

**Papahānaumokuākea Marine National Monument**  
RESEARCH Permit Application

**NOTE: *This Permit Application (and associated Instructions) are to propose activities to be conducted in the Papahānaumokuākea Marine National Monument. The Co-Trustees are required to determine that issuing the requested permit is compatible with the findings of Presidential Proclamation 8031. Within this Application, provide all information that you believe will assist the Co-Trustees in determining how your proposed activities are compatible with the conservation and management of the natural, historic, and cultural resources of the Papahānaumokuākea Marine National Monument (Monument).***

**ADDITIONAL IMPORTANT INFORMATION:**

- Any or all of the information within this application may be posted to the Monument website informing the public on projects proposed to occur in the Monument.
- In addition to the permit application, the Applicant must either download the Monument Compliance Information Sheet from the Monument website OR request a hard copy from the Monument Permit Coordinator (contact information below). The Monument Compliance Information Sheet must be submitted to the Monument Permit Coordinator after initial application consultation.
- Issuance of a Monument permit is dependent upon the completion and review of the application and Compliance Information Sheet.

**INCOMPLETE APPLICATIONS WILL NOT BE CONSIDERED**

Send Permit Applications to:  
NOAA/Inouye Regional Center  
NOS/ONMS/PMNM/Attn: Permit Coordinator  
1845 Wasp Blvd, Building 176  
Honolulu, HI 96818  
nwhipermit@noaa.gov  
PHONE: (808) 725-5800    FAX: (808) 455-3093

**SUBMITTAL VIA ELECTRONIC MAIL IS PREFERRED BUT NOT REQUIRED. FOR ADDITIONAL SUBMITTAL INSTRUCTIONS, SEE THE LAST PAGE.**

## **Papahānaumokuākea Marine National Monument Permit Application Cover Sheet**

This Permit Application Cover Sheet is intended to provide summary information and status to the public on permit applications for activities proposed to be conducted in the Papahānaumokuākea Marine National Monument. While a permit application has been received, it has not been fully reviewed nor approved by the Monument Management Board to date. The Monument permit process also ensures that all environmental reviews are conducted prior to the issuance of a Monument permit.

### **Summary Information**

**Applicant Name:** Paulo Xavier Catry

**Affiliation:** MARE – Marine and Environmental Sciences Centre (<http://www.mare-centre.pt/en>) and ISPA – Instituto Universitário (<http://en.ispa.pt/>), Portugal.

**Permit Category:** Research

**Proposed Activity Dates:** August-September 2018

**Proposed Method of Entry (Vessel/Plane):** M/V Searcher

**Proposed Locations:** Nihoa Island

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

**Estimated number of days in the Monument:** 10

**Description of proposed activities:** (complete these sentences):

a.) The proposed activity would...

Document geographical differences (Hawaii, Azores, Madeira, Cape Verde and Japan) in mercury concentration in body feathers of Bulwer's petrels (*Bulweria bulwerii*) and establish a baseline for future monitoring.

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

Measure mercury (Hg) levels in feathers of 20 adult and 20 chick Bulwer's petrels (10 feathers from each bird). Ten small body feathers should be taken from each sampled individual, for isotope (Carbon and Nitrogen) and Hg determination.

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

providing Monument managers with information on mercury levels in seabirds and mesopelagic organisms within the Monument and nearby waters. The project would measure mercury levels in Bulwer's petrels, a predator of mesopelagic prey (primarily fish and squid), on Nihoa. The information gathered from this project will help managers

understand the threats that seabirds in the Monument face and also provide a baseline indicator of mercury levels in mesopelagic organisms. This research supports the Monument's management plan objective to "Monitor contaminant levels in birds and their habitats" (MB-2.2).

The research will establish a baseline of mercury levels in this region through sampling a predator of mesopelagic prey. The information gathered will be of use for the conservation of Bulwer's petrels, and other seabirds that feed on mesopelagic prey (including Tristram's storm petrel and Bonin's petrel). The research will also help determine the effects of human activities on seabirds and mesopelagic organisms in the monument and begin research on the potential effects of mercury contamination on seabird species in the Monument.

**Other information or background:**

Mercury (Hg) is a metal that is being released in increasing quantities by human activities. Much of the mercury ends in the ocean, where it bio-accumulates. Due to its toxicity, mercury potentially represents a threat to various forms of life, and it may have impacts on human health. Mercury concentrations in organisms are particularly high in the mesopelagic domain. Seabirds often accumulate significant amounts of mercury, which they then excrete into feathers during molt. Hence, seabird feathers are extensively used for assessments of mercury pollution, and seabirds can function as bioindicators providing insights into the spatial and temporal patterns of mercury contamination in the world's oceans. To date, few studies on Hg in seabirds have attempted to compare samples taken in various oceans, and none also involving specialist predators of mesopelagic prey, which are known to have very high mercury levels compared to other seabirds. Bulwer's petrels occur in the three main oceans and are highly specialized, feeding mostly on mesopelagic prey. Hence, they are an interesting model species to use as a bioindicator for mercury in the global ocean.

