# 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:** Eric Conklin, Ph.D
**Affiliation:** Marine Science Director, The Nature Conservancy

**Permit Category:** Research
**Proposed Activity Dates:** May 1, 2016 - April 30, 2017
**Proposed Method of Entry (Vessel/Plane):** Vessel - Makani Olu
**Proposed Locations:** Nihoa

**Estimated number of individuals (including Applicant) to be covered under this permit:** 18

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

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

a.) The proposed activity would…

engage teams from The Nature Conservancy (TNC), Office of Hawaiian Affairs (OHA) and other trained participants aboard the vessel Makani Olu to conduct nearshore reef fish surveys (0-30 ft. depth) in order to collect and analyze data on the status of marine resources within the Papahanaumokua National Monument (PMNM). Data will be collected in a manner consistent with methods used in TNC's community-based marine conservation and monitoring efforts throughout the Main Hawaiian Islands (MHI). The information gathered will fill a data gap between monitoring efforts resulting from the annual Reef Assessment & Monitoring Program cruises (30-100 ft. depth) and annual intertidal cruises (rocky intertidal zone) in PMNM.

In addition, TNC is proposing to partner with PMNM/Office of National Marine Sanctuaries and OHA to conduct a ciguatera study at Nihoa. Initial data for this study was collected previously, and the data collected under this permit will enhance that data set. For this study, divers will collect a small number of one species of reef fish for laboratory anlysis of the level of ciguatoxins present in select reef fish within PMNM, focusing on islands at which higher levels of consumption may occur, such as Nihoa.

TNC has partnered with OHA to be participants in a broad-scale effort at Nihoa that will focus on both land activites (covered under seperate permits - PMNM-2016-001 & PMNM-2015-014) and shallow water fish surveys (covered by this permit application).

b.) To accomplish this activity we would ….
use transect survey methods and timed-swims to survey a random selection of sites at Nihoa for fish, coral, macro invertebrates and benthic habitat.

Surveys would be conducted using groups of 2 or 3 surveyors per team, including trained scientific diver(s) to collect survey data and community member(s) with experience in marine monitoring within their respective community. The teams will: (a) conduct a basic reef fish presence/absence survey, (b) document their observations of near shore ecosystems within PMNM in a way that is analogous to their home community's survey methods and techniques, (c) conduct 5-minute timed swims to quanitfy resource fish following TNC science protocols, (d) collect comprehensive data on fish and benthic communities along 25-m transects following TNC science protocols, and (e) deploy water quality instruments at survey sites for short time periods to map spatial patterns in water quality parameters.

In addition, surveyors would opportunistically collect 25 whole fish specimens of one selected, edible reef fish species for ciguatoxin (CTX) analysis in support of management and to establish a better understanding of CTX levels in fish at select sites within PMNM, including Nihoa. The species to be collected would be determined after the surveys above have been completed, allowing surveyors to select a species that has been documented to be locally abundant. The team would then collect no more than 25 specimens of the selected species for the CTX study.

Upon return to the Main Hawaiian Islands, all data will be entered in a database for analysis by The Nature Conservancy's science team.

c.) This activity would help the Monument by …
providing baseline knowledge of an area of nearshore habitat (0-30 ft. depth) where a data gap currently exists for PMNM. This information would be obtained and shared with Monument managers to improve decision-making for long-term conservation and management of nearshore habitat and resources within PMNM. It will also provide a dataset that can be used to compare resource abundance and distribution within PMNM and the MHI. This activity directly supports MMP Activity MCS-1.1: "Continue to characterize types and spatial distributions of shallow-water marine habitats to inform protection and management efforts" and MMP Activity MCS-1.2: "Continue monitoring of shallow-water coral reef ecosystems to protect ecological integrity."

**Other information or background**:
Working with communities is the cornerstone of The Nature Conservancy's Hawai‘i Marine Program. TNC uses a community-based approach to marine research and management,

recognizing that the long-term success of efforts to protect Hawai‘i's nearshore environment is dependent upon the support of local communities living in and around the resources.

