



U.S. DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL MARINE FISHERIES SERVICE  
Pacific Islands Fisheries Science Center  
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### Project Instructions


**Date Submitted:** April 23, 2018

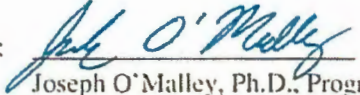
**Platform:** NOAA Ship *Oscar Elton Sette*

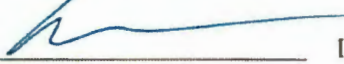
**Project Number:** SE-18-02 (OMAO)

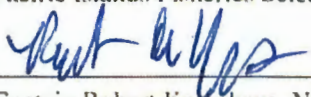
**Project Title:** Mariana Archipelago Life-History Research Project

**Project Dates:** May 15, 2018 to June 24, 2018 (HST)

**Prepared by:**  Dated: 5/8/2018  
Brett Taylor, Ph.D.  
Chief Scientist  
Pacific Islands Fisheries Science Center; Life History Program

**Approved by:**  Dated: 05/08/2018  
Joseph O'Malley, Ph.D., Program Lead  
Pacific Islands Fisheries Science Center, Life History Program

**Approved by:** <sup>For</sup>  Dated: 5/7/2018  
Michael Seki, Ph.D., Director  
Pacific Islands Fisheries Science Center

**Approved by:**  Dated: 9 MAY 2018  
Captain Robert Kamphaus, NOAA  
Commanding Officer  
Marine Operations Center – Pacific Islands

## I. Overview

### A. Brief Summary and Project Period

NOAA Ship *Oscar Elton Sette* will be engaged as support for a Pacific Islands Fisheries Science Center (PIFSC), National Marine Fisheries Service (NMFS), project from 31 May through 24 June, 2018, for a total of 25 days at sea (DAS).

The focus of this mission is to conduct fishery-independent life-history research on the biological dynamics of harvested deepwater and shallow reef-associated fishes across the Mariana Archipelago to better inform stock assessment models.

During this mission, deepwater line fishing (with hydraulic reels) and spearfishing (while skin diving) will be used to collect multiple fish species for life-history research. For all species collected, life-history traits of value to fisheries management will subsequently be derived in the laboratory at PIFSC. These collections will be done using daily small-boat deployments and hydraulic reels from the NOAA Ship *Oscar Elton Sette*. Water samples for environmental DNA (eDNA) analysis of biodiversity patterns and conductivity-temperature-depth (CTD) measurements will be made at each island visited. Work will be conducted at 8 islands in total.

### B. Days at Sea (DAS)

Of the 25 DAS scheduled for Leg 2 of this project, 25 DAS are funded by an OMAO allocation. This project is estimated to exhibit a High Operational Tempo.

### C. Operating Area (include optional map/figure showing op area)

The area of scientific operations encompasses waters around the Commonwealth of the Northern Mariana Islands (CNMI). Specifically, the mission will conduct scientific sampling at Farallon de Pajaros (Uracas), Maug, Asuncion, Pagan, Guguan, Sarigan, Anatahan, and Farallon de Medinilla.

In general, for most project objectives, the lowest site resolution is at the island level, therefore sampling for all projects will be stratified around each island as necessary depending on weather conditions and success of capture for targeted species.

### D. Summary of Objectives

#### *Leg 1*

Recover and deploy a High-Frequency Acoustic Recording Package (HARP) at Wake Island in addition to deploying three deep Argo floats during the transit from Honolulu to

Saipan.

*Leg 2*

The research program will collect biological data from numerous species, as well as from near-reef and pelagic water samples to measure life-history rates, life-history patterns across archipelagic gradients, biodiversity of harvested species, and Chlorophyll *a* as a measure of island productivity.

The objectives of the project are (in order of priority):