We have, together with partners also involved in this study, carried out studies of mercury accumulation in marine organisms in Portugal, West Africa and the South Atlantic. Studies (most of them ongoing) have spanned from near shore environments, using marine invertebrates, to offshore deep-seas (using seabirds and other predators, such as tuna and marine turtles).

Our research has minimal impact on island resources. Seabirds are captured, sampled (a few body feathers are cut) and released at their capture locations. Prior to chemical analysis, the body feathers are cleaned. Then the feathers are cut so as to have a homogeneous sample. We use thermal decomposition atomic absorption spectrometry with gold amalgamation in LECO AMA-254 equipment, to determine the total concentration of mercury in the body feathers. Precision of the method is supported on the analysis of certified reference material: SRM - 2976 (muscle tissue) for trace elements and methylmercury from NIST (certified for value of Hg equal to  $0.061 \pm$

0.0036 mg/kg). Previous analyses revealed a high concentration of mercury in the Bulwer's petrels.

Nihoa hosts one of the largest Bulwer's petrel colonies in the world, with estimates of 75,000 to 100,000 breeding pairs. Bulwer's Petrel spends less than six months each year at its breeding colonies, and the remainder of its time is spent at sea. Bulwer's Petrel is colonial and nocturnal. Bulwer's do not excavate their own burrows but lay a single egg under rock ledges, crevices, burrows of other species, or natural cavities. Pairs are faithful to nest sites and mates for several years; both sexes incubate and feed the young. The young leave the nest at night when their flight feathers still are not fully developed, and immature birds are not observed on land again for at least two years. In the nonbreeding season, this species migrates to areas of rich nutrient upwellings. Little is known of its feeding during this season, but the most important prey species collected from birds near the breeding grounds are hatchetfishes (Sternoptychidae) and lanternfishes (Myctophidae).

## **Section A - Applicant Information**

### **1. Applicant**

Name (last, first, middle initial): Paulo Xavier Catry

Title: Dr Paulo Catry (PhD) – Researcher at the ISPA-Instituto Universitário  
(<https://scholar.google.pt/citations?user=Ej3nssMAAAAJ&hl=pt-PT>)

[paulo.catry@gmail.com](mailto:paulo.catry@gmail.com)

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

Rachel Rounds  
U.S. Fish and Wildlife Service  
Pacific Islands Refuges and Monuments  
Inventory & Monitoring Program



Sheldon Plentovich, Ph.D.  
U.S. Fish and Wildlife Service  
Pacific Islands Fish and Wildlife Office  
Coastal Program Coordinator



[REDACTED]

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

ISPA

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

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

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

- MARE – Marine and Environmental Sciences Centre (<http://www.mare-centre.pt/en>), Portugal.
- ISPA – Instituto Universitário (<http://en.ispa.pt/>), Portugal.

**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):**

Rachel Rounds  
U.S. Fish and Wildlife Service  
Pacific Islands Refuges and Monuments  
Inventory & Monitoring Program

[REDACTED]

Sheldon Plentovich, Ph.D.  
U.S. Fish and Wildlife Service  
Pacific Islands Fish and Wildlife Office  
Coastal Program Coordinator

[REDACTED]