TNC seeks to strenghten local capacity by empowering communities that already have a deep understanding of their area’s marine resources and providing support with the management tools needed to care for them. In the process, TNC also partners with these on-the-ground and in-the-water stewards to build public support for increased marine protection, improved resource stewardship, and stronger enforcement statewide.

TNC's works with local communities and conservation partners in four key areas:

- Science and conservation planning to monitor the health and abundance of Hawaii’s marine resources, identify major threats and develop strategies for protection.
- Community-based marine conservation to build local community capacity for marine stewardship.
- Development of new innovative technologies to control the spread of harmful invasive marine species.
- A Marine Conservation Fellowship Program to build the next generation of marine resource stewards for Hawai‘i.

## Section A - Applicant Information

### 1. Applicant

Name (last, first, middle initial): Conklin, Eric J.

Title: Marine Science Director, The Nature Conservancy

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

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

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

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

**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):**
18 individuals would serve as crew and passengers aboard the Makani Olu for purposes of various research and Native Hawaiian practices at Nihoa. Crew member names are TBD and will be listed on the compliance information sheet.

## 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 | | | |
| ☐ 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 |
| ☐ Other | | | |

☐ Remaining ashore on any island or atoll (with the exception of Midway & Kure Atolls and Field Camp staff on other islands/atolls) between sunset and sunrise.

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

Location Description:

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

☒ Removing, moving, taking, harvesting, possessing, injuring, disturbing, or damaging any living or nonliving Monument resource

☐ Drilling into, dredging, or otherwise altering the submerged lands other than by anchoring a vessel; or constructing, placing, or abandoning any structure, material, or other matter on the submerged lands

☐ Anchoring a vessel

☐ Deserting a vessel aground, at anchor, or adrift

☒ Discharging or depositing any material or matter into the Monument

☒ Touching coral, living or dead

☒ Possessing fishing gear except when stowed and not available for immediate use during passage without interruption through the Monument

☐ Attracting any living Monument resource

☐ Sustenance fishing (Federal waters only, outside of Special Preservation Areas, Ecological Reserves and Special Management Areas)

☐ Subsistence fishing (State waters only)

☒ Swimming, snorkeling, or closed or open circuit SCUBA diving within any Special Preservation Area or Midway Atoll Special Management Area

**6. Purpose/Need/Scope** ***State purpose of proposed activities:***
Most characterization, research, and monitoring in tropical coral reef ecosystems has occurred at comfortable SCUBA-diving depths between 30 to 100 feet. There are significant data gaps at depths greater or shallower than those accessed for SCUBA-based research. These under-surveyed zones include mesophotic (deep) reefs and nearshore subtidal and intertidal habitats. These shallow subtital and intertidal habitats are of great cultural importance because of their accessibility for harvesting and related activities; however, scientific characterization of these habitats has lagged due to a number of challenges, including the difficulty of working along rugose rocky shorelines compunded with the turbulence caused by swells and breaking waves.

Maintaining healthy breeding populations (seed sources) of reef fish is critical for the sustainability and health of coral reef systems. Identified and pressing information needs include: (1) a basic qualitative characterization of species presence/absence to document biodiversity, and (2) repeated quantitative surveys to look for changes in abundance and diversity over time. In an attempt to fill the existing data gap, the Office of Hawaiian Affairs will support The Nature Conservancy-led team to conduct nearshore surveys (0-30 ft. depth) at Nihoa, as described above. Future partnership will be important to ensure the continuation of survey efforts, and it is possible that future efforts could be conducted as part of an intertidal monitoring cruise that typically occurs annually in PMNM.

Information obtained would be shared with Monument managers to improve decision-making for long-term conservation and management of nearshore habitat and resources within PMNM, as well as provide a dataset that can be used to compare resource abundance and distribution within PMNM and the MHIs.

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

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?
Participants aboard the Makani Olu will offer culturally and biologically appropriate ho‘okupu in the Monument, after consultation with Monument management, such as oli (chant), wai (water), pa'akai (salt), and pule (prayer).