1. Deploy spearfishers from *Oscar Elton Sette*-based PIFSC small boats to collect 6 reef-associated harvested species for life-history research along the Mariana Archipelago. Demographic rates can be directly used in future stock assessments, but the collection design also informs about patterns across environmental (sea surface temperature associated with latitude) and anthropogenic (human fishing pressure in 5 southern-most islands) influence. Four non-harvested species will also be collected to calibrate patterns associated with the anthropogenic gradient. Otoliths, gonads, tissue samples, and gut contents will be extracted and stored from each specimen for subsequent life-history and genetic analysis.
2. Conduct deepwater line fishing from *Oscar Elton Sette*-based PIFSC SAFE Boat and from the *Oscar Elton Sette* to collect deepwater grouper and eteline snapper species, as well as mesophotic-depth lutjanid-lethrinid-epinephelid complex species, for life-history research. Otoliths, gonads, tissue samples, and gut contents will be extracted and stored from each specimen for subsequent life-history and genetic analysis.
3. Assess near-island gradients of phytoplankton biomass by collecting *in situ* information on oceanographic conditions along longitudinal gradients from each island visited. A series of nearshore-offshore conductivity-salinity-depth (CTD) transects to the east and west of each island will be conducted nightly from the *Oscar Elton Sette*. Water samples from a subset of CTD locations will provide Chlorophyll *a* measurements. These oceanographic data can provide context for the inter-island differences in life-history traits of fishes of research interest.
4. Collect near-reef water samples (n = 2-3 sites) from an *Oscar Elton Sette*-based small boat at each island visited for subsequent environmental DNA (eDNA) analysis to assess potential biodiversity gradients of harvested species along the archipelago and to test the technique against *in situ* diver fish survey biodiversity measures from previous PIFSC research projects.

E. Participating Institutions

- NOAA Pacific Islands Fisheries Science Center
  - Fisheries Research and Monitoring Division (FRMD)
  - Science Operations Division (SOD)

- Ecosystem Sciences Division (ESD)
  - Joint Institute for Marine and Atmospheric Research (JIMAR)
  - CNMI Division of Fish and Wildlife (DFW)
  - King Abdullah University of Science and Technology (KAUST)
  - Australian Museum
  - Micronesian Environmental Services (MES)
  - University of Guam (UOG)

F. Personnel/Science Party: name, title, gender, affiliation, and nationality

Name (Last, First)	Title	Date Aboard	Date Disembark	Gender	Affiliation	Nationality
Berumen, Michael	Professor	6/13/18	6/24/18	M	KAUST	USA
Buniag, Francis	Fisheries Biologist	5/31/18	6/13/18	M	DFW	USA
Camacho, Greg	Fisheries Biologist	5/31/18	6/23/18	M	DFW	USA
Coker, Darren	Scientist	5/31/18	6/13/18	M	KAUST	New Zealand
Cruz, Eric	Natural Resource Specialist	6/13/18	6/24/18	M	NOAA/SOD	USA
DelaCruz, Carl	Volunteer	6/13/18	6/24/18	M	UOG	USA
DiBattista, Joseph	Scientist	5/31/18	6/24/18	M	Australian Museum	Canada
Dunn, William (Trey)	Fisheries Biologist	5/31/18	6/23/18	M	DFW	USA
Flores, Tony	Cooperating Fisherman	5/31/18	6/23/18	M	MES	USA
Gove, Jamison	Oceanographer	5/31/18	6/13/18	M	NOAA/ESD	USA
Ha, Jennifer	Student	5/31/18	6/24/18	F	UOG	USA
Leon Guerrero, Keena	Fisheries Biologist	5/31/18	6/13/18	F	DFW	USA
Martinez, Jude	Volunteer	5/31/18	6/24/18	M	UOG	USA
Nadon, Marc	Scientist	5/31/18	6/13/18	M	JIMAR/FRM D	Canada
Nichols, Ryan	Fisheries Biologist	5/31/18	6/24/18	M	NOAA/FRM D	USA
Norris, Erik	Coxswain	5/31/18	6/24/18	M	JIMAR/SOD	USA
Ossolinski, Justin	Operations Lead / Coxswain	5/31/18	6/24/18	M	JIMAR/SOD	USA
Pangelinan, Vincent	Volunteer	6/13/18	6/24/18	M	NOAA Contractor	USA
Reed, Erin	Data Manager	5/31/18	6/24/18	F	JIMAR/FRM D	USA
Sinclair-Taylor, Tane	Marine Research Technician	5/31/18	6/24/18	M	KAUST	Australia

Steffen, Elizabeth	Float research coordinator	5/15/18	5/28/18	F	JIMAR/PME L	USA
Taylor, Brett	Chief Scientist	5/31/18	6/24/18	M	JIMAR/FRM D	USA
Tenorio, Michael	Fisheries Biologist	6/13/18	6/23/18	M	DFW	USA
Trianni, Michael	Natural Resource Specialist	5/31/18	6/13/18	M	NOAA/SOD	USA

G. Administrative

1. Points of Contacts:

Chief Scientist:  
 Brett Taylor  
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 808 725 5535 (Office)

Ship Operations Officer:  
 LT Aaron Maggied  
[OPS.Sette@noaa.gov](mailto:OPS.Sette@noaa.gov)  
 NOAA Ship *Oscar Elton Sette*  
 1897 Ranger Loop, Building 184, Honolulu, HI 96818  
 808 725 5791 (Office)

2. Diplomatic Clearances

None Required.