Chris Farmer, Ph.D.  
 Hawaii Program Director  
 American Bird Conservancy



**Section B: Project Information**

**5a. Project location(s):**

- |   |  |  |                                     |
|---|--|--|-------------------------------------|
| <input checked="" type="checkbox"/> Nihoa Island      | <input checked="" type="checkbox"/> Land-based | <input type="checkbox"/> Shallow water | <input type="checkbox"/> Deep water |
| <input type="checkbox"/> Necker Island (Mokumanamana) | <input type="checkbox"/> Land-based            | <input type="checkbox"/> Shallow water | <input type="checkbox"/> Deep water |
| <input type="checkbox"/> French Frigate Shoals        | <input type="checkbox"/> Land-based            | <input type="checkbox"/> Shallow water | <input type="checkbox"/> Deep water |
| <input type="checkbox"/> Gardner Pinnacles            | <input type="checkbox"/> Land-based            | <input type="checkbox"/> Shallow water | <input type="checkbox"/> Deep water |
| <input type="checkbox"/> Maro Reef                    |  |  |                                     |
| <input type="checkbox"/> Laysan Island                | <input type="checkbox"/> Land-based            | <input type="checkbox"/> Shallow water | <input type="checkbox"/> Deep water |
| <input type="checkbox"/> Lisianski Island, Neva Shoal | <input type="checkbox"/> Land-based            | <input type="checkbox"/> Shallow water | <input type="checkbox"/> Deep water |
| <input type="checkbox"/> Pearl and Hermes Atoll       | <input type="checkbox"/> Land-based            | <input type="checkbox"/> Shallow water | <input type="checkbox"/> Deep water |
| <input type="checkbox"/> Midway Atoll                 | <input type="checkbox"/> Land-based            | <input type="checkbox"/> Shallow water | <input type="checkbox"/> Deep water |
| <input type="checkbox"/> Kure Atoll                   | <input type="checkbox"/> Land-based            | <input type="checkbox"/> Shallow water | <input type="checkbox"/> Deep water |
| <input type="checkbox"/> Other                        |  |  |                                     |

**Ocean Based**

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:

- Nihoa Island: the work will occur where Bulwer’s petrel’s nests are located; samples will likely be collected from in and around the campsite at Nihoa, but will depend on location of Bulwer’s nests in 2018.

**5b. Check all applicable regulated activities proposed to be conducted in the Monument:**

- Removing, moving, taking, harvesting, possessing, injuring, disturbing, or damaging any living or nonliving Monument resource
- Drilling into, dredging, or otherwise altering the submerged lands other than by anchoring a vessel; or constructing, placing, or abandoning any structure, material, or other matter on the submerged lands
- Anchoring a vessel
- Deserting a vessel aground, at anchor, or adrift
- Discharging or depositing any material or matter into the Monument
- Touching coral, living or dead
- Possessing fishing gear except when stowed and not available for immediate use during passage without interruption through the Monument
- Attracting any living Monument resource
- Sustenance fishing (Federal waters only, outside of Special Preservation Areas, Ecological Reserves and Special Management Areas)
- Subsistence fishing (State waters only)
- Swimming, snorkeling, or closed or open circuit SCUBA diving within any Special Preservation Area or Midway Atoll Special Management Area

**6. Purpose/Need/Scope *State purpose of proposed activities:***

The purpose of the proposed activities is to measure mercury (Hg) levels in feathers of adult and chick Bulwer's petrels in order to document geographical differences in mercury concentration across the globe, and to establish a baseline for future monitoring of mercury levels within the Monument and surrounding waters. The need for the project is to understand global differences in mercury levels in a specialist predator of mesopelagic prey, along with documenting differences in mercury levels across three oceans. In addition, the project will provide valuable information on mercury levels in mesopelagic organisms and seabirds within the Monument. Seabirds can provide valuable information on ocean pollutants, such as mercury, because they are top-level predators and pollutants bioaccumulate at higher trophic levels.

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

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

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:**

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?

The activity will be conducted with adequate safeguards for the natural, cultural, and historical resources and ecological integrity of the Monument. All personnel that will be involved in the field activities have worked in terrestrial habitats in the monument before and have extensive experience on several islands that contain a variety of resources. They will be able to avoid stepping on seabird nests and otherwise disturbing nesting seabirds and other natural resources.

The proposed activities would not affect any historical or cultural resources and personnel will stay away from any such resources. No ground disturbance or movement of rocks will be necessary and nests will be selected which are easily accessible.

The use of feathers for the evaluation of mercury is a widely used method. This is a method that is not invasive and that does not cause harm to the birds. The handling and collection of 10 body feathers will cause temporary stress. Feather collection is common tool for measuring indicators in bird species; mortality or injury would be highly unlikely. Extreme caution will be taking in collecting adults and chicks from nests.

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 proposed activity will have a negligible impact on the natural resources of the Monument. This is a method that is non-invasive and will not adversely affect cultural, natural, or historic resources. Samples will be collected on previously-planned expeditions intended for other purposes. The duration of the activity will be very short; we anticipate handling each bird for 5 minutes and the work will be conducted as part of a routine Monument manager's trip to Nihoa. The research will help determine the effects of human activities on seabirds and mesopelagic organisms in the monument and begin research on the potential effects of mercury contamination on seabird species in the Monument.

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.

Nihoa has one of the largest Bulwer's petrel colonies in the world, and the colony there is very accessible. There are many Bulwer's petrels nests located in and around the campsite, along with up the gullies where biologists routinely hike. Nests or burrows of other seabirds will not be damaged by this work and it will not take much searching to find the appropriate number of birds. Other sites were looked into in Hawaii but Nihoa seemed the best choice given the above reasons.

