

Papahānaumokuākea Marine National Monument
RESEARCH Permit Application

NOTE: This Permit Application (and associated Instructions) is 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: David Hyrenbach

Affiliation: Oikonos–Ecosystem Knowledge & Hawaii Pacific University

Permit Category: Research

Proposed Activity Dates: 01 January 2024 – 31 December 2024 (Year 1 of a 3-year project)

Proposed Method of Entry (Vessel/Plane): Vessel (separately permitted by USFWS)

Proposed Locations: Kamole (Laysan Island) and Hōlanikū (Kure Atoll)

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

11 personnel and 11 TBD slots

Estimated number of days in the Monument: Overall, we are asking for 28 days in the Monument in 2024, with 14 days spent at each of the 2 proposed locations. The timing and number of visits to the field sites will depend on availability of ship transport, USFWS schedules, and weather. In future years, we will submit permit applications for an additional 42 days in 2025 and 28 days in 2026.

At Kamole: Weather permitting, a two-person team from Oikonos will visit this site once in 2024 (with additional visits planned in 2025 and 2026 that will be included in future permit applications). The bulk of the research will be conducted over 2 weeks during the early albatross chick provisioning period (late January – May). Our team deployments will span 12 - 14 days: transiting from Honolulu (3-4 days), working in the field (6 days), and returning to Honolulu (3-4 days). In 2025 and 2026, we plan to request permits for similar amounts of time in each of those years. Additionally, we plan on asking that USFWS and NOAA monk seal teams deployed at these locations retrieve tags opportunistically during any additional separately permitted visits in 2025 and 2026. No new tags will be deployed in 2026.

At Hōlanikū: All activities at this site will rely on State of Hawai‘i Division of Forestry & Wildlife (DOFAW) personnel, already deployed/separately permitted for access in the field from October 2023 to May 2024. In 2024, the team will deploy 20 Geolocation (GLS) tags over 2 weeks, during the late egg incubation and early albatross chick provisioning period (January – May). Our future plans (to be included in future permit applications) is to have the Hōlanikū team spend 2 weeks in January – May 2025 deploying the other 20 GLS tags and 2 weeks opportunistically retrieving the 2024-deployed tags (for a total of 4 weeks). We also plan to have the Hōlanikū team spend an

additional 2 weeks in January – May 2026 opportunistically retrieving tags during their normal fieldwork. No new tags will be deployed in 2026.

Overall time on field sites in Year 1 (2024): 14 days (Kamole) and 14 days (Hōlanikū)

In future years, we plan on requesting permits for the following time:

Year 2 (2025): 14 days (Kamole) and 28 days (Hōlanikū)

Year (2026): 14 days (Kamole) and 14 days (Hōlanikū)

Description of proposed activities: (complete these sentences):

a.) The proposed activity would...

The proposed research on black-footed albatross (BFAL) will: (1) characterize the at-sea distribution of birds breeding on Kamole and Hōlanikū over two breeding seasons (2024, 2025) and two non-breeding seasons (2024, 2025); (2) obtain feather samples to determine the sex of the tagged birds using molecular techniques; (3) integrate sex-specific data on seasonal movements by birds from these two colonies with existing tracking datasets for this species; and (4) synthesize their at-sea distribution and overlap with U.S. and foreign fisheries across the North Pacific to develop an integrated bycatch risk assessment for the species.

b.) To accomplish this activity we would

Over 3 years, we would deploy a total of 20 satellite-linked platform terminal transmitters (PTTs) and up to 90 archival Geolocation (GLS) tags to track the movements of up to 110 breeding BFAL (see Table 1). This permit application covers Year 1 (2024), but we have included all years here for clarity about the scope of the project.

At Kamole: BFAL have not been tracked from this site previously. Thus, we will deploy 20 PTTs and 40 GLS tags at this site. If we obtain additional funding, we would deploy an additional 10 GLS tags. Our goal is to deploy half of the currently funded tags (10 PTT and 20 GLS) in 2024. Weather and field conditions may alter this plan. The other half would be deployed in 2025 (under a separate permit application).

Under future permit applications, we plan to retrieve the archival GLS tags during field visits in 2025 and 2026. To facilitate the recapture of the birds equipped with archival GLS tags, BFAL nesting sites will be recorded with GPS and will be marked using colored rocks, to aid in recapture in the following year. The PTTs, which will be attached to 4 -6 dorsal feathers using Tesa tape, will fall off when the adhesive wears off (~2 months after deployment) or when the birds molt (July – September). We will also mark nests with colored rocks for the birds with PTTs in the case that USFWS can check on the fate of chicks.

At Hōlanikū: Between February and May in both 2012 and 2013, David Hyrenbach and Michelle Hester deployed GPS tags on a total of 18 BFAL breeding on Hōlanikū. These data are published in Hyrenbach et al. 2017 and Orben et al. 2021. Since we already have fine-scale spatial data from the breeding season for this colony, we will not deploy PTTs tags at this site. Instead we will focus on GLS tags at this site, with a maximum of 40 GLS to be deployed. Our goal is to deploy half the tags (20 GLS) in 2024. Under a separate permit application, we would like to deploy the remaining 20

GLS tags in 2025. We may alter the number deployed in 2024 if logistics or weather are uncooperative, but the maximum number of GLS tags deployed at Hōlanikū in 2024 will be 20.