3. Licenses and Permits

This project will be conducted under the Scientific Research Permit (U.S.) issued by the CNMI Division of Fish and Wildlife (U.S. agency) applied for on 02/08/2018 to Brett Taylor.

**II. Operations**

The Chief Scientist is responsible for ensuring the scientific staff are trained in planned

operations and are knowledgeable of project objectives and priorities. The Commanding Officer is responsible for ensuring all operations conform to the ship's accepted practices and procedures.

1. Project Itinerary:

Weather, equipment failures, and scheduling problems are unpredictable. As such, the following planned 'ideal' itinerary should be considered as only as a guide to how the Chief Scientist expects the surveys and collections to progress. Operations may be altered as appropriate based on weather, sea conditions, or the progress of the survey itself. Some adjustment is highly anticipated. Ship transit estimates to and from the survey areas have been estimated based on a ship speed of 9 knots.

Daily overview: Upon overnight arrival at any island, a routine morning operations meeting will be held on the bridge between the Command and the Chief Scientist/Operations Lead. A standard day of operations will consist of deepwater line fishing from PIFSC 19' SAFE boat, and spearfishing from two Small Boats (PIFSC 19' inflatable Zodiac Mark V and SE-4), small boat-based water sampling from an inflatable small boat (SE-2; water sampling expected for only one day at each island), deepwater line fishing from three hydraulic reels from the *Oscar Elton Sette*, and nightly CTD deployments from the *Oscar Elton Sette*. Small Boat Safety Meeting (SBSM) to be conducted at 0730 each morning. After the SBSM, each small boat will be launched pre-loaded with all necessary sampling and safety gear, the coxswain, and one scientific crewmember. The remaining scientific complement of each small boat will embark via Jacob's Ladder. Ideally, the small boats will be launched as close as possible to their target sampling locations. After each full day of daytime operations, small boat recoveries aboard *Oscar Elton Sette* are anticipated to be completed by 1700. Appendix 1 has a map of projected routes and Appendix 2 provides a matrix of transit times and travel distances among all Mariana Islands.

8-11 MAY      **Fuel delivery:** Fuel to be delivered and pumped into hip tanks and drums on shore for subsequent loading onto ship. Load full hip tanks, fuel drums, and any final gear.

**SE-18-02**

*Leg 1*

14 MAY      Embark Elizabeth Steffen (no other scientific party aboard), **depart Ford Island** for transit to Saipan, begin Leg 1. Deploy first Argo Float.  
24 MAY      Recovery and deployment of HARP at Wake Island. Deploy second and third Argo floats  
28 MAY      **Arrive Port of Saipan**, complete Leg 1.

*Leg 2*

- 31 MAY-1 JUN **Depart Saipan Harbor for Uracas:** Embark full scientific complement and depart Port of Saipan for Uracas (preferably no later than 0900 on 31 May). Begin Leg 2. Conduct Welcome Aboard Brief, safety drills, operational planning and equipment preparations throughout the transit. Arrive at Uracas at 2000 on 1 June.
- 2-4 JUN **Uracas:** Commence daily spearfishing and deepwater line fishing operations from small boats, as well as water sampling for eDNA (on 2 June only, weather dependent). After launching small boats, *Oscar Elton Sette* commences fish sampling from hydraulic reels. Fish processing occurs throughout the day and continues after dinner. At 1800 commence CTD transects. On 5 June, depart Uracas at 0000 and arrive at Maug Islands at 0400.
- 5-7 JUN **Maug:** Commence daily spearfishing and deepwater line fishing operations from small boats, as well as water sampling for eDNA on (5 June only). After launching small boats, *Oscar Elton Sette* commences fish sampling from hydraulic reels. Fish processing occurs throughout the day and continues after dinner. At 1800 commence CTD transects. On 8 June, depart Maug Islands at 0000 and arrive at Asuncion at 0300.
- 8-10 JUN **Asuncion:** Commence daily spearfishing and deepwater line fishing operations from small boats, as well as water sampling for eDNA (on 8 June only). After launching small boats, *Oscar Elton Sette* commences fish sampling from hydraulic reels. Fish processing occurs throughout the day and continues after dinner. At 1800 commence CTD transects. On 10 June, depart Asuncion at 1800 and arrive at Pagan at 0500 (11 June).
- 11 JUN **Pagan:** Commence daily spearfishing and deepwater line fishing operations from small boats, as well as water sampling for eDNA. After launching small boats, *Oscar Elton Sette* commences fish sampling from hydraulic reels. Fish processing occurs throughout the day and continues after dinner. Depart Pagan at 1800 and arrive at Anatahan at 0600 (12 June).
- 12 JUN **Anatahan:** Commence daily spearfishing and deepwater line fishing operations from small boats, as well as water sampling for eDNA. After launching small boats, *Oscar Elton Sette* commences fish sampling from hydraulic reels. Fish processing occurs throughout the day and continues after dinner. At 1800 commence CTD transects. Depart Anatahan at 2300 and arrive at Saipan at 0700 (13 June).
- 13 JUN **Saipan:** Arrive at Saipan at 0700. Commence swapping of personnel. *Oscar Elton Sette* will stay outside Port of Saipan and personnel swap will be conducted by small boat. Anticipated departure for Guguan at 1200. Welcome aboard and safety briefings for new personnel during