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 proposed project will have no adverse impacts on Monument cultural, natural or historic resources. The project will require the brief handling of 40 Bulwer's petrels, but will not result in any harm to the birds. No cultural or historic resources will be disturbed by the proposed project. The project will collect valuable data for the Monument on mercury levels in seabirds and fish that could help researchers and managers better understand the effects mercury may be having on trust resources.

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

This work will be done in conjunction with a previously planned monitoring trip to Nihoa. The primary objective of the Nihoa trip is to monitor the Nihoa millerbird, Nihoa finch, endangered plants, and invasive plants and grasshoppers. The work will occur during a 5 day monitoring trip. No extra time on island is allotted for this project, but the USFWS biologists feel they can complete this project in the time they already had planned to be on Nihoa.

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

Rachel Rounds, Sheldon Plentovich, and Chris Farmer will be the three biologists collecting feathers from Bulwer's petrels. All three biologists have conducted multiple trips to Nihoa (at least 6 trips per person) and are therefore very familiar with the terrain and challenges of working on Nihoa. The biologists are also familiar with the distribution and abundance of Bulwer's petrels on Nihoa, and will be able to easily find nests with adults and chicks to collect feathers from.

Rounds, Plentovich, and Farmer all have extensive experience handling birds that goes way beyond the scope of this project and is documented in their CVs. All three are experienced in 1) identifying seabirds correctly; 2) collecting seabirds safely from burrows or nests and returning them safely back to the same nest; 3) handling and processing birds including feather collection, banding, radio-transmitting, and drawing blood; 4) avian first aid; and 5) avian translocations.

I (Paulo Catry), and my team, have extensive experience handling birds and analyzing seabird samples in laboratory that go way beyond the scope of this project and are documented in my CV. I am experienced in 1) identifying seabirds correctly; 2) collecting and sampling seabirds safely; 3) analyzing stable isotopes (nitrogen and carbon) in feathers and nails 4) extracting of mercury in feathers using thermal decomposition atomic absorption spectrometry with gold amalgamation in LECO AMA-254 equipment and 5) extracting other heavy metals (arsenic, lead) in feathers, blood and sediments.

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.

The trip to Nihoa is funded as part of an existing trip, and no additional resources are needed for traveling to the island, or supplying quarantined gear. We do not anticipate any impacts from the project that would require mitigation. We have funds from FCT – Portugal (Portuguese Foundation for Science and Technology) (<https://www.fct.pt/index.phtml.en>) to carry out the lab analyses of the samples that will be collected.

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.

The only effect to Monument resources will be the brief stress to the birds caused by handling Bulwer's petrels and collecting body feathers. Collecting body feathers is a standard technique in avian research (often used for genetic analysis), and doesn't result in any harm to the birds, as they can easily re-grow their feathers. The methods proposed have been used successfully to measure mercury levels in seabirds.

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

Yes.

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

There are no other factors that would make the issuance of a permit for this activity inappropriate.

## **8. Procedures/Methods:**

All work as part of this project will occur on land on Nihoa. Project staff would sail to Nihoa by vessel. On Nihoa, project staff would land by zodiac from the larger vessel. Work will occur as close to the campsite as possible, but the distance travelled to each

Bulwer's petrel nest will depend on the distribution and abundance of Bulwer's in August and September of 2018. All nests will be accessed on foot, by hiking from the campsite. The entire island of Nihoa can be considered a seabird colony; however, we will not select nests that are located within sooty tern or gray-backed tern colonies or that are located too close to other seabird nests or chicks that we would cause disturbance. We will not need access to the beach on Nihoa. We may collect body feathers from adults that return to Nihoa at dusk, but no work will occur at night, as it is generally unsafe to move about Nihoa after nightfall.

Adult Bulwer's petrels will be captured by hand when attending their nests and chicks will be also taken from nests. About 10 body feathers will be cut with scissors in such a way (from different spots) so that no gaps are left in the plumage. The duration of handling of each individual bird should be approximately 2 minutes, after which it will be put safely back into its nest. The nest the adult or chick is removed from will be temporarily marked to ensure the bird is returned to the correct location.