We will retrieve the archival GLS tags during field visits in 2025 and 2026 (under separate permit applications). To facilitate the recapture of the birds equipped with archival GLS tags, BFAL nesting sites will be recorded with GPS and will be marked using colored rocks or recognizable pieces of marine debris (discarded buoys, etc.).

Table 1. Number of BFAL tags to be deployed and received by site, year, and tag type. Each tagged bird would have up to 4 breast feathers sampled for genetically sex the tracked individuals. Years not included in this permit application (2025 and 2026) are highlighted with gray shading, for clarity.

Satellite Tags: Laysan Island (Kamole), Hawaiian Islands National Wildlife Refuge

Black-footed	Birds Tracked	No. of Feathers	Notes
2024	10	40	
2025	10	40	
2026	0	0	
Total	20	80	

Geocator (GLS) Tags: Laysan Island (Kamole), Hawaiian Islands National Wildlife Refuge

Black-footed	Birds Tracked	No. of Feathers	Notes
2024	20	80	deploy tags
2025	30	120	deploy and retrieve 2024 tags and deploy 2025 tags
2026	0	0	retrieve remaining tags
Total	50	200	

Geocator (GLS) Tags: Kure Atoll (Hōlanikū), Hawaiian Islands National Wildlife Refuge

Black-footed	Birds Tracked	No. of Feathers	Notes
2024	20	80	deploy tags
2025	20	80	deploy and retrieve 2024 tags and deploy 2025 tags
2026	0	0	retrieve remaining tags
Total	40	160	

Grand Totals across all years, sites, and tag types

Black-footed	Birds Tracked	No. of Feathers	Notes
2024	50	200	deploy tags
2025	60	240	deploy and retrieve 2024 tags and deploy 2025 tags
2026	0	0	retrieve remaining tags
Total	110	440	

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

This research will provide the Monument with useful information on the year-around distribution of male and female BFAL. BFAL have not been tracked at Kamole, and have only been tracked during the breeding season at Hōlanikū. As part of our project, we will integrate this information with similar existing data for birds from other breeding sites (Midway, Tern Island) in collaboration with Scott Shaffer and colleagues to enhance the integrated management and monitoring of this species. In a recent workshop, resource managers from NOAA fisheries, the Western Pacific Regional Fishery Management Council (WPRFMC), and the USFWS expressed their interest in these tracking data and bycatch analyses, with the goal to update the last population assessment for BFAL (Arata et al., 2009, Hyrenbach et al. 2021).

In the short-term, our team will quantify BFAL overlap with domestic and foreign fisheries, using datasets of longline and trawl fishing effort / catch from NOAA fisheries, regional fishery management organizations (RFMOs), and Global Fishing Watch (globalfishingwatch.org). Our project will assess albatross vulnerability to incidental fishing mortality and will identify the temporal and spatial hotspots of albatross-fisheries interactions. Ultimately, knowing when and where albatross interact with fisheries will help managers to identify threats and to develop recommendations for enhanced bycatch monitoring and mitigation across the North Pacific.

In the long-term, the integrated analysis of multi-colony BFAL tracking with updated fishing effort / bycatch data will inform the population assessment for this species, and will help answer questions about albatross ecology and conservation, within a broader ecosystem-based management framework. Our ultimate goal is to inform a new integrated population model (IPM) for this species, capable of evaluating the impacts from fisheries bycatch, climate (e.g., sea-level rise and flooding at breeding colonies), and introduced vegetation at colonies (Hyrenbach et al. 2021).

Hyrenbach KD, Ishizaki A, Polovina J, Ellgen S [editors]. 2021. The factors influencing albatross interactions in the Hawaii longline fishery: towards identifying drivers and quantifying impacts. U.S. Dept. of Commerce, NOAA Technical Memorandum NOAA-TM-NMFS-PIFSC-122, 163 p. doi:10.25923/nb95-gs31TM-PIFSC-122

Arata JA, Sievert PR, Naughton MB. 2009. Status assessment of Laysan and black-footed albatrosses, North Pacific Ocean, 1923–2005. Reston (VA): U.S. Geological Survey Scientific Investigations Report 2009-5131, 80 p. <https://pubs.usgs.gov/sir/2009/5131/pdf/sir20095131.pdf>.