transit. Arrive at Guguan at 0500 (14 June).  
Disembarking: Buniag, Coker, Gove, Leon Guerrero, Nadon, Trianni  
Embarking: Berumen, Cruz, DelaCruz, Pangelinan, Tenorio

- 14 JUN **Guguan:** Commence daily spearfishing and deepwater line fishing operations from small boats, as well as water sampling for eDNA. After launching small boats, *Oscar Elton Sette* commences fish sampling from hydraulic reels. Fish processing occurs throughout the day and continues after dinner. At 1800 commence CTD transects. Depart Guguan at 2300 and arrive at Pagan at 0500 (15 June).
- 15-16 JUN **Pagan:** Commence daily spearfishing and deepwater line fishing operations from small boats, as well as water sampling for eDNA. After launching small boats, *Oscar Elton Sette* commences fish sampling from hydraulic reels. At 1800 commence CTD transects. Depart Pagan at 1800 and arrive at Guguan at 0000 (17 June).
- 17 JUN **Guguan:** Commence daily spearfishing and deepwater line fishing operations from small boats. After launching small boats, *Oscar Elton Sette* commences fish sampling from hydraulic reels. Fish processing occurs throughout the day and continues after dinner. At 1800 commence CTD transects. Depart Guguan at 0000 and arrive at Sarigan at 0500 (18 June).
- 18-19 JUN **Sarigan:** Commence daily spearfishing and deepwater line fishing operations from small boats, as well as water sampling for eDNA. After launching small boats, *Oscar Elton Sette* commences fish sampling from hydraulic reels. Fish processing occurs throughout the day and continues after dinner. At 1800 commence CTD transects. Depart Sarigan at 0000 and arrive at Anatahan at 0300 (20 June).
- 20-21 JUN **Anatahan:** Commence daily spearfishing and deepwater line fishing operations from small boats. After launching small boats, *Oscar Elton Sette* commences fish sampling from hydraulic reels. Fish processing occurs throughout the day and continues after dinner. At 1800 commence CTD transects. Depart Anatahan at 0000 and arrive at Farallon de Medinilla at 0300 (22 June).
- 22 JUN **Farallon de Medinilla:** Two small Boats will be deployed to target deepwater eteline snappers and mesophotic fish assemblages for life-history research. No skin diving operations will take place at FDM. *Oscar Elton Sette* returns to Saipan evening of 22 JUN.
- 23 JUN **Saipan:** Commence daily spearfishing and deepwater line fishing operations from small boats. After launching small boats, *Oscar Elton Sette* commences fish sampling from hydraulic reels. Fish processing occurs throughout the day and continues after dinner. At 1600,



disembark Saipan personnel and offload some equipment. *Oscar Elton Sette* then departs for Guam at 1800, arriving on the 24<sup>th</sup> June 0800.

