway Atoll)
- Hōlanikū (Kure Atoll).

Hereinafter all islands and atolls will be referred to by their Hawaiian names.

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

- PMDP-2024-01: 12 PMDP staff
- PMDP-2024-02: 16 PMDP staff and 7 M/V Imua staff
- PMDP-2024-03: 16 PMDP staff and 7 M/V Imua staff

Estimated number of days in the Monument: 75

- PMDP-2024-01: 15 days
- PMDP-2024-02: 30 days
- PMDP-2024-03: 30 days

Description of proposed activities: (complete these sentences):

a.) The proposed activity would…

"allow for large-scale marine debris survey and removal operations to occur in the Monument in support of priorities identified in Monument management and recovery plans, included but not limited to: 1) Papahānaumokuākea Marine National Monument (PMNM) Management Plan (hereinafter referred to as the MMP) (specifically 3.3: Reducing Threats to Monument Resources – 3.3.1: Marine Debris (MD) Action Plan – "Reduce the adverse effects of marine debris to PMNM resources and reduce the amount of debris entering the North Pacific Ocean"), 2) Hawai'i Marine Debris Action Plan (HI-MDAP), 3) Recovery Plan for the Hawaiian Monk Seal, 4)

Mai Ka Po Mai: A Guidance Document for Papahānaumokuākea, 5) Endangered Species Act of 1973 (ESA) and the 6) Marine Mammal Protection Act of 1972 (MMPA)."

The NOAA Northwestern Hawaiian Islands (NWHI) Marine Debris Project, henceforth referred to as the 'Project', commenced its operations in 1996 and was spearheaded by NOAA Fisheries in collaboration with various partner agencies until the year 2021. Over the years, the Project has underscored the imperative of conducting large-scale marine debris removal initiatives to safeguard marine wildlife, notably the endangered Hawaiian monk seal, threatened green sea turtle, and other marine species.

Between 2015-2021, James Morioka (Executive Director, Papahānaumokuākea Marine Debris Project (PMDP)) and Kevin O'Brien (President and Founder, PMDP jointly directed and managed the Project. This was prior to the establishment of PMDP in 2019. PMDP now leads the Project in the PMNN, following successful collaborative missions with NOAA, U.S. Fish and Wildlife Services (USFWS) and the State of Hawai'i Department of Land and Natural Resources (DLNR) in 2020-2021. Subsequently, PMDP has independently orchestrated and executed four successful field missions in 2022 and 2023, successfully removing a cumulative weight of 202,950 pounds (101 tons) of marine debris in 2022 and 212,410 pounds (106 tons) in 2023. Looking ahead, PMDP envisions removing over 200,000 pounds (100 tons) of marine debris in 2024.

b.) To accomplish this activity, we would ….

The Papahānaumokuākea Marine Debris Project (PMDP) will concentrate its efforts on achieving the following objectives:

- Surveying for and removing derelict fishing gear (DFG) from shallow coral reef environments (0-30 ft depth) at Lālo (French Frigate Shoals), Kamokuokamohoali'i (Maro Reef), Manawai (Pearl and Hermes Atoll), Kuaihelani (Midway Atoll), and Hōlanikū (Kure Atoll).
- Surveying for and removing DFG, plastics, and other entanglement hazards from shoreline habitats at Lālo (French Frigate Shoals), Kamole (Laysan Island), Kapou (Lisianski Island), Manawai (Pearl and Hermes Atoll), Kuaihelani (Midway Atoll), and Hōlanikū (Kure Atoll).
- Opportunistically removing large marine debris items such as buoys, derelict small boats, and other material.
- Evaluating the rates of marine debris accumulation and assessing its abundance and distribution on coral reefs and shorelines.
- Assessing ecological impacts of DFG on coral reef environments through photographic surveys.
- Disentangling protected wildlife, including Hawaiian monk seals, sea turtles, and sea birds, from marine debris when human intervention is necessary or possible.

- Conducting opportunistic surveys of Hawaiian monk seals and sea turtles, including capturing and tagging weaned Hawaiian monk seal pups when appropriate.
- Utilizing small Unmanned Aerial Systems (sUAS) surveys to enhance marine debris detection, thereby increasing operational efficiency, and assessing the abundance and distribution of marine debris on coral reefs and shorelines. Additionally, exploring a potential partnership with the University of Hawaii at Manoa to utilize sUAS surveys for quantifying and characterizing shoreline marine debris in PMNM.
- Utilizing Diver Propulsion Vehicle (DPV) surveys to aid in the detection of marine debris underwater, enhancing operational efficiency, and assessing the abundance and distribution of marine debris on coral reefs.
- Conducting Native Hawaiian cultural protocols to include hoʻokupu (offering) consisting of ti leaf and if permitted, wai (freshwater), paʻakai (salt), ʻawa (dried Piper methysticum), kalo (taro), or ulu (breadfruit).

c.) This activity would help the Monument by …

"supporting priorities identified in Monument management and recovery plans, included but not limited to: 1) Papahānaumokuākea Marine National Monument (PMNM) Management Plan, 2) Hawai'i Marine Debris Action Plan (HI-MDAP), 3) Recovery Plan for the Hawaiian Monk Seal, 4) Mai Ka Po Mai: A Guidance Document for Papahānaumokuākea, 5) Endangered Species Act of 1973 (ESA) and the 6) Marine Mammal Protection Act of 1972 (MMPA)."

1. **Papahānaumokuākea Marine National Monument (PMNM) Management Plan (MMP)** (Link HERE)
   Led by Monument Management Board (MMB)
   Volume 1: December 2008

   3.1: Understanding and Interpreting the NWHI.
   - 3.3.1: Marine Conservation Science Action Plan.
     - Strategy Marine Conservation Science (MCS)-1: Continue and enhance research, characterization and monitoring of marine ecosystems for the life of the plan, as appropriate.
       - Activity MCS-1.1: Continue to characterize type and spatial distributions of shallow-water marine habitats to inform protection and management efforts.
       - MCS-1.2: Continue monitoring of shallow-water coral reef ecosystems to protect ecological integrity.
     - MCS-2: Assess and prioritize research and monitoring activities over the life of the plan.

        - Theme of Natural Resources Science Plan (NRSP): Research on human impacts (marine debris).
    - MCS-3: Communicate results of research and monitoring over the life of the plan.
        - MCS-3.3: Include an educational component in marine research expeditions.
        - MCS-3.4: Use materials gathered and created through research to develop or enhance education and outreach products.
- 3.1.2: Native Hawaiian Culture and History (NHCH) Action Plan.
    - NHCH-2: Conduct, support, and facilitate Native Hawaiian cultural access and research of the NWHI over the life of the plan.
        - NHCH-2.3: Facilitate cultural field research and cultural education opportunites annually.
        - NHCH-2.6: Continue to facilitate Native Hawaiian cultural access.
    - NHCH-3: Increase cultural resource management capacity across MMB agencies over the life of the plan.
        - NHCH-3.2: Engage Native Hawaiian practicioners and cultural experts and the Native Hawaiian Cultural Working Group in the development and implementation of the Monument's management activities.
        - NHCH-3.4: Identify and integrate Native Hawaiian traditional knowledge and management concepts into Monument management.
    - NHCH-5: Provide cultural outreach and educational opportunities to serve the Native Hawaiian community and the general public over the life of the plan.
        - NHCH-5.1: Integrate Native Hawaiian values and cultural information into general outreach and education programs.
        - NHCH-5.2: Develop a culturally based strategy for education and outreach within the Native Hawaiian community.

<u>3.2: Conserving Wildlife and Habitats.</u>

- 3.2.1: Threatened and Endangered Species (TES) Action Plan.
    - TES-1: Support activities that advance recovery of the Hawaiian monk seal for the life of the plan.
        - TES-1.1: Support marine debris removal activities to promote recovery.
        - TES-1.3: Conserve Hawaiian monk seal habitat.
        - TES-1.5: Support outreach and education on Hawaiian monk seals.
    - TES-2: Determine the status of cetacean populations and verify and manage potential threats over the life of the plan.
        - TES-2.3: Monitor, characterize, and address the effects of marine debris on cetaceans in the Monument.