Other information or background:

Background and Overview: Summary of recommendations from the workshop: Hyrenbach KD, Ishizaki A, Polovina J, Ellgen S [editors]. 2021. The factors influencing albatross interactions in the Hawaii longline fishery: towards identifying drivers and quantifying impacts. U.S. Dept. of Commerce, NOAA Technical Memorandum NOAA-TM-NMFS-PIFSC-122, 163 p. doi:10.25923/nb95-gs31TM-PIFSC-122

The Hawaii deep-set longline fishery (DSLL) operates north and south of the Hawaii Archipelago, with the shallow-setting swordfish fishery operating predominantly to the north and east of the fishing grounds. The tuna-targeting DSLL fishery accounts for 96% of the fishing effort. The

number of hooks has been increasing since 2010, with 64 million hooks set in 2021 (McCracken and Cooper, 2022). The Hawaii longline fishery is managed under the WPRFMC Pelagic Fisheries Ecosystem Plan (FEP), which specifies the measures to reduce interactions with protected species, including seabirds (Dalzell et al., 2021). Seabird interactions are monitored through the NMFS Pacific Islands Regional Office (PIRO) Observer Program, with the DSLL fishery monitored at a minimum of 20% coverage annually. The numbers of observed albatross interactions are summarized and published annually as part of PIRO Seabird Annual Reports and the Pelagic FEP SAFE Report (Ishizaki & Ellgen, 2021).

In the last decade (2004–2014), observer records have documented an increasing trend in albatross interactions (Ishizaki & Ellgen, 2021). A recent analysis conducted by Gilman and colleagues (2016) using data from October 2004 to May 2014, revealed that BFAL interaction rates have significantly increased over time, especially during years of higher annual mean Multivariate El Niño Index (MEI) values, suggesting that oceanographic changes have contributed to that trend. This analysis also showed a significant increasing trend in the number of albatrosses attending fishing vessels which may have contributed to the increasing catch rates. The higher interaction rates observed during the 2015–2016 El Niño event (Ishizaki & Ellgen, 2021) further underscore the potential links between ocean conditions and albatross-longline interactions.

Published tracking data of BFAL breeding at three sites in the NWHI (French Frigate Shoals, Midway Island, and Kure Atoll) suggest that BFAL at-sea distribution and movement patterns vary according to the phase of the breeding season. Longer foraging trips take place during the incubation and the chick-rearing periods, and shorter trips occur during the chick-guarding (or brooding) period. Furthermore, tagging studies in the NWHI suggest population-level differences in distribution among BFAL colonies; birds from French Frigate Shoals show the greatest spatial overlap with areas used by the DSLL fishery (Shaffer et al., 2021). Nevertheless, substantial knowledge gaps remain concerning sex differences in distribution during the breeding and post-breeding periods, the distributions of juveniles, and the movements of BFAL from unstudied breeding sites (e.g., year around from Laysan Island, post-breeding from Kure).

Workshop attendees highlighted the need to develop a rigorous integrated population model (IPM) model, able to address total population size, including non-breeders and juveniles, based on adult counts at multiple breeding colonies over time (e.g., years of contrasting oceanographic conditions). While this model would allow the assessment of the fishery impacts (e.g., effects of fishery takes on the population) in a broader ecological context, it would require filling in three substantial data gaps:

- BFAL distribution and fishery interaction data for different age-classes (breeders, juveniles, fledging chicks) from all breeding colonies during multiple years of contrasting oceanographic conditions (e.g., ENSO, PDO);
- Fishing effort distributions and BFAL bycatch data for the Hawaii DSLL and SSLL fisheries and other North Pacific longline fisheries;
- Characterize the degree of sex-specific, and individual variability in BFAL association and reliance on fisheries.

Our project addresses these knowledge gaps by studying the year around distribution of male / female breeding BFAL from Laysan Island and Kure Atoll, during two years (2024 and 2025). We will then add the distribution data to that of our collaborators and analyze the overlap and susceptibility of individuals to bycatch in different national and international fleets. These data will

then be made available to USFWS and their contractors who are currently creating an IPM for the species.

Data Sharing: Once our project has been completed, we will make all the tracking and associated meta-data from each tagged bird available to other researchers in the U.S. and internationally, for future use in research and management applications.

Domestically, we will deposit our PTT tracking data into the Animal Telemetry Network (ioos.noaa.gov/project/atn), a U.S. multi-agency initiative established under the auspices of the Integrated Ocean Observing System (IOOS), to provide unity, stability, and continuity to the national infrastructure that facilitates the collection, management, and availability of marine animal telemetry data. Data are viewable to the public in near real time via an online portal (portal.atn.ioos.us).

Internationally, we will deposit the GLS and PTT data in the Global Seabird Tracking Database, hosted by BirdLife International in the UK (www.seabirdtracking.org). We have already deposited our previous albatross tracking data in this database, which have been used in numerous reports, outreach activities, governmental assessments, and scientific publications.

Outreach: Since 2000, our research in the Monument has led to the publication of 7 peer-reviewed papers and a chapter in a technical report published by NOAA. Our team has also given 20 presentations at conferences, university seminars, local special interest groups, and government sponsored meetings. We have also provided data or analyzed products (e.g., maps or figures) to NOAA – fisheries and USFWS staff for outreach and reports. Moreover, this research has supported 4 MS and 2 undergraduate students.

For this project we will make all our research available online, with links to our educational program, Winged Ambassadors, which uses life histories of albatross to teach elementary and high school students about marine conservation. We are also enthusiastic about participating in any outreach efforts the Monument would like to promote, including outreach to members of the Native community.