Disembark: Camacho, Dunn, Flores, Tenorio

24 JUN **Guam:** Half day of spearfishing operations on west coast of Guam, near Apra Harbor. Arrive at Apra Harbor at 1500, disembarking all scientific personnel aboard the ship. Complete Leg 2. **End of project.**

2. Staging and Destaging:

1. Staging: Assistance from the ship personnel for craning aboard large gear and transferring small boat fuel will be necessary. Primary loading is anticipated to occur the second week of May, 2018, before the *Oscar Elton Sette* departs from Ford Island, Pearl Harbor to Saipan. Delivery of small boat fuel for transfer to ship is anticipated to occur 7-11 May. Small boats will be delivered to the ship 7-11 May. The new icemaker will be delivered and installed 7-11 May. Final hand carried items will be delivered while in port in Saipan (29-30 May).
2. Destaging: Hand-carried items and some scientific samples will be off-loaded 24 June while at Guam. Full off-load of all program-provided gear and small boats will begin in coordination with the Command upon return to Pearl Harbor, 08 August.

3. Operations to be Conducted:

The Chief Scientist has the authority to revise or alter the technical portion of the instructions as work progresses, provided that, after consultation with the Commanding Officer, it is ascertained that the proposed changes will not (1) jeopardize the safety of the personnel or the ship, (2) exceed the overall time allotted for the project, (3) result in undue additional expenses, and (4) alter the general intent of the project instructions. In addition, the Chief Scientist must notify the Office of the Director of the Pacific Islands Fisheries Science Center at the earliest opportunity to making: (1) deviations from the general project track or area of operations noted in the project instructions, (2) significant changes or additions of research operations to those specified in the project instructions, or (3) port calls not specifically identified in the project instructions.

High-Frequency Acoustic Recording Packages (HARPs) retrieval and deployment: retrieve one HARP and deploy another fully assembled HARP during Leg 1. The HARP retrieval is located south of Wake Island at 19.222N, 166.695E, deploy at same location. Ship speed, Order of operations: Retrieval must occur during daylight hours. Deployment may occur during day or night.

Ship equipment required: The ship will provide the crane.

Ship personnel requirements: The Deck Department will provide the needed personnel to assist with retrieval and deployment. The HARP to be deployed will be fully assembled with batteries, acoustic release, and weights (no assembly required).

Fishery-independent collections and surveys are an important component of the efforts to improve the data informing current stock assessment models. The focus of this mission is to sample harvested coral-reef and deepwater fishes along the latitudinal gradient of the Mariana Archipelago in order to derive life-history trait values of importance to management and to examine the variability (as well as drivers of variability) of life-history traits along gradients of environmental change and anthropogenic pressure. In complement to the latter objective, fishery-independent samples of several non-harvested reef-associated species will be collected in order to calibrate against the effects of anthropogenic forces. Additionally, water samples will be collected to in the near-reef and pelagic environments at each island to assess (1) biological diversity of harvested species through environmental DNA techniques and (2) coastal productivity through direct measures of Chlorophyll *a* gradients.

During SE-18-02, the mission will sample pre-selected species and water samples at 7 islands (Uracas, Maug, Asuncion, Pagan, Guguan, Sarigan, Anatahan), and also sample deepslope mesophotic species exclusively at Farallon de Medinilla. In order to build a comprehensive data set for analysis of life-history traits and general directional changes in life-history across the environmental gradient, the mission will operate at the island-scale, targeting approximately 50 specimens per pre-selected species at each island. This scientific collection effort is complemented by previous collections during SE-14-04 to the same 7 islands (not including FDM) in the CNMI.

1. Station operations
  - a) Conduct deep-slope handline bio-sampling operations from the *Oscar Elton Sette* and one PIFSC SAFE Boat to obtain scientific specimens of eteline snappers, epinepheline groupers, and various species of the commercially harvested mesophotic complex for life-history, trophic, and genetic analysis (see Appendix 3).
  - b) Conduct skin-dive bio-sampling operations with pole spear or speargun to obtain pre-selected reef-associated fish specimens from PIFSC Zodiac, SE-4, or small inflatable boats for life-history, trophic, and genetic analysis (see Appendix 3).
  - c) Collect water samples (1 liter) from 8-12 sites at each island to derive measures of biodiversity from environmental DNA techniques. Water samples will be collected by skin-divers from a small inflatable boat, kept on ice until returned to the *Oscar Elton Sette*, and then filtered for DNA as soon as possible (see Appendix 3).