    - TES-3: Ensure that nesting populations of green turtles at source beaches are stable or increasing over the life of the plan.
        - TES-3.2: Protect and manage nesting and basking habitat.
        - TES-3.3: Protect and manage marine habitat, including foraging areas and migration routes.
- 3.2.2: Migratory Birds (MB) Action Plan.
    - MB-2: Minimize the impacts of threats to migratory birds such as habitat destruction by invasive species, disease, contaminants (includign oil), and fisheries interactions for the life of the plan.
        - MB-2.5: Work with partners to reduce the impact of commercial and sport fisheries outside the Monument on migratory bird populations.
- 3.2.3: Habitat Management and Conservation (HMC) Action Plan.
    - HMC-1: Within 15 years, develop and implement a strategy for restoring the health and biological diversity of the shallow reefs and shoals where anthropogenic disturbances are known to have changed the ecosystem, using best available information about pre-disturbance conditions.
        - HMC-1.1: Identify and prioritize restoration needs in shallow water reef habitats impacted by anthropogenic disturbances within 5 years.

<u>3.3: Reducing Threats to Monument Resources.</u>

- 3.3.1: Marine Debris (MD) Action Plan.
    - MD-1: Remove and prevent marine debris throughout the life of the plan.
        - MD-1.1: Continue working with partners to remove marine debris in the Monument and reduce additional debris entering the Monument.
        - MD-1.2: Catalog, secure, contain, and properly remove hazardous materials that wash ashore in the NWHI.
        - MD-1.3: Develop and implement a 5-year marine debris removal and prevention strategy for the Monument.
    - MD-2: Investigate the sources, types, and accumulation rates of marine debris within 5 years.
        - MD-2.1: Work with partners on marine debris studies.
        - MD-2.2: Develop and standardize marine debris monitoring protocols for marine and terrestrial habitats.
    - MD-3: Develop outreach materials regarding marine debris within 2 years.
        - MD-3.1: Work with partners to continue to develop and implement an outreach strategy for marine debris.
- 3.3.2: Alien Species (AS) Action Plan (specifically for ‘nuisance’ algae, *Chondria tumulosa* at Manawai, Kuaihelani, and Hōlanikū).

- AS-1: Conduct planning to prioritze by threat level, invasiveness, and practicality of eradication or control all nonnative organisms in the Monument over the life of the plan.
  - AS-1.1: Complete an Integrated Alien Species Management Plan (IASMP).
  - AS-1.2: Develop best management practices to prevent, control, and eradicate alien species.
- AS-2: Engage in active surveillance to monitor existing infestations and to detect new infestations of alien species over the life of the plan.
  - AS-2.1: Survey distributions and populations of known alien species at regular intervals.
  - Develop and implement monitoring protocols for early detection and characterization of new infestations.
- AS-3: Establish and enforce quarantine procedures appropriate for each site and habitat (terrestrial and aquatic) in the Monument to prevent the invasion or reinfestation of nonindigenous species over the life of the plan.
  - AS-3.1: Enforce the use of existing quarantine protocols to prevent the introduction of invasive terrestrial species to the Monument.
- AS-8: Conduct and facilitate research designed to answer questions regarding invasive species detection, effects on ecosystems, and alien species prevention, control, and eradication over the life of the plan.
  - AS-8.1: Support and conduct research on alien species detection and the effects of invasive species on native ecosystems.
  - AS-8.2: Support and conduct research on invasive species prevention, control methods, and eradication techniques.
- AS-9: Engage Monument users and the public in preventing the introduction and spread of alien species.
  - AS-9.2: Integrate alien species information into general Monument outreach materials.
- AS-10: Participate in statewide and Pacific regional alien species efforts.
  - AS-10.1: Build relationships with other resource managers and invasive species experts in the State, nation, and other countries based on shared challenges concerning invasive species.

- 3.3.4: Emergency Response and Natural Resource Damage Assessment (ERDA) Action Plan.
  - ERDA-1: Create a Monument Emergency Response and Assessment Team within 1 year.
    - ERDA-1.4: Participate in damage assessment programs and training throughout the life of the plan.
    -

3.5: Coordinating Conservation and Management Activities.

- 3.5.1: Agency Coordination (AC) Action Plan.
    - AC-2: Establish and support cooperative management agreements with agency partners.
        - AC-2.2: Establish agreements for coordinated management and conduct cooperative management operations.
        - AC-2.3: Develop interagency agreements, grants, and memoranda of agreement as needed to carry our specific program priorities.
    - AC-3: Promote international, national, and local agency collaborations to increase capacity building and foster networks that will improve management effectiveness.
        - AC-3.2: Network with other marine protected areas in the Pacific.
- 3.5.2: Constituency Building and Outreach Action Plan.
    - CBO-1: Develop and implement an integrated communications strategy, based on assessment of ongoing activities and future needs, to coordinate outreach and engage Monument constituencies within 5 years.
        - CBO-1.1: Develop an integrated communications strategy based on an assessment of ongoing activities and future needs.
        - CBO-1.2: Continue to refine and implement the Monument Media Communications Protocol to engage news media in informing the public about the Monument's resources and activities.
        - CBO-1.4: Incorporate new perspectives for understanding the value of NWHI ecosystems, including socioeconomic studies, to increase ocean ecosystems literacy and conservation in the Monument within 5 years.
        - CBO-1.5: Research and implement new technologies and tools to increase public understanding of the NWHI ecosystems within 5 years.
    - CBO-2: Continue to develop and disseminate materials and improve and update tools that help inform Monument constituencies about the Monument over the life of the plan.
        - CBO-2.2: Continue to develop and update printed materials to aid Monument constituencies in understanding key aspects of the Monument.
        - CBO-2.3: Support other entities' efforts to broaden knowledge of and appreciation for Monument resources and management priorities.
    - CBO-3: Continue initiatives that allow Monument constituencies to be more involved in the Monument and enhance opportunities for long-term engagement over the life of the plan.
        - CBO-3.1: Continue to seek out and participate in events that reach a broader audience and provide constituents with knowledge of the Monument.

        - CBO-3.3: Continue to seek out and support partnership opportunities that focus on Oceania-related issues.
        - CBO-3.6: Continue to support the Native Hawaiian Cultural Working Group through the Office of Hawaiian Affairs.
        - CBO-3.8: Continue to convene the Northwestern Hawaiian Islands Coral Reef Ecosystem Reserve Advisory Council (RAC) through NOAA's Office of National Marine Sanctuaries until the Monument Alliance is established.
- 3.5.3: Native Hawaiian Community Involvement (NHCI) Action Plan.
    - NHCI-2: Develop and annually maintain partnerships with Native Hawaiian organizations and institutions.
        - NHCI-2.1: Continue to expand and explore opportunities to partner with institutions serving Native Hawaiians,
    - NHCI-3: Identify and integrate Native Hawaiian traditional knowledge and management concepts into Monument management annually for the life of the plan.
        - NHCI-3.1: Engage the Native Hawaiian community to identify how traditional knowledge will be integrated into Monument activities.
        - NHCI-3.2: Use and integrate Native Hawaiian traditional knowledge in Monument management activities.
- 3.5.4: Ocean Ecosystems Literacy (OEL) Action Plan.
    - OEL-1: Develop and implement educational programs in Hawai'i to increase ocean ecosystems literacy and promote stewardship values within 5 years.
        - OEL-1.3: Develop an ocean stewardship program for middle school and high school students within 5 years.
    - OEL-2: Develop and implement new tools to "bring the place to the people", with a focus on students, within 3 years.
        - OEL-2.1: Identify and prioritize research and development projects to increase ocean ecosystems literacy and conservation in the NWHI.
        - OEL-2.2: Use telepresence for educational and outreach activities within 5 years.

<u>3.6: Achieving Effective Monument Operations.</u>

- 3.6.3: Coordinated Field Operations (CFO) Action Plan.
    - CFO-2: Enhance interagency planning and coordination for field operations in support of Monument protection and management, and develop protocols and processes that will be utilized throughout the life of the plan.
        - CFO-2.1: Develop interagency agreements to facilitate effective field coordination throughout the Monument.

- CFO-2.2: Develop and implement standardized field operations protocols.
- CFO-2.4: Annually coordinate field operations to efficiently deploy personnel and share resources among agency partners.