Surveys would be conducted in a manner that minimizes the interaction between fish and other marine species that inhabit the nearshore marine habitat. Surveys would not occur in the vicinity of any known Native Hawaiian or western archeological sites within PMNM and thus are unlikely to impact any known historic resource or properties. If potential new archeological sites are encountered, GPS coordinates will be taken and provided to Monument staff.

The Nature Conservancy is accustomed to working with communities throughout Hawaii, in particular Native Hawaiian communities, when conducting nearshore marine surveys. As such, staff offer the utmost respect to Native Hawaiian culture and cultural resources, acknowledging that natural and cultural resources are often one-in-the-same and such resources and their value (albeit cultural, historic, and/or natural) are to be respected, preserved, and perpetuated.

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 activities will provide critical data that will enhance the Monument managers' ability to continue to characterize and understand nearshore coral reef ecysostems within PMNM, as well as how it compares to the MHIs. At a minimum, these activities directly supports MMP Activity MCS-1.1: Continue to characterize types and spatial distributions of shallow-water marine habitats to inform protection and management efforts and MMP Activity MCS-1.2: Continue monitoring of shallow-water coral reef ecosystems to protect ecological integrity.

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.
Because of the existing data-gap in shallow-water fish surveys within PMNM, the only way to obtain such a dataset is to conduct surveys targeting the shallow-water area of 0-30 ft. depth.

d. How does the end value of the activity outweigh its adverse impacts on Monument cultural, natural and historic resources, qualities, and ecological integrity?
Such shallow-water surveys are necessary to establish a baseline abundance of reef fish and begin to understand the natural spatial and temporal variability that characterizes the shallow water ecosystem of the Monument. This data will also aid in establishing a baseline against which changes due to effects of large scale, long-term (as well as short-term) natural and anthropogentic impacts can be compared.

e. Explain how the duration of the activity is no longer than necessary to achieve its stated purpose.
The proposed research activities would occur at Nihoa only and be conducted for a 10-day period, ensuring adequate time to conduct as much of the nearshore surveys per day and gather as complete a dataset as possible. The number of surveys per day will be dependent on ocean conditions, survey method, and boat support and balanced with activities on land.

f. Provide information demonstrating that you are qualified to conduct and complete the activity and mitigate any potential impacts resulting from its conduct.
The Nature Conservancy will provide oversight and management of the research activities under this permit. TNC has 35 years of experience working collaboratively in Hawaii with federal, state, and community partners on research activities, science-based resource management, and on-the-ground conservation. In 2000, we established our marine program to help the State and local communities manage and restore coastal areas, coral reefs and nearshore fisheries in the main Hawaiian Islands. The TNC Hawai‘i Marine Program is now working with 19 coastal communities on six islands to restore healthy reef habitats and ensure an abundance of marine life in nearshore waters. The program has successfully managed dozens of NOAA and other government grants, including a $3.2 million American Recovery and Reinvestment Act of 2009 “Stimulus” grant, a $1.3 million Habitat Blueprint Grant to build effective partnerships for coral reef management and restoration in West Hawai‘i, and a six-year collaborative agreement with NOAA’s Coral Reef Conservation Program for priority projects on Maui, Moloka‘i, Lana‘i and Hawai‘i Island.

TNC's Hawaii marine science team has been instrumental in working with partners to 1) design and implement biological monitoring and original science projects to address marine conservation needs; 2) implement science-based conservation measures and evaluate their effectiveness over time; 3) provide scientific assessments of existing and proposed marine resource policy; 4) develop the first Indo-Pacific partnership to understand and address the effects of bleaching and coral disease on a regional scale; and 5) implement the first certified scientific diving program for The Nature Conservancy nationwide. Selected members from our 7-person team will design, lead and help conduct the surveys described in this proposal, and will provide the data entry and analysis.

Applicant and Principle Investigator have been with The Nature Conservancy for a combined 18 years, participating and leading the statewide marine science and monitoring activities described above (see attached CV's).

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 costs of the vessel and other related costs for the trip to Nihoa will be funded entirely by OHA. TNC funds through a grant from NOAA will cover staff time to prepare for the trip and collect and analyze the data.