The conduct of the above (a) and (b) operations will require the use of three NOAA small boats daily while on station. The conduct of (c) operation will require the use of one NOAA small boat during only one day at each island. Small boat operations will use SE-2, SE-4, and two PIFSC small boats (19' SAFE Boat and 19' Zodiac Mark V); operations will be conducted when weather permits and in adhering to GAR assessments. Each day of deep-slope handline bio-sampling operations will be preceded (0500-0700) with a bathymetric survey of the 50-400 m depth zone to identify likely fish habitat to be

targeted. Following the bathymetric survey work, a daily meeting at 0730 will be held to discuss that day's small boat operations for the 3-4 NOAA small boats and to assess the conditions likely to be encountered on the water that day. Small boat deployments will be scheduled to start immediately following the daily meeting while at Mariana Trench Marine National Monument and CNMI island locations and recoveries to the Sette beginning at 1600 daily.

- d) Conduct a series of shipboard CTD casts along nearshore-offshore transects adjacent to each island visited during the project.

For night operations, CTD casts will be commenced at approximately 1800. The CTD will be equipped with both a WetLab profiling and Seapoint flow-through fluorometer, redundant dissolved oxygen sensors, and a 12-Niskin water bottle carousel rosette sampler. Water samples will be collected for nutrients, Chlorophyll *a*, and chloropigments. All chloropigment samples including discrete Chlorophyll *a* samples will be filtered at sea. Chlorophyll *a* samples will be analyzed at-sea post-filtration while chloropigments and nutrient samples will be stored in the ship's walk-in scientific freezer. CTD casts will go down to a maximum of 1000 meters depth. Current velocity will be continuously monitored with an ADCP, while surface temperature, salinity, and Chlorophyll *a* will be monitored with a hull-mounted thermosalinograph and flow-through fluorometer throughout the duration of the project. The availability of the Survey Tech is requested for CTD operations, to participate in the collection and filtration of water samples for chlorophyll-a analysis.

#### D. Dive Plan

All dives are to be conducted in accordance with the requirements and regulations of the NOAA Diving Program (<http://www.ndc.noaa.gov/dr.html>) and require the approval of the ship's Commanding Officer.

Diving using compressed air is not planned for this project. Free-diving / skin-diving during spearfishing activities will be conducted at each island surveyed during this project, and only individuals with prior clearance from an appropriate NOAA diving authority will participate in any in-water operations.

#### E. Applicable Restrictions

Conditions which preclude normal operations: Poor weather and sea conditions, equipment failure, safety concerns, heavy local vessel traffic, and unforeseen circumstances may alter or prohibit operations as planned. At these times, the Chief Scientist, Logistics Lead, and Commanding Officer will determine the appropriate plan of action.

NMFS employees and collaborating agencies are not exempt from the requirements of the Marine

Mammal Protection Act (MMPA) of the Endangered Species Act (ESA). PIFSC has developed mitigation measures for its fisheries and ecosystem research projects to avoid take and to comply with the Lecky, Murawski, and Merrick guidance. Copies of these documents are available at <https://sites.google.com/a/noaa.gov/pifsc-science-operations/nepa-permits/protected-species-mitigation-measures> and on the ship's bridge.

1. "Take" of Protected Species

- a. Under the MMPA and ESA, it is unlawful to take a protected species. The MMPA defines take as "harass, hunt, capture, kill or collect." The ESA defines take as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." An incidental take is one that is incidental to, but not the purpose of, otherwise lawful activities.
- b. In the event of an incidental take of a marine mammal or federally listed threatened or endangered species during the project, the Chief Scientist will report the incident to the ship's Commanding Officer, then the PIFSC Director and Deputy Director IMMEDIATELY via IRIDIUM, INMARSAT, and email. Samples should not be collected from any incidentally taken marine mammals, sea turtles, or seabirds.
- c. PIFSC has developed mitigation measures for its fisheries and ecosystem research projects to avoid take and comply with the Lecky, Murawski, and Merrick guidance. A copy of these documents is available at <https://sites.google.com/a/noaa.gov/pifsc-science-operations/nepa-permits/protected-species-mitigation-measures> and on the ship's bridge.