2. **Hawai'i Marine Debris Action Plan (HI-MDAP)** (Link HERE)
   Led by NOAA Marine Debris Program (MDP)
   December 2021

   Goal 1: Prevention.

   - Strategy 1.1: Change consumer behavior through outreach and education.
     - Action 1.1.1: Use social media as a platform for outreach.
     - 1.1.2: Conduct education and outreach to the general public, residents, military community, and visitors through, but not limited to, presentations, news events, featured speakers, and film screenings.
     - 1.1.6: Conduct education and outreach at schools and universities.
     - 1.1.6: Provide education on alternative products, make them accessible, and promote their use.
     - 1.1.8: Work with Hawai'i Marine Debris Action Plan (HI-MDAP) researchers to support one another in sharing accurate scientific information to the local community.
     - 1.1.9: Educate the public on marine debris generated through the commercial fishing industry, encourage increased understanding of where seafood comes from and how to support local fishers.

   Goal 2: Ocean-based Marine Debris.

   - 2.1: Conduct education and outreach to ocean users on proper and legal waste management at sea.
     - 2.1.5: Educate and promote consumer understanding of the marine debris costs associated with certain fisheries and seafood choices.
   - 2.2: Identify funding and provide low-cost and convenient disposal options for fishing gear and solid waste.
     - 2.2.6: Partner in the Hawai'i Nets-to-Energy program.
   - 2.3: Identify fishing materials and practices designed to reduce marine debris.
     - 2.3.1: Gather and share best management practices for coastline fishing gear and methods.
     - 2.3.2: Learn more about smart fish aggregating devices (FAD).
   - 2.4: Create public-private partnerships to develop industry standards for reducing marine debris.

    - Engage with fisheries and gear manufacturers that are determined to be the source of derelict fishing gear washing into Hawai'i.
- 2.7: Effectively respond to abandoned and derelict vessels.
    - 2.7.2: Enhance interagency coordination for addressing abandoned and derelict vessels and maintain an abandoned and derelict vessel inventory for remote or difficult to access coastlines.

Goal 3: Removal.

- 3.1: Utilize effective methods to locate marine debris accumulation.
    - 3.1.1: Continue to support the advancement of at-sea detection for marine debris through remote sensing.
    - 3.1.2: Continue monitoring efforts in the Papahānaumokuākea Marine National Monument to identify accumulation sites.
    - 3.1.6: Conduct annual aerial shoreline surveys and ground truthing (if UAS aerial surveys are permitted).
    - 3.1.7: Tag derelict fishing gear with GPS buoys to determine their location and potential marine debris accumulations.
- 3.3: Use available information to prioritize cleanup sites.
    - 3.3.2: Continue engagement with county, state and federal marine wildlife representatives regarding their high-priority regions/seasons by island.
- 3.4: Develop capacity for marine debris removal and disposal.
    - 3.4.1: Create and update island-specific flow chart options depicting the disposal and collaboration process.
    - 3.4.3: Expand the development and capacity to repurpose and recycle salvaged marine debris into infrastructure, materials, and products across all islands.
    - 3.4.8: Create a shared understanding within and outside of the Hawai'i Marine Debris Action Plan community, on what happens to debris after disposal.
- 3.5: Increase communication and collaboration to efficiently remove marine debris.
    - 3.5.4: Provide financial and logistical support for large-scale marine debris removal in the Papahānaumokuākea Marine National Monument.
    - 3.5.6: Develop and maintain a network of nongovernmental organizations and other partner on-water resources that can perform regular near-shore debris mass surveys, removal training, and removal operations, and coordinate disposal of debris found with shore-based cleanup partners.

Goal 4: Research

- 4.1: Develop an understanding of marine debris physical and chemical traits, life cycle, sources, transport, fate, quantity, and accumulation rate.
    - 4.1.1: Conduct shoreline and in-water surveys regularly, and share data and survey methods to determine accumulation rates.

  - 4.1.4: Use spatial mapping to compare areas of high removal effort to standing debris accumulations in order to evaluate the impact of cleanups and site monitoring.
  - 4.1.7: Better identify sources of hagfish traps to determine the best prevention efforts.
  - 4.1.8: Create a database of derelict fishing gear types and metrics in Hawai‘i in order to try and identify the fishery or manufacturer sources.
  - 4.1.11: Identify funding to continue sourcing derelict fishing gear marine debris and scaling up a centralized detection, removal, research, and repurposing program.
- 4.2: Develop or identify standardized methods or best management practices for applicable aspects of research to ensure data can be meaningfully analyzed.
  - 4.2.5: Identify standardized shoreline and in-water monitoring protocols throughout Hawai‘i.
  - 4.2.8: Develop a method to identify gear types from derelict fishing gear.
- 4.3: Enhance and advance research on the ecological impacts of marine debris.
  - 4.3.1: Research the interaction of invasive species with marine debris, including species identification, impacts, transport, and fate.
  - 4.3.3: Monitor and assess information on the impacts of entanglement on wildlife.
  - 4.3.4: Monitor and assess information on the impacts of marine debris to habitats.
  - 4.3.6: Use structure-from-motion (SFM) imagery to quantify the volume of coral reef damage by derelict fishing gear strikes in Kaneohe Bay.
- 4.4: Improve research on the economic impacts of marine debris.
  - 4.4.5: Research the economic impacts of derelict fishing gear in Hawai‘i.
- 4.5: Evaluate the effectiveness of mitigation, outreach, and removal efforts of marine debris.
  - 4.5.2: Investigate the effectiveness of marine debris and plastic education and outreach.
- 4.6: Support communication and collaboration of research to all stakeholders.
  - 4.6.1: Improve collaboration and data sharing amongst the local marine debris community through the publishing, compiling, and sharing of marine debris research completed in Hawai‘i state and regional waters.
  - 4.6.4: Explore and share funding opportunities and develop partnerships to approach funding opportunities.
  - 4.6.5: Collaborate with international partners for marine debris research.
  - 4.6.6.: Participate in international conferences, partnerships, and other avenues of information sharing to highlight the relevance of marine debris in Hawai‘i.

3. **Recovery Plan for the Hawaiian Monk Seal (*Monachus schauinslandi)*** (Link HERE)
   August 2007
   Led by NOAA National Marine Fisheries Service

   Recovery Goal: The goal of this revised recovery plan is to assure the long-term viability of the Hawaiian monk seal in the wild, allowing initially for reclassification to threatened status, and, ultimately, removal from the List of Endangered and Threatened Wildlife.

   Significant threats that face this species: Entanglement of seals in marine debris has and continues to result in significant levels of seal mortality.

- Strategy 1: Improve the survivorship of females, particularly juveniles, in sub-populations of the NWHI. To do this requires:
    - Continuing actions to remove marine debris and reduce mortality of seals due to entanglement.

Recommended short-term actions:

- Strategy 2: Prevent entanglements of monk seals.
    - Action 2.1: Continue programs that facilitate the disentanglement of animals.
    - 2.2: Continue removing potentially hazardous debris.
        - 2.2.1: Continue focused clean-up effort on high entanglement risk zones in the water.
            - 2.2.1.1: Monitor marine debris accumulation rates and identify areas of greatest potential risk.
            - 2.2.1.2: Remove debris from beaches.
    - 2.3: Reduce the amount of debris.
        - 2.3.2: Implement education and marine debris reduction programs targeting identified sources.

4. **Mai Ka Pō Mai: A Native Hawaiian Guidance Document for the Management of Papahānaumokuākea Marine National Monument** (Link HERE)
   2021, Office of Hawaiian Affairs (added as a PMNM Co-Trustee in 2017)

   Hoʻokuʻi: Papahānaumokuākea represents the rich Hawaiian heritage, cultural experiences, and wisdom that have cultivated healthy relationships among places and their peoples through time and space.
    - Na Kuhikuhi (Strategies) Hoʻokuʻi-2: Ensure that policies and programs incorporate relevant cultural knowledge.

- Hoʻokuʻi-3: Use Hawaiian knowledge, language, values, traditions, and concepts throughout all areas of management and activities.
- Hoʻokuʻi-4: Manage data to support Monument and community based management.

Kūkulu 1. Hoʻomana: Papahānaumokuākea is a living spiritual foundation and natural environment for Hawaiian existence.