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.
TNC-led survey teams will follow all Monument BMPs, protocols, and policies while operating in PMNM.
(for methods and procedures see "Question 8")

i. Has your vessel been outfitted with a mobile transceiver unit approved by OLE and complies with the requirements of Presidential Proclamation 8031?
The Makani Olu will be outfitted with a working NOAA-OLE type approved VMS for the trip. OHA and ONMS are working together to ensure an ONMS-owned VMS unit is installed and operational aboard the Makani Olu prior to departure.

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 the proposed activities inappropriate.

**8. Procedures/Methods:**
TNC proposes to use a suite of methods to accomplish the goals of the proposed research. All methods will be site-based, with the specific sites surveyed dependent on wind and sea conditions, as well as logistics and coordination with other research projects sharing resources on Nihoa. Sites will be accessed by small boat, which will deliver divers or snorkelers to the desired location, and stand by on-site to assist them as needed, and transport them to the next survey location upon completion of data collection. Locations will be selected using GIS maps and bathymetry of Nihoa, and focused primarily in the 5-15ft depth range.

At survey sites, the monitoring team will collect data using the following protocols:

Timed Fish Swims
Five-minute timed swims are used by TNC and DAR biologists in the MHI to quantify the abundance or larger “target” fish (i.e., those species prized by fishers). For the timed swims, two fish surveyors swim approximately 5 m apart staying at constant depth while visually censusing all target fish larger than 15 cm within or passing through a 5 m wide column (centered on the surveyor) extending from the ocean bottom to the surface. Divers communicate with each other to ensure that each fish is censused by only one surveyor (i.e., fish are not double counted). All fish are identified to the lowest possible taxonomic level and sized into 5 cm bins. These timed swims typically cover between 100 and 150 m, with the actual distance calculated from tracks recorded on a GPS unit towed behind the surveyors. A third surveyor follows behind the fish surveyor taking photos of the reef bottom to characterize the benthic habitat within the survey area. Data management and photo analysis is described below.

25-m Transect Surveys

Twenty-five meter transects surveys are used by TNC and University of Hawai‘i researchers to quantify overall fish and benthic assemblages in the MHI. For these transects, surveyors loop one end of a 25-m transect line around rock or dead coral on the benthos, and then spool out the transect line while slowly moving along a depth contour conducting a fish survey. All fish (i.e., not only larger target fish, as above) within or passing through a 5 m wide belt along the 25 m transect are identified to species and sized into 5 cm bins (i.e., 0-5 cm, >5-10 cm, >10-15 cm, etc.). Divers move slowly along the transects, taking between 10 and 15 minutes to complete each belt survey.

Following the fish surveys, benthic photographs are collected at 1-m intervals along the 25-m transect line. Photographs are taken using a high-resolution digital camera in an underwater housing mounted on a 0.8-m long monopod, resulting in images that covered approximately 0.8 x 0.6 m of the bottom. A 5-cm scale bar marked in 1-cm increments was included in all photographs.

Additionally, an index of rugosity will be calculated along the first 10 m of the 25-m transect by dividing the length of brass chain laid directly along the bottom by the 10 m transect length (McCormick 1994). For this index, a value of one represents a flat surface with no three dimensional relief, and increasing values represent more topographically complex substratum.

Data on coral health may also be collected by one surveyor. The coral health surveyor will follow along 25-m the transect line, deploying a .25m2 quadrat regularly along the transect line, recording information on the species, size, and health of all corals seen within the quadrat.

Water Quality testing
While surveyors are in the water conducting transect surveys, a YSI water quality sonde will be deployed from the small-boat support vessel. The sonde will be attached to a small hand reel, and the boat operator will slowly lower the sonde into the water, dropping it down in the water column until it is approximately 1m off of the bottom. The sonde will then be slowly reeled back into the boat, and the site and time of the sampling recorded on a data sheet. This full deployment and retrieval process is expected to take no more than 2 minutes, during which time the sonde continually records data on water temperature, salinity, pH, depth, and turbidity.

Community fish monitoring
The monitoring protocol used by TNC Hawaii’s community volunteers is designed to encourage participation and obtain useful information.

a. Abundance or biomass survey.The start point of each transect, located using a Global Positioning System (GPS) unit is identified by a fully trained volunteer upon arrival at the site.