### III. Equipment

- A. Equipment and Capabilities provided by the ship (itemized)
- CTD system and heavy duty cage assembly
  - 12 complete Niskin bottles, with at least enough spare parts to replace 4 bottles
  - Oceanographic winches and cables (port and starboard)
  - SEACAT portable CTD with backup
  - Deck cranes with 6000-lb static-lift block (for small boat deployment/recovery)
  - Thermosalinograph
  - RD Instruments ADCP and associated computer and software
  - EK60 and ES60 echosounder system at the frequencies of 38kHz, 70 kHz, 120kHz, and 200 kHz
  - GPS navigational system
  - Depth sounders and recorders
  - Scientific freezer, kept between -30° and -20° at all times
  - Two-way radios for communications from the electronics lab to the winch operator
  - Operational Scientific Computing System (SCS)

- Navigational equipment and course plotter
- Adequate freshwater for gear and small boat wash down
- Iridium phone
- A minimum 2 terabyte shared network space
- Hydraulic handling gurdies (3) for day deepwater fish sampling
- 1,000-watt night-light with rheostat
- SE-2 and SE-4 with spare parts
- 2 coxswains available for SE-2 and SE-4 operations
- 2 hip tanks and 2 fuel racks for small boat fuel storage
- Ice for food and water jugs on small boats
- Working Wet Lab faucets and drains
- Wireless internet connection from fantail and longline pit
- Deck personnel for the deployment and recovery of small boats
- Support from the Engineering Department to fuel small boats daily after scientific boat operations are completed.
- Daily lunches and water jugs provided from the Steward Department for small boat operations.

B. Equipment and Capabilities provided by the scientists (itemized)

- Chest freezer in Breezeway for bait / ice / scientific samples
- Ice machine to supplement daily ice requirements for lunches and short-term preservation of scientific samples.
- Weight scales and measuring calipers
- Sample collection jars
- Laboratory stereo-microscope
- Laboratory glassware (e.g., Erlenmeyer flasks, graduated cylinders)
- External hard drives (at least 1-2 TB) for data storage and backup capabilities
- 1 PIFSC 19' SAFE Boat
- 1 PIFSC 19' Zodiac Mark V
- 2 boat cradles for PIFSC Small Boats
- Electric handline gurdies for SAFE Boat
- Hooks, line, weights, and other fishing supplies for Small Boat handline fishing
- Frozen squid and fish bait
- Fuel (two hip tanks and 6x55-gal barrels) for small boats
- Knives and other tools for processing and measuring fish
- Fish tags
- Spearguns, pole sears, snorkel gear, associated replacement parts
- Deep Cycle Marine Battery (3) and chargers
- Various hand tools
- Rod/reel set up (4)

- In addition to scientific expertise, the program will provide experienced coxswains for small boat operation and routine boat and outboard engine maintenance.

#### IV. Hazardous Materials

##### A. Policy and Compliance

The Chief Scientist is responsible for complying with FEC 07 Hazardous Materials and Hazardous Waste Management Requirements for Visiting Scientific Parties (or the OMAO procedure that supersedes it). By Federal regulations and NOAA Marine and Aviation Operations policy, the ship may not sail without a complete inventory of all hazardous materials by name and quantity, MSDS, appropriate spill cleanup materials (neutralizing agents, buffers, or absorbents) in amounts adequate to address spills of a size equal to the amount of chemical brought aboard, and chemical safety and spill response procedures. Documentation regarding those requirements will be provided by the Chief of Operations, Marine Operations Center, upon request.

Per OMAO procedure, the scientific party will include with their project instructions and provide to the CO of the respective ship 30 days before departure:

- List of chemicals by name with anticipated quantity
- List of spill response materials, including neutralizing agents, buffers, and absorbents
- Chemical safety and spill response procedures, such as excerpts of the program's Chemical Hygiene Plan or SOPs relevant for shipboard laboratories
- For bulk quantities of chemicals in excess of 50 gallons total or in containers larger than 10 gallons each, notify ship's Operations Officer regarding quantity, packaging and chemical to verify safe stowage is available as soon as chemical quantities are known.

Upon embarkation and prior to loading hazardous materials aboard the vessel, the scientific party will provide to the CO or their designee:

- An inventory list showing actual amount of hazardous material brought aboard
- An MSDS for each material
- Confirmation that neutralizing agents and spill equipment were brought aboard sufficient to contain and cleanup all of the hazardous material brought aboard by the program
- Confirmation that chemical safety and spill response procedures were brought aboard

Upon departure from the ship, scientific parties will provide the CO or their designee an inventory showing that all chemicals were removed from the vessel. The CO's designee will maintain a log to track scientific party hazardous materials. MSDS will be made available to the ship's complement, in compliance with Hazard Communication Laws.

Scientific parties are expected to manage and respond to spills of scientific hazardous materials. Overboard discharge of hazardous materials is not permitted aboard NOAA ships.