- Hoʻomana 1-1: Manage the natural-cultural landscape through the practice of aloha ʻāina.
- Hoʻomana 1-2: Perpetuate Hawaiian cultural practices, knowledge, and values.
- Hoʻomana 1-3: Enhance protections through access for Native Hawaiians.
- Hoʻomana 1-4: Amplify the cultural and spiritual experience.

Kūkulu 2. Hōʻike: Papahānaumokuākea is an abundant source of ancestral knowledge and a place where experts demonstrate excellence and advance knowledge systems.

- Hōʻike 2-1: Conduct research and monitoring in a manner that incorporates multiple perspectives, knowledge systems, and values.
- Hōʻike 2-2: Support, facilitate, and conduct Hawaiian methods of science and research.
- Hōʻike 2-4: Promote alignment of research initiatives of the co-managing agencies and permittees to advance Hawaiian research agenda items.

Kūkulu 3. Hoʻoulu: Inspire and grow thriving communities.

- Hoʻoulu 3-1: Engage and collaborate with communities and leaders involved in mālama ʻāina work.
- Hoʻoulu 3-3: Develop partnerships and collaborations with other organizations to support Papahānaumokuākea programs and initiatives.
- Hoʻoulu 3-4: Develop and support initiatives that focus on next-generation capacity building for leadership succession.

Kūkulu 4. Hoʻolaha: Papahānaumokuākea provides cultural pathways and ancestral wisdom that extends through time and space.

- Hoʻolaha 4-1: Develop educational programs and initiatives that are based on Hawaiian cultural values, concepts, and traditional resource management stewardship.
- Hoʻolaha 4-2: Identify, share, and promote innovative research and other place-based activities in PMNM that can serve as models to inform resource management in the main Hawaiian Islands.
- Hoʻolaha 4-4: Incorporate Hawaiian values, traditions, and histories into Monument communication strategies to better connect the public to the Monument.

5. **Endangered Species Act, 1973** (Link HERE)
   Implemented by NOAA Fisheries and the U.S. Fish and Wildlife Services.

- Section 4: Designates critical habitat for the conservation of the species (endangered Hawaiian monk seal and threatened green sea turtle).
- Section 4: Developing and implementing recovery plans for listed species (endangered Hawaiian monk seal and threatened green sea turtle).
- Section 10: Cooperating with non-federal partners to develop conservation plans, safe harbor agreements, and candidate conservation agreements with assurances for the long-term conservation of species.
- Section 10: Issuing permits that authorize scientific research to learn more about listed species, or activities that enhance the propagation or survival of listed species.

6. **Marine Mammal Protection Act, 1972** (Link HERE)
   Implemented by NOAA Fisheries, the U.S. Fish and Wildlife Services, and Marine Mammal Commission.
   - NOAA Fisheries performs the following conservation and management actions:
   - Develops and implements conservation plans for species designated as depleted.
   - Develops and implements take reduction plans to minimize dead and seriously injured marine mammals in commercial fishing gear.

Other information or background:

The Hawaiian Archipelago, specifically the Papahānaumokuākea Marine National Monument (PMNM) is centrally situated within the world's largest ocean gyre, known as the North Pacific Gyre. This gyre comprises a system of clockwise ocean currents that gather marine debris originating from the North Pacific Ocean, including regions like East Asia, the Aleutian Islands, the North American West Coast, and the equatorial zone. Thhese debris converge into the gyre's convergence zones, located just north of the Hawaiian Islands. Coupled with prevailing northeast tradewinds and significant north swells, the PMNM becomes a substantial repository for marine debris.

The PMNM encompasses all of the Northwestern Hawaiian Islands (NWHI), including its islands, atolls, coral reefs, shoals, and seamounts. This area holds 70% of all shallow-water coral reef habitats (<200 m) in the United States. Designated a World Heritage Site by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) in 2010, PMNM is home to more than 7,000 marine species, with 25% being endemic, found only in the Hawaiian Archipelago.

Papahānaumokuākea is deeply significant in the ancestry of Kānaka Maoli (Native Hawaiian people), representing an extension of their genealogy tracing back to the elemental energies that birthed the Pae ʻāina Hawaiʻi (Hawaiian archipelago). Venturing into Papahānaumokuākea means reconnecting with Hawaiian ancestral ties, transitioning from Ao (light, day; the realm of humans) to Pō (dark, night; the realm of the gods). This place, frequented by kūpuna (elders) for thousands of years, holds profound

cultural and genealogical significance, as reflected in the Kumulipo, a Hawaiian cosmogonical genealogy chant.

In line with the Kumulipo, the chant conveys the interconnectedness of realms, underscoring that "He ali'i ka 'āina, He kauwa ke kanaka" ("The land is the chief, man is the servant"). As humans, it is our kūleana (responsibility)to mālama (care for) Papahānaumokuākea, maintaing balance within the system. Our endeavors to clean marine debris uphold our cultural and genealogical connection to not only Papahānaumokuākea but to all Hawai'i.

Since 1996, the Project (formerly led by NOAA Fisheries and other agencies) has conducted large-scale marine debris removals to mitigate the entanglement and ingestion threat to protected wildlife and damage to coral reefs and has successfully removed a total of 1,270 metric tons (2.8 million pounds) of marine debris from the PMNM (with PMDP supporting 364 metric tons or 802,000 pounds during 2020-2023). The Project has also disentangled numerous marine animals. Of the estimated 1,500 remaining Hawaiian monk seals (which face the highest documented entanglement rate of any pinniped species), approximately 32% are alive today due to marine debris removal efforts, disentanglements, and rehabilitation endeavors (Harting et al., 2014). The NOAA NMFS Recovery Plan for the Hawaiian Monk Seal (2007) highlights a minimum of 2.3 serious injuries or deaths annually due to fishery-related marine debris.

Marine debris and derelict fishing gear have pervasive impacts across the Hawaiian Archipelago, affecting all inhabitatnts – both human and wildlife. Whether entangling marine animals (seals, turtles, whales, fish, and invertebrates) or adversely impacting corals, marine debris poses a serious threat to fragile coral ecosystems, particularly within the PMNM, known for being among the most biologically diverse and economically valuable ecosystems globally (Bryant et al., 1997). The entanglement of monk seals remains a critical concern, particularly in the absense of a formal Project led by NOAA. The frequencey of monk seals found entangled has remained unchanged, and marine debris accumulation rates in the PMNM have not decreased. Fortunately, PMDP diligently fulfills its role in safeguarding the marine environment and ocean wildlife from the adverse effects of marine debris by continuing large-scale marine debris removal operations within the PMNM.

"Papahānaumokuākea's ecosystems are increasingly under pressure from threats such as marine debris, invasive species, and climate change," said Rick Spinrad, Ph.D., NOAA Administrator. "Designation of the monument's waters as a national marine sanctuary would complement the efforts of the four co-trustees to safeguard the Monument's natural, cultural, and historic values."
NOAA Considers Sanctuary off Hawaiian Islands – (November 19, 2021)
https://www.noaa.gov/news-release/noaa-considers-marine-sanctuary-off-hawaiian-islands

Section A - Applicant Information

1. Applicant

Name (last, first, middle initial): Morioka, James, M.

Title: Executive Director, Papahānaumokuākea Marine Debris Project (PMDP)

1a. Intended field Principal Investigator (See instructions for more information):

James Morioka (CV attached)
Executive Director
Papahānaumokuākea Marine Debris Project (PMDP)
[redacted]

Kevin O'Brien (CV attached)
President and Founder
Papahānaumokuākea Marine Debris Project (PMDP)
[redacted]

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

Papahānaumokuākea Marine Debris Project (PMDP)
[redacted]

[redacted]

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

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

Papahānaumokuākea Marine Debris Project (PMDP) – U.S. 501(c)(3) non-profit organization.