Using an appropriate underwater landmark as a center point, each volunteer spaces himself 2.5 meters on either side of the line, 5 meters from one another. One volunteer records the time while the other takes a predetermined compass bearing and confirms a landmark to guide the team.

Orienting themselves in the direction of the compass heading specific for that transect they begin swimming side by side along that bearing until they reach a predetermined GPS end point (approximately 100m). The surveyors will swim at a speed of roughly 10 meters per minute. Each surveyor records size and abundance or just abundance (depending on community members training and comfort level) of all fish on a swath of reef of 5 meters wide (2.5 meters to either side of themselves) while maintaining a consistent distance of 5 meters from each other. Once the endpoint is reached the time keeper signals the other volunteer to stop counting.

b. Presence/ absence survey (P/A). P/A Surveys will be conducted in a predetermined area and community members will record if they see specific fish using a survey form that includes color pictures of multiple preselected fish.

Data management
At the end of each day, data sheets collected using these methods will be reviewed and evaluated for completeness and accuracy. Necessary changes to in-field approaches will be made to ensure data is complete and accurate. Surveys will be considered successful if all data collected are complete and accurately (<5% error) entered into the appropriate TNC databases. Fish lengths recorded during surveys will be converted to weights using known length-weight conversions, and fish abundance and biomass by species can be determined for the analysis of the fish assemblage documented at each survey site.

Each photograph taken of the benthos will digitally enhanced and then analyzed using the Coral Point Count program with Excel extension (CPCe) developed by the National Coral Reef Institute (Kohler and Gill 2006) to determine the percent of the reef bottom covered by coral, algae, and other reef bottom categories.

Water quality data will be downloaded from the sonde every evening, and linked in a database to the GPS location of each survey. A GS analysis can then map the spatial variation in water quality parameters observed over the course of the surveys.community monitoring protocols, in development

Ciguatera study

Surveyors would opportunistically collect 25 whole fish specimens (measuring > minimum size at maturity) of one selected edible reef fish species for ciguatoxin (CTX) analysis in support of management and to establish a better understanding of CTX levels in fish at select sites within PMNM, including Nihoa. A list of the edible reef fish species of interest can be found in the answer to "Question 9a". The species to be collected would be determined after the surveys above have been completed, allowing surveyors to select one of these species that has been documented to be locally abundant. The team would collect no more than 25 specimens of the selected species for the CTX study. All fish will be collected using 3 prong spears.

Additional procedures and methods for the ciguatera study are provided as an attachment to this permit application. (Attachment 1)

**NOTE: If land or marine archeological activities are involved, contact the Monument Permit Coordinator at the address on the general application form before proceeding, as a customized application will be needed. For more information, contact the Monument office on the first page of this application.**

**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:
Hawaiian chub or Pacific chub
Convict tang
Goldring surgeonfish
Brick soldierfish or Bigscale soldierfish
Blueline snapper

Scientific name:
Kyphosus hawaiiensis or Kyphosus sandwicensis
Acanthurus triostegus
Ctenochaetus strigosus
Myripristis amaena or Myripristis berndti
Lutjanus kasmira

# & size of specimens:
No more than 25 specimens of 1 specific species, which will be determined after surveys are conducted and fish populations are assessed, ensuring that the species selected is locally abundant and will not be impacted by this limited collection. The size of fish taken will be determined by the species minimum size at maturity.

Collection location:
Nihoa

☒ Whole Organism ☐ Partial Organism

**9b. What will be done with the specimens after the project has ended?**
All specimen parts will be identified and analyzed. The whole specimen will not be useful once all analysis is complete, so all pieces will be appropriately excessed and returned to the ocean.

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

• General site/location for collections:
Nihoa

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

• Is there an outfall? ☐ Yes ☐ No
NA

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

• Will organisms be released?
NA

**10. If applicable, how will the collected samples or specimens be transported out of the Monument?**
Sealed in ziploc bags frozen or appropriately preserved and transported via Makani Olu to Honolulu and stored at the IRC.