Feathers of adult and chick Bulwer's petrels will be collected during the breeding season of 2018 in the Atlantic (Azores, Madeira, Cape Verde) and in the Pacific Oceans (Hawaii, Japan). Feathers of chicks are particularly useful, because they inform on the contamination in the broad area around known breeding sites (if chicks are too young to have grown feathers at time of collection, down will be useful too, but collecting from feathered chicks is the preferred option). Feathers from adults are less informative for populations for which we still do not have information on migratory routes and winter quarters (information is available for Atlantic breeding populations, but not for the Pacific); nevertheless, adult feathers will provide an interesting baseline even for populations not yet tracked, and isotopes can give indications on the non-breeding distribution. Ten small body feathers should be taken from each sampled individual, for isotope (Carbon and Nitrogen) and mercury determination. The target is to have 20 adults and 20 chicks sampled from each study site or island, but smaller samples will still be useful, although not ideal.

We will use thermal decomposition atomic absorption spectrometry with gold amalgamation in LECO AMA-254 equipment, to determine the total concentration of mercury in the body feathers. Stable isotope analyses of Carbon and Nitrogen will contribute to provide information of the wintering areas of Bulwer's petrels from the Pacific/Indian oceans, and to assess trophic levels of different populations.

Analyses will be carried out in the laboratories of research partners at the University of Aveiro, Portugal,.

**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:  
Bulwer's petrels

Scientific name:  
*Bulweria bulwerii*

# & size of specimens:

We will collect 8-10 body feathers of each bird:

- Nihoa Island – 20 adults and 20 chicks

Collection location:

- Nihoa Island

Whole Organism  Partial Organism

**9b. What will be done with the specimens after the project has ended?**

Conserved in Marine and Environmental Sciences Centre (<http://www.mare-centre.pt/en>) and ISPA – Instituto Universitário (<http://en.ispa.pt/>), Portugal.

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

N/A

• General site/location for collections:

N/A

• Is it an open or closed system?  Open  Closed

N/A

• Is there an outfall?  Yes  No

N/A

• Will these organisms be housed with other organisms? If so, what are the other organisms?

N/A

• Will organisms be released?

N/A

**10. If applicable, how will the collected samples or specimens be transported out of the Monument?**

The feathers will be placed in clearly labeled zip-loc bags and transported in a 5-gallon bucket back to Honolulu, Hawaii aboard the M/V Searcher. The feathers will then be

shipped, following appropriate Migratory Bird Treaty Act procedures, and any other U.S. Customs requirements, to Paulo Catry in Portugal.

**11. Describe collaborative activities to share samples, reduce duplicative sampling, or duplicative research:**

We are not aware of any related research being conducted in the region. The amount of tissue collected will be small, so that there will be no effect to the birds. Hence, no significant leftovers will be available for further analyses.

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

- Poly Plastic bags;
- Scissors;

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

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

**14. Provide a time line for sample analysis, data analysis, write-up and publication of information:**

- November 2018 – March 2019: analyses of feather samples;
- March – May 2019: data analysis;
- June – September 2019: write-up;
- October – December 2019: submission for publication.

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

Waap, S., Symondson, W. O. C., Granadeiro, J. P., Alonso, H., Serra-Goncalves, C., Dias, M. P., & Catry, P. (2017). The diet of a nocturnal pelagic predator, the Bulwer's petrel, across the lunar cycle. *Scientific Reports*, 7(1), 1–10. <https://doi.org/10.1038/s41598-017-01312-3>

Dias, M. P., Romero, J., Granadeiro, J. P., Catry, T., Pollet, I. L., & Catry, P. (2016). Distribution and at-sea activity of a nocturnal seabird, the Bulwer's petrel *Bulweria bulwerii*, during the incubation period. *Deep-Sea Research Part I: Oceanographic Research Papers*, 113, 49–56. <https://doi.org/10.1016/j.dsr.2016.03.006>

Coelho JP, Monteiro RJR, Catry T, Lourenço PM, Catry P, Regalla A, Catry I, Figueira P, Pereira E, Vale C, Granadeiro JP 2016. Estimation of mercury background values in

sediment and biota of the Bijagós archipelago, Guinea-Bissau. *Marine Pollution Bulletin* 111: 488-492. <http://dx.doi.org/10.1016/j.marpolbul.2016.06.053>

Dias, M. P., Alho, M., Granadeiro, J. P., & Catry, P. (2015). Wanderer of the deepest seas: Migratory behaviour and distribution of the highly pelagic Bulwer's petrel. *Journal of Ornithology*, 156(4), 955–962. <https://doi.org/10.1007/s10336-015-1210-9>

Boieiro, M., Catry, P., Jardim, C. S., Silva, I., Oliveira, P., Gatt, M. C., Pedro, P., Granadeiro, J. P. (2018). Invasive Argentine ants prey on Bulwer's petrels nestlings on the Desertas Islands (Madeira) but do not depress seabird breeding success. *Journal for Nature Conservation*. <https://doi.org/10.1016/j.jnc.2018.02.013>

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.



30 April 2018

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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