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):

PMDP Staff:

1. James Morioka (PMDP, Executive Director), Co-Field PI, PMDP-2024-02 Mission Lead, Diver and Small Boat Operator
2. Kevin O'Brien (PMDP. President), Co-Field PI, PMDP-2024-01 and PMDP-2024-03 Mission Lead, Diver and Small Boat Operator
3. TBD (PMDP), Diver and Small Boat Operator
4. TBD (PMDP), Diver and Small Boat Operator
5. TBD (PMDP), Diver and Small Boat Operator
6. TBD (PMDP), Diver and Small Boat Operator
7. TBD (PMDP), Diver and Small Boat Operator
8. TBD (PMDP), Diver and Small Boat Operator
9. TBD (PMDP), Diver and Small Boat Operator
10. TBD (PMDP), Diver and Small Boat Operator
11. TBD (PMDP), Diver and Small Boat Operator
12. TBD (PMDP), Diver and Small Boat Operator
13. TBD (PMDP), Diver and Small Boat Operator
14. TBD (PMDP), Diver and Small Boat Operator
15. TBD (PMDP), Diver and Small Boat Operator
16. TBD (PMDP), Diver and Small Boat Operator
17. TBD (PMDP), Diver and Small Boat Operator

M/V Imua Staff:

1. Dennis Hans Bishop (Hawai'i Resource Group – HRG), Captain, M/V *Imua*
2. TBD (HRG), First Mate, M/V *Imua*
3. TBD (HRG), Second Mate, M/V *Imua*
4. TBD (HRG), Lead Engineer, M/V *Imua*
5. TBD (HRG), Deckhand, M/V *Imua*
6. TBD (HRG), Deckhand, M/V *Imua*
7. TBD (HRG), Cook, M/V *Imua*

Note:

- *PMDP-2024-01: There will be a total of 12 PMDP staff for the shore-based mission.*

- *PMDP-2024-02 and PMDP-2024-03: There will be a total of 23 individuals per ship-based mission. Of the 23 individuals, 16 individuals (berthing limitations) will be from PMDP, and 7 individuals from Hawai'i Resource Group (HRG, M/V Imua) for each of the proposed 30-day missions to the PMNM.*

The actual individuals covered by this permit may exceed 24 total, due to staffing changes that occur between the three proposed PMDP field missions.

Section B: Project Information

5a. Project location(s):		**Ocean Based**	
☐ Nihoa Island	☐ Land-based	☐ Shallow water	☐ Deep water
☐ Necker Island (Mokumanamana)	☐ Land-based	☐ Shallow water	☐ Deep water
☒ French Frigate Shoals	☒ Land-based	☒ Shallow water	☐ Deep water
☐ Gardner Pinnacles	☐ Land-based	☐ Shallow water	☐ Deep water
☒ Maro Reef	☐ Land-based	☒ Shallow water	☐ Deep water
☒ Laysan Island	☒ Land-based	☒ Shallow water	☐ Deep water
☒ Lisianski Island, Neva Shoal	☒ Land-based	☒ Shallow water	☐ Deep water
☒ Pearl and Hermes Atoll	☒ Land-based	☒ Shallow water	☐ Deep water
☒ Midway Atoll	☒ Land-based	☒ Shallow water	☐ Deep water
☒ Kure Atoll	☒ Land-based	☒ Shallow water	☐ Deep water
☐ Monument Expansion Area			
☐ Other			

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:

- PMDP-2024-01: All PMDP staff will overnight at Charlie Barracks on Sand Island at Kuaihelani (Midway Atoll) for the duration of the shore-based mission.
- PMDP-2024-02: No staff will remain onshore on any island or atoll.
- PMDP-2024-03: No staff will remain onshore on any island or atoll.

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:*

All activities described in this application are directed towards the betterment of the Papahānaumokuākea Marine National Monument and the wildlife that reside there. All of the information is then compiled to develop, implement, and assess strategies to support management and recovery plans, included but not limited to: 1) Papahānaumokuākea Marine National Monument (PMNM) Management Plan, 2) Hawai'i Marine Debris Action Plan (HI-MDAP), 3) Recovery Plan for the Hawaiian Monk Seal, 4) Mai Ka Po Mai: A Guidance Document for Papahānaumokuākea, 5) Endangered Species Act of 1973 (ESA) and the 6) Marine Mammal Protection Act of 1972 (MMPA)."

*Considering the purpose of the proposed activities, do you intend to film / photograph federally protected species beyond the protocols provided in PMNM Best Management Practices (https://www.papahanaumokuakea.gov/permit/bestmanagement.html)? Yes ☐ No ☒

All BMPs will be strictly enforced. All footage (film / photograph) will be provided to the four Co-Managing agencies (NOAA, U.S. Fish and Wildlife Services, State of Hawai'i, Office of Hawaii Affairs) upon return from PMNM.

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

PMDP is committed to capturing film and photographs of protected wildlife, such as the Hawaiian monk seal, sea turtles, and sea birds, interacting with or being impacted by marine debris while adhering strictly to all PMNM Best Management Practices (BMPs). In cases where protected wildlife becomes entangled in marine debris, and with appropriate permits as Co-Investigators under NOAA National Marine Fisheries Services (NMFS) permits, PMDP will collaborate with partners at the NOAA Pacific Islands Fisheries Science Center (PIFSC) Protected Species Division (PSD), U.S. Fish and Wildlife Services, and the State of Hawai'i to assess the threat to wildlife and implement risk mitigation strategies to the best of their ability. If seals or

turtles are critically entangled, PMDP personnel, trained in collaboration with the NOAA NMFS PIFSC PSD, may intervene to prevent potentially fatal outcomes through disentanglement.

For a list of terrestrial species protected under the Endangered Species Act visit:
http://www.fws.gov/endangered/
For a list of marine species protected under the Endangered Species Act visit:
http://www.nmfs.noaa.gov/pr/species/esa/
For information about species protected under the Marine Mammal Protection Act visit:
http://www.nmfs.noaa.gov/pr/laws/mmpa/

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:

All activities described in Section 7. Findings (below) refer to specific Best Management Practices (BMPs) or programmatic assessment/guidance documents that include, but are not limited to:

1. PMNM BMP #001 – Marine Alien Species Inspection Standards for Maritime Vessels
2. PMNM BMP #004 – Best Management Practices for Boat Operations and Diving Activities
3. PMNM BMP #007 – Best Management Practices for Terrestrial Biosecurity
4. PMNM BMP #010 – Marine Wildlife Viewing Guidelines
5. PMNM BMP #020 -- Minimize the Spread of Nuisance Algae
6. NOAA PIFSC CRED Programmatic Ecological Assessment (PEA) under National Environmental Policy Act (NEPA)
7. NOAA PIFSC CRED PEA Signatures
8. NOAA PIFSC CRED Finding of No Significant Impact (FONSI)
9. Cultural-based Strategy for Marine Debris Removal Operations
10. Marine Debris Removal Criteria

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?

All activities proposed by the Papahānaumokuākea Marine Debris Project (PMDP) in this PMNM Conservation and Management permit application will be executed with stringent safeguards to protect the natural, cultural, and historic resources of the Monument as required by Presidential Proclamation 8031, and other applicable laws, agency policies, and standard operating procedures. PMDP will provided detailed field protocols and best management practices (BMP)

to all involved agencies. These practices and procedures will effectively reduce or eliminate disturbances to wildlife, flora, habitat, and cultural and historic resources.

PMDP conducts comprehensive training for PMNM (biological and environmental) aspects, ship operations, small boat operations, and free-dive/snorkel operations prior to at-sea field operations. This training regimen mirrors the rigorous training led by both James Morioka (PMDP Executive Director) and Kevin O'Brien (PMDP President) at NOAA for all field staff in between 2007-2021. This training encompasses marine debris removal activities as well as the safeguarding and minimizing of impacts on other natural and cultural resources. It will be supplemented by PMNM pre-access and cultural briefings for all staff. Furthermore, a PMNM-approved Resource Monitor (Morioka and O'Brien have both served in the PMNM Resource Monitor role) will accompany all permitted activities to oversee and ensure compliance with permit conditions and BMPs.

PMDP proposes the use of small Unmanned Aerial Systems (sUAS, commonly referred to as 'drones') for surveys of derelict fishing nets on coral reefs, using a DJI Mavic Pro 3. The Project piloted this study in 2018, mapping over 2 square kilometers of coral reef area and ground-truthing the imagery for nets with divers in the water. The Project successfully demonstrated that the proof of concept for aerial net detection, and PMDP aims to capture more imagery to enhance artificial intelligence (AI) detection software for detect derelict fishing nets on shallow water coral reef environments through machine-learning. Trained and certified staff will operate the sUAS, following all relevant PMNM BMPs and protocols specific to deployment, retrieval, and operations of the sUAS. The sUAS will be deployed and recovered from a small boat, flying a minimum altitude of 100 feet and a maximum altitude of 400 feet over the reef or land. Interactions with birds and other wildlife will be closely monitored, and sUAS operations will be halted should significant interactions occur.