**11. Describe collaborative activities to share samples, reduce duplicative sampling, or duplicative research:**
TNC is proposing to partner with PMNM/Office of National Marine Sanctuaries and OHA to conduct a ciguatera study at Nihoa. Initial data for this study was collected previously, and the data collected under this permit will enhance that data set. For this study, divers will collect a small number of one species of reef fish for laboratory anlysis of the level of ciguatoxins present in select reef fish within PMNM, focusing on islands at which higher levels of consumption may occur, such as Nihoa.
Fish for the ciguatera test will be received by Dr. Alison Robertson
-University of South Alabama & Dauphin Island Sea Lab
[redacted]

**12a. List all specialized gear and materials to be used in this activity:**
For the nearshore surveys: GPS, snorkel gear, SCUBA gear, dive float with flag and reel, 25m transect reels, slates, data sheets, maps, time pieces, dive belts, dive weights, pop floats, digital camera and PVC monopd, EPIRB, O2 kit, compass, VHF, air analyzer, YSI water quality sonde

For the ciguatera study: Three-pronged spear, snorkel gear, dive float with flag and reel

**12b. List all Hazardous Materials you propose to take to and use within the Monument:**

NA

**13. Describe any fixed installations and instrumentation proposed to be set in the Monument:**
NA

**14. Provide a time line for sample analysis, data analysis, write-up and publication of information:**
For the nearshore surveys: Data will be recorded on data sheets, which will be entered into TNC's database upon return to Honolulu. TNC marine science team will analyze the data and produce a written report by December 31, 2016.

For the ciguatera study: Upon return to Honolulu, fish samples will be shipped directly to a collaborator who will be conduct the analysis to test the presence of ciguatoxins in each fish sample.

**15. List all Applicants' publications directly related to the proposed project:**
The Nature Conservancy's marine scientists have published numerous journal articles and technical reports documenting the condition of marine resources in Hawaii and the Pacific. A partial list of these publications, including those most relevant to TNC's expertise in nearshore marine surveys, is as follows.

Peer-reviewed Publications:

DeMartini, E., P. Jokiel, J. Beets, Y. Stender, C. Storlazzi, D. Minton, E. Conklin. 2013. Terrigenous sediment impact on coral recruitment and growth affects the use of coral habitat by recruit parrotfishes (F. Scaridae). Journal of Coastal Conservation 10.1007/s11852-013-0247-2

Williams, G.J. J.E. Smith, E.J Conklin, J.M. Gove, E. Sala, S.A. Sandin .2013. Benthic communities at two remote Pacific coral reefs: effects of reef habitat, depth, and wave energy gradients on spatial patterns. PeerJ 1:e81 http://dx.doi.org/10.7717/peerj.81

Kittinger, J. N, T. M. Bambico, E. W. Glazier, M.Mejia, N.Kalei, B.Wong, D.Minton, A.Miller. 2013. Restoring Ecosystems, Restoring Community: Socioeconomic and Cultural Dimensions of a Community-Based Coral Reef Restoration Project. Regional Environmental Change.

Conklin, E.J. and J.E. Smith. 2005. Abundance and spread of the invasive red algae, Kappaphycus spp., in Kane'ohe Bay, Hawai'i and an experimental assessment of management options. Biological Invasions 7: 1029-1039.

Technical Publications:

Minton, D., E. Conklin, R. Most, and C. Wiggans. 2014. Baseline Surveys of Marine Resources Kaʻūpūlehu, Hawaiʻi 2009-2011. TNC Technical Report. 38 pp.

Minton, D., E. Conklin, R. Amimoto, and K. Pollock. 2014. Baseline Surveys of Marine Resources at Kīpahulu, Maui 2010 and 2013. TNC Technical Report. 27 pp.

Minton, D., E. Conklin, R. Most, K. Pollock, and Z. Caldwell. 2014. Baseline Surveys of Marine Resources Mū‘olea, Maui 2009-2011. TNC Technical Report. 42 pp.

Minton D., E. Conklin, K. Pollock. 2013. 2012 Baseline Surveys of Marine Resource: Polanui, Maui. TNC Technical Report. 30 pp.

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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.

_____ _____

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