In addition to sUAS, Diver Propulsion Vehicles (DPVs) will be integrated into the operational procedures. Leveraging DPVs will enable PMDP's expert divers to efficiently assess and survey shallow coral reef environments for derelict fishing nets. This streamlined process in locating the marine debris will optimize the time spent on cutting and lifting the nets into the small boats, ultimately resulting in a higher quantity of marine debris successfully removed.

Stringent biosecurity quarantine procedures (outlined under PMNM BMP 007) will be adhered to and enforced at each island where personnel land on shore or boats and divers enter the water. This includes use of gear purchased new and dedicated to each island/atoll. Thorough cleaning, biosecurity, and safe storage protocols will be observed between field missions.

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?

The NOAA Northwestern Hawaiian Islands (NWHI) Marine Debris Project, referred to as the 'Project' and led by NOAA and other agency partner, has been actively engaged in extensive marine debris removal operations and other conservation and management initiatives within the NWHI since 1996. Over the years, NOAA and its partners have diligently crafted and refined protocols for surveying, mitigating, and removing marine debris, a critical threat to wildlife and vital habitats. While ese operations carry the potential for negative impact on cultural and natural resources, NOAA previously conducted a Programmatic Environmental Assessment (PEA or EA) under the National Environmental Policy Act (NEPA), resulting in a Finding of No Significant Impact (FONSI) in June 2005 (valid indefinitely) for the Project. PMDP's operation strictly adheres to all existing NOAA protocols and procedures, ensuring the safe execution of the mission.

For new and particularly sensitive activities, such as addressing a nuisance algal outbreak like *Chondria tumulosa* at Kuaihelani (Midway Atoll), Manawai (Pearl and Hermes Atoll), and Hōlanikū (Kure Atoll), we will proactively communicate and collaborate with our Monument partners, providing clear justification and the necessity for each activity.

Papahānaumokuākea epitomizes 'āina momona (fat lands, fertile or rich lands). It serves as a tangible example of how our 'āina should abundantly produces resources, holding immense cultural significance. From the perspective of Kānaka Maoli worldview, understanding these mauka to makai (mountain to sea, land to ocean) connections is vital for indigenous knowledge. The flourishing ecosystems and habitats of Papahānaumokuākea act as a living testament, aiding in comprehending the stories, history, and relationships practiced by kūpuna (ancestors). It provides a living space for Kānaka Maoli to reconnect and expand upon cultural practices. The removal of marine debris becomes a crucial aid to safeguard, perpetuate, and enhance this special place, its ecosystem, and its cultural resources for future generations.

PMDP has actively collaborated with the Native Hawaiian community and intends to continue this collaboration indefinitely. Specifically, we have partnered with the Office of Hawaiian Affairs (OHA) and PMNM's Native Hawaiian Program Specialist Kalani Quiocho, to develop a culture-based strategy for the Project. This strategy aims to enhance inclusivity and collaboration with the Native Hawaiian community, facilitating access to the PMNM, creating culture-based outreach materials, and adhering to traditional protocols and procedures while in the field.

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.

Marine debris remains and will persist as a significant threat to the PMNM without a comprehensive annual large-scale marine debris removal effort (requiring removal of >57 tons annually). Marine debris, in general, poses sbstantial risks and threats to wildlife and essential habitat in Hawai'i. However, the marine debris challenges facing PMNM differ significantly from those of the Main Hawaiian Islands (MHI).

The PMNM comprises of islands and atolls with ancient origins, forming over Hawai'i's hotspot (underwater geological volcanic island formation), as early as 30 million years ago (Hōlanikū – Kure Atoll). These islands have moved northwest (nearly 3000 km or 1900 miles) due to the Pacific tectonic plate's movement and have sunk back into the ocean, transforming large volcanic islands (like the Big Island of Hawai'i) into shallow atolls, shoals, and expansive reef areas.

The emergent land mass in the PMNM is about 15 square kilometers, whereas shallow reef area (between 0-30 ft depth) is estimated to be 350 square kilometers. In contrast, the MHI is estimated to have over 16,000 square kilometers of emergent land area but only ~320 square kilometers of shallow reef area. The MHI consists of high volcanic islands with steep reef drop-offs from shore, whereas the NWHI landscape is dominated by isolated clusters of low-lying islands, barrier reefs, and calm lagoons with expansive shallow reef formations. Consequently, the issue of in-water or underwater marine debris, particularly derelict fishing gear (DFG), has a significantly more adverse impact on the PMNM compared to the MHI (as nets become snagged on shallow corals rather than washing onto the shorelines). Recent research (co-authored by K. O'Brien and J. Morioka) demonstrated that reefs in PMNM experiencing interactions with DFG have a higher occurrence of bare (dead) substrate (Suka, et al. 2020).

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 primary goal of all proposed activities is to safeguard PMNM and its natural, historical, and cultural assets by eradicating anthropogenic threats to coral reefs, wildlife and their crucial habitats. PMDP aspires to embody an organization that upholds the stringent standards necessary for access to the PMNM. Numerous safeguards are meticulously implemented to minimize the potential negative impacts on the PMNM's resources, encompassing biosecurity measures, specific marine debris removal criteria, and nuisance algae Best Management Practices (BMPs). The Project has, to date, made a significant positive impact on PMNM resources and we anticipate this impact will persist in the future.

PMDP firmly believes that fostering a sense of community vested in a positive outcome for Papahānaumokuākea is the most effective model for stewardship of protected resources. Given the incredibly diverse community here in Hawai'i, nurturing an understanding and affection for PMNM can establish genuine and enduring support for these activities. The outreach and education aspect of the proposed marine debris removal activities cannot be understated. Since the general public in unable to visit PMNM due to its protected status, the oral, written, and visual narratives brought back to our community from PMNM hold significant importance in building and nurturing a stewardship community. Additionally, we aspire to facilitate Native Hawaiians' access to PMNM, offering opportunities for them to participate as members of the marine debris field team. This approach is pivotal in forging a novel model that integrates Western science-based projects, indigenous ways of knowing, and conservation efforts.

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

The Project, formerly branded as the 'NOAA NWHI Marine Debris Project' and led by NOAA in collaboration with other agency partners, commenced in 1996. Its initial objective was to conduct large-scale operations aimed at eliminating the accumulated marine debris on shallow coral reef environments. This was achieved through the utilization of multiple vessels over several months annually between 1999-2004. By 2006, NOAA determined the backlog of accumulated marine debris had been successfully cleared and transitioned to a 'maintenance mode' approach, targeting the removal of 57 tons (52 metric tons of 115,000 pounds) of marine debris annually (as per Dameron et al., 2007). However, between 2006-2021, due to diminishing funding and resources available for annual removal missions, the removal of marine debris fell behind the accumulation rate, resulting in a current backlog estimated at ~1,000,000 pounds.

PMDP took the initiative in 2022 to address the legacy, backlogged marine debris, while also keeping pace with the annual accumulation of 57 tons of new marine debris. PMDP anticipates a continued trend of removing more than 57 tons of marine debris from PMNM each year up to 2027. It is PMDP's aspiration that once the backlog of marine debris is entirely cleared, efforts can be redirected towards shoreline marine debris (currently unquantified) and conducting regular maintenance on the coral reef ecosystems.

A typical 30-day mission to the PMNM can yield approximately 21 operational days, subject to weather conditions, scheduling, and project scope. With a team of 16 PMDP staff (comprising 4 boat teams of 4 divers), each operational day can effectively remove an estimated 6,500 pounds of marine debris. Therefore, aligning all the elements optimally, each PMDP 30-day mission can potentially remove ~135,000 pounds (~67 tons) of marine debris. With the plan to conduct at least two 30-day missions annually (60+ days at sea, and ~270,000 pounds of marine debris removed annually), PMDP envisions transitioning to a "maintenance mode". If there is increased

funding or in-kind support enabling additional field missions on top of the 60-day annual baseline, this timeline to transition to maintenance mode could be significantly shortened.

The above description of accumulation and backlog specifically refers to in-water Derelict Fishing Gear (DFG). Shoreline DFG and plastics are not encompassed in these estimates, presenting another significant challenge in terms of time and resources required for their effective management. Thus, unlike many other proposed projects within PMNM, the effectiveness of our proposed approach directly corresponds to the project's duration.

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

PMDP is well-equipped to continue leading this project safely and efficiently, benefiting from the expertise of individuals overseeing both management and field operations. James Morioka, the Executive Director of PMDP, previously led and managed the NOAA NWHI Marine Debris Project in the PMNM for NOAA from 2015 to 2021, prior to his role with PMDP. Kevin O'Brien, President and Founder of PMDP, spearheaded field operations for the NOAA Marine Debris Project from 2013 to 2018. During their combined nine-year tenure co-leading and managing the project at NOAA, both demonstrated a strong commitment to safety, successful project outcomes, meticulous attention to detail, and extensive institutional knowledge of marine debris removal operations. James Morioka additionally served as the Operations Manager and Vessel Operations Coordinator for the NOAA Pacific Islands Fisheries Science Center (PIFSC) Ecosystem Sciences Division (ESD), where he developed protocols and best practices for executing safe small boat and dive operations from larger vessels, while providing subject matter expertise for Best Management Practices (BMPs) for PMNM. This expertise includes recent contributions related to addressing the nuisance algae, *Chondria tumulosa.*

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.

PMDP was established in 2019 with the explicit purpose of relieving the Government and the PMNM Co-Trustees from the sole responsibility of funding and conducting marine debris removal efforts in the Monument. As governmental resources dwindled over the last 15 years, it became necessary to devise an additional mechanism to broaden the funding base, including sources that were not accessible to NOAA during the Project's tenure. This was aimed at creating an organization that could act as a focal point for collaborative planning and execution of these crucial missions. PMDP has now reached a point where it possesses the essential elements – staff, facilities, and assets – to independently conduct full-scale removal missions.

In fiscal year 2021, PMDP successfully executed three 'proof-of-concept' field missions with a budget of $410,000:

- October 2020: 16-day hurricane debris removal effort at Tern Island, Lālo (French Frigate Shoals)
- March 2021: 23-day shoreline marine debris removal across all islands and atolls within Papahānaumokuākea.
- September 2021: 30-day in-water and shoreline marine debris removal across all islands within Papahānaumokuākea.

These missions were carried out in collaboration with the U.S. Fish and Wildlife Services (USFWS), the State of Hawai'i Department of Land and Natural Resources (DLNR), and NOAA Pacific Islands Fisheries Science Center (PIFSC). In-kind support was also provided by these agencies, helping to share costs for these collaborative removal projects.

For fiscal year 2022 and 2023, PMDP was allocated a budget of $2,186,000 from the National Fish and Wildlife Foundation (NFWF), enabling the successfull execution of four large-scale underwater remote-island marine debris removal missions to PMNM. These efforts resulted in the removal of over 414,000 pounds of marine debris and the restoration of more than 4,000 acres of shallow coral reef habitat:

- July 2022: 28-day in-water and shoreline marine debris removal across all islands within Papahānaumokuākea.
- September 2022: 28-day in-water and shoreline marine debris removal across all islands within Papahānaumokuākea.
- July 2023: 28-day in-water and shoreline marine debris removal across all islands within Papahānaumokuākea.
- September 2023: 28-day in-water and shoreline marine debris removal across all islands within Papahānaumokuākea.

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.

All activities proposed by PMDP in this permit application will strictly adhere to established NOAA protocols from prior years. PMDP is committed to not only complying with but also enhancing all PMNM Best Management Practices (BMPs) and regulations that align with our activities.

i. Has your vessel been outfitted with a mobile transceiver unit approved by OLE and complies with the requirements of Presidential Proclamation 8031?

Yes, the vessel (M/V Imua) facilitating the proposed activities are outfitted with the mobile transceiver.

j. Demonstrate that there are no other factors that would make the issuance of a permit for the activity inappropriate.

All other approvals have been obtained for the proposed activities, and all permit applicants have maintained compliance with previous PMNM permits, primarily facilitated through NOAA channels.

8. Procedures/Methods:

The following list of activities aims to promote the PMNM and its resources:

Marine Debris Survey and Removal Operations:
Note: If the nuisance algae, *Chondria tumulosa*, is identified on the marine debris or in the nearby habitat (currently identified at Kuaihelani, Manawai, and Hōlanikū), its specific location within the atoll/island will be marked with a Global Positioning System (GPS) unit, and the marine debris will be left in place (pending further guidance from the MMB). Shoreline marine debris removal operations at islands/atolls with *Chondria tumulosa* will follow the strict Nuisance Algae BMP #020 and Supplemental Biosecurity Plans (attached).

In-Water Marine Debris Survey and Removal Operations:
Three (3) methods are used for in-water or underwater survey and removal of derelict fishing gear (DFG):

- Tow-board Surveys: This method allows for rapid visual surveys in shallow water (0-30 ft depth) and maximum area coverage, employing breath-hold techniques by two divers towed behind a 19-ft inflatable boat at 1-2 knots across reefs.
- Swim Surveys: Primarily used within atoll lagoons around reticulated reefs or in areas too shallow or intricate for effective tow-board operations.
- Diver Propulsion Vehicle (DPV) Surveys: Theses are utilized within atoll lagoons around reticulated reef areas to cover more reef area per unit of time, aiding in more efficient marine debris detection and removal.

For all three methods (detailed above), divers conduct surveys until DFG is visually located entangled on the reef. Once located, the net location (latitude, longitude), net characteristic (type, length, width, height, depth, foul level, coral growth) and habitat data are collected. A debris removal decision-tree is then used to determine whether net removal is appropriate and won't cause additional reef damage (see Supplemental Biosecurity Plan). If removal is deemed

appropriate, divers cut the DFG free from the substrate while minimizing impact to the entangled coral and surrounding reef habitat. The DFG is then loaded by hand into inflatable boats for transport back to the ship, and ultimately transported back to Honolulu, Hawai'i for proper disposal.

Shoreline Marine Debris Survey and Removal Operations:

- Shoreline Surveys: PMDP staff will conduct surveys by walking the shorelines (between low-tide line and vegetation on shore) of the islands and atolls within PMNM to survey for and remove marine debris. The Project primarily focuses on surveying for and removing entanglement and ingestion hazards to wildlife. Once the marine debris is identified, collected, and staged at a 'pick-up point', 19-ft inflatable boats will approach accessible shorelines to load the marine debris safely to transport back to the ship, and ultimately transport back to Honolulu, Hawai'i for proper disposal.

Aerial Marine Debris Survey Operations:

- Small Unmanned Aerial Systems (sUAS) Surveys: These surveys are expected to cover all islands/atolls and will be deployed and retrieved from inflatable boats when possible. The goal is to identify areas of high-density debris accumulation, marine debris items of interest, and to attempt quantification and characterization of the marine debris present on shorelines of the islands and atolls within Papahānaumokuākea Marine National Monument. Strict sUAS protocols (FAA Part 107 regulations) and BMPs will be followed and enforced for aerial survey operations. Flights will maintain altitudes between a minimum of 100 feet (over land or reef) and a maximum of 400 feet.

Wildlife Disentanglement Operations:

The Project often encounters marine wildlife entangled in marine debris. Marine wildlife in the PMNM are protected and managed by the State and Federal government, and are protected by laws, rules and regulation that prohibit the interaction and intervention with wildlife. If granted the necessary permissions, PMDP staff who are fully qualified, certified, and trained in handling, restraining, and disentangling marine wildlife will assess the situation and report the outcomes to the appropriate office for guidance and next steps.

- Hawaiian Monk Seal Disentanglement Operations: Hawaiian monk seals are often entangled in marine debris, necessitating intervention and disentanglement for their survival. When an entangled Hawaiian monk seal is identified, PMDP staff will promptly notify the NOAA NMFS PIFSC Protected Species Division (PSD) Hawaiian Monk Seal Research Program (HMSRP) of the situation. A full assessment of the seal's health and surrounding habitat will be conducted and relayed to the HMSRP office. James Morioka (Executive Director, PMDP) is a professionally trained Hawaiian monk seal handler with prior experience at NOAA PSD HMSRP from 2011-2013. He has assisted in handling and disentangling numerous seals in the PMNM. If authorized, James Morioka or other

authorized Co-Investigators on the NOAA NMSF Permit (Permit #22677) would lead a team to handle, restrain, and disentangle the endangered seal using established protocols and procedures, including manual restraint, hoop-net restraint, or stretcher-net restraint methods.

- Marine Turtle Disentanglement Operations: Marine turtles are frequently entangled in marine debris, particularly in shallow water coral reef environments. When a turtle is identified as entangled, the team will assess the turtle and its surrounding environment. If permitted, and the disentangling scenario does not cause further risk to the staff and Project, the team will handle the rescue of turtle, ensuring the turtle's head remains above water for effective breathing, and proceed with the disentanglement and release into the wild process.

Marine Debris Transport and Disposal:

Marine debris collected from within the Papahānaumokuākea Marine National Monument will be managed as follows (for more details, please refer to the Supplemental Biosecurity Plan):

1. All marine debris will be stored in PMDP's specialized marine debris storage bins or placed in super sacks.
2. When derelict fishing nets are stored in **PMDP's marine debris storage bins**, they will be cut to appropriate sizes in the field. These nets will remain contained in the bins until they arrive in Honolulu. Upon arrival, the marine debris storage bins will be craned of the ship wholesale and transported directly to either:
    a. **H-Power/Covanta Energy** through Hawaii's "Waste to Energy" initiative for direct incineration, or
    b. **Hawaii's Department of Transportation** "Nets to Roads" initiative, which is facilitated by Hawaii Pacific University's Center for Marine Debris Research.
3. All other marine debris not stored in PMDP's marine debris storage bins, primarily ocean plastics, will be stored in **supersacks** on the ship's deck until they reach Honolulu. Upon arrival in Honolulu, this debris will be craned off the ship and placed in roll-off containers provided by Schnitzer Steel. These containers will then be transported to H-Power/Covanta for incineration and disposal.

PMDP actively seeks innovative, alternative disposal methods for marine debris collected in the PMNM. An educational initiative, the Ocean Plastics Student Makerspace, has been established in collaboration with Le Jardin Academy, a high school located in Kailua, Hawaii. This project involves building small-scale recycling machines to shred, melt, and mold ocean plastics from PMNM into new products designed by students. The products created aim to raise awareness about the size and scale of the marine debris issue in PMNM and actively engage the local community in combating the problem in the Main Hawaiian Islands. While the volume of plastics processed through this method is limited, it's important to note that the Hawai'i Waste to

Energy Partnership remains the primary disposal method for the majority of marine debris removed from PMNM.

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):

Common name:
Red algae

Scientific name:
Chondria tumulosa

& size of specimens:
Collect and preserve four samples (4" x 4" x 4" sample, softball size):

1. Freeze (frozen as-is).
2. Salted fresh (salted with table salt as-is).
3. Ethanol (preserved in ethanol as-is).
4. Dried (dried at room temperature in the dark as-is).

Collection location:
Kuaihelani, Manawai, Hōlanikū, or areas of new discoveries.

☒ Whole Organism ☒ Partial Organism

9b. What will be done with the specimens after the project has ended?
If the Monument Management Board (MMB) or Resource Protection Working Group (RPWG) requests samples of *Chondria tumulosa* and/or other nuisance algae observed and collected in the field at Nuisance Algae Mitigation Zones (NAMZs) such as Kuaihelani, Manawai, or Hōlanikū for genetic testing, the specimens will be sent directly to the University of Hawai'i at Manoa (in collaboration with the University of Charleston) for genetic sampling.

9c. Will the organisms be kept alive after collection? ☒ Yes ☐ No

Preserved.

• General site/location for collections:

Samples will only be collected if specifically requested by the MMB or Resource Protection Working Group. The areas most likely to have *Chondria tumulosa* are Kuaihelani, Manawai, and Hōlanikū.

• 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?
No.

• Will organisms be released?
No.

10. If applicable, how will the collected samples or specimens be transported out of the Monument?
Collect and preserved in the field (in-situ) as follows, before transportation back to Honolulu, Hawai‘i using the larger vessel, M/V *Imua*:

1. Freezing
2. Salting (fresh)
3. Ethanol
4. Drying

11. Describe collaborative activities to share samples, reduce duplicative sampling, or duplicative research:
Genetic sampling through the University of Hawai‘i at Manoa.

12. List all specialized gear and materials to be used in this activity:
Whirlpack bags and secondary containers.

13. List all Hazardous Materials you propose to take to and use within the Monument:
A complete list of hazardous materials will be included in the supplemental material, but in general, is limited to:

- Pool-shock bleach (concentrated sodium hypochlorite solution)
- Ethanol
- Fuel (non-ethanol 89 grade gasoline)
- Hypalon glue (for inflatable boats)
- Motor oil (for small boats)
- Other applicable small boat support supplies (i.e., grease, adhesives, etc.)

14. Describe any fixed installations and instrumentation proposed to be set in the Monument:
None.

15. Provide a time line for sample analysis, data analysis, write-up and publication of information:
Genetic sampling and information distribution can be completed within 2 weeks of arrival back to Honolulu, Hawai'i, with a maximum timeline of 6 months for the entire process.

16. List all Applicant's publications directly related to the proposed project:

Large floating abandoned, lost or discarded fishing gear (ALDFG) is frequent marine pollution in the Hawaiian Islands and Palmyra Atoll.
Royer, S,, Corniuk, R., McWhirter, A., Lynch IV, H.W., Pollack, K., **O'Brien, K.**, Escalle, L., Stevens, K.A., Moreno, G., Lynch, J.M.
(November 2023) Marine Pollution Bulletin: https://doi.org/10.1016/j.marpolbul.2023.115585

Coral cover remains suppressed three years after derelict net removal in a remote shallow water coral reef ecosystem.
Halperin, A., Lichowski, F., **Morioka, J.**, **O'Brien, K.**, Suka, R., Huntington, B.
(February 2023) Marine Pollution Bulletin: https://doi.org/10.1016/j.marpolbul.2023.114703

Movement and retention of derelict fishing nets in Northwestern Hawaiian Island reefs.
McCoy, K., Huntington, B., Kindinger, T., **Morioka, J.**, **O'Brien, K.**
(January 2022) Marine Pollution Bulletin: https://doi.org/10.1016/j.marpolbul.2021.113261
https://www.sciencedirect.com/science/article/pii/S0025326X21012959

Successful application of a novel technique to quantify negative impacts of derelict fishing nets on Northwestern Hawaiian Island reefs.
Suka, R., Huntington, B., **Morioka, J.**, **O'Brien, K.,** Acoba, T.
(August 2020) Marine Pollution Bulletin: https://doi.org/10.1016/j.marpolbul.2020.111312
https://www.sciencedirect.com/science/article/abs/pii/S0025326X20304306

Building evidence around ghost gear: Global trends and analysis for sustainable solutions at scale.
Richardson, K., Asmutis-Silvia, R., Drinkwin, J., Gilardi, K.V.K., Giskes, I., Jones, G., **O'Brien, K.**, Pragnell-Raasch, H., Ludwig, L., Antonelis, K., Barco, S., Henry, A., Knowlton, A., Landry, S., Mattila, D., MacDonald, K., Moore, M., Morgan, J., Robbins, J., van der Hoop., J., Hogan, E.
(January 2019) Marine Pollution Bulletin: https://doi.org/10.1016/j.marpolbul.2018.11.031

The following publications are referenced throughout the document and are related to the proposed project:

Marine debris accumulation in the Northwestern Hawaiian Islands: An examination of rates and processes.
Dameron, O.J., Parke, M., Albins, M., Brainard, R.
(May 2007) Marine Pollution Bulletin: https://doi.org/10.1016/j.marpolbul.2006.11.019

Benefits derived from opportunistic survival-enhancing interactions for the Hawaiian monk seal: the silver BB paradigm.
(September 2014) Endangered Species Research: https://doi.org/10.3354/esr00612

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.

_____11/5/2023_____

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