##### B. Inventory

Common Name of Material	Qty	Notes	Trained Individual	Spill control
Formaldehyde solution (3.7%)	20 gal	Stored in Wet Lab and Hydro Lab HazMat cabinets	Brett Taylor / Justin Ossolinski	F
Ethanol (95%)	15 gal	Stored in Wet Lab HazMat cabinet	Brett Taylor / Justin Ossolinski	F
Hydrochloric Acid, 10%	500 mL	Acid	Brett Taylor / Justin Ossolinski	A
Acetone (99.5%)	4 gal	Stored in Hydro Lab HazMat cabinet	Brett Taylor / Justin Ossolinski	F

### C. Chemical safety and spill response procedures

#### **F: Formalin/Formaldehyde/Acetone**

- Ventilate area of leak or spill. Remove all sources of ignition.
- Wear appropriate personal protective equipment.
- Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible.
- Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container.
- Do not use combustible materials, such as saw dust.

#### Inventory of Spill Kit supplies

Product Name	Amount	Chemicals it is useful against	Amount it can clean up
3M Spill Response Kit	1	Formaldehyde, Ethanol, Acetone	31 gal
SPILFYTER	1	Formaldehyde	5 gal

### D. Radioactive Materials

No Radioactive Isotopes are planned for this project

## V. Additional Projects

### A. Supplementary (“Piggyback”) Projects

Deployment of three Deep Argo floats: These floats need to be deployed in water deeper than 5000 m and be placed into the water with a crane or davit to ensure the float is away from the hull of the ship. The float will be prepared for deployment by Dr Steffen, the ship slowed, and then assistance from the crew will be needed to hoist the float and protect the float from colliding with anything while it is being lowered into the water and released (Dr. Steffen will provide a snap shackle for this purpose). Floats weigh about 60 lbs in air. Shady storage for the floats is needed prior to deployment. Based on pre-cruise discussions, the following locations have been selected to be along the ship’s track and put the floats into desirable areas. Dr Steffen will be able to modify these in case of operational needs.

21.27°N 174.83°W

19.76°N 169.02°E

17.6°N 157.62°E

### B. NOAA Fleet Ancillary Projects

No NOAA Fleet Ancillary Projects are planned.

## VI. Disposition of Data and Reports

Disposition of data gathered aboard NOAA ships will conform to NAO 216-101 *Ocean Data Acquisitions* and NAO 212-15 *Management of Environmental Data and Information*. To guide the implementation of these NAOs, NOAA’s Environmental Data Management Committee (EDMC) provides the *NOAA Data Documentation Procedural Directive* (data documentation) and *NOAA Data Management Planning Procedural Directive* (preparation of Data Management Plans). OMAO is developing procedures and allocating resources to manage OMAO data and Programs are encouraged to do the same for their Project data.

### A. Data Classifications: *Under Development*

#### a. OMAO Data



b. Program Data

The project will follow current PIFSC data management plans, which comply with NOAA requirements. Contact Nori Shoji ([noriko.shoji@noaa.gov](mailto:noriko.shoji@noaa.gov)), Director, PIFSC Science Operations Division, for PIFSC data policy updates.

B. Responsibilities: *Under Development*

**VII. Meetings, Vessel Familiarization, and Project Evaluations**

- A. Pre-Project Meeting: The Chief Scientist and Commanding Officer will conduct a meeting of pertinent members of the scientific party and ship's crew to discuss required equipment, planned operations, concerns, and establish mitigation strategies for all concerns. This meeting shall be conducted before the beginning of the project with sufficient time to allow for preparation of the ship and project personnel. The ship's Operations Officer usually is delegated to assist the Chief Scientist in arranging this meeting.
- B. Vessel Familiarization Meeting: The Commanding Officer is responsible for ensuring scientific personnel are familiarized with applicable sections of the standing orders and vessel protocols, e.g., meals, watches, etiquette, drills, etc. A vessel familiarization meeting shall be conducted in the first 24 hours of the project's start and is normally presented by the ship's Operations Officer.
- C. Post-Project Meeting: The Commanding Officer is responsible for conducted a meeting no earlier than 24 hrs before or 7 days after the completion of a project to discuss the overall success and shortcomings of the project. Concerns regarding safety, efficiency, and suggestions for future improvements shall be discussed and mitigations for future projects will be documented for future use. This meeting shall be attended by the ship's officers, applicable crew, the Chief Scientist, and members of the scientific party and is normally arranged by the Operations Officer and Chief Scientist.
- D. Project Evaluation Report: Within seven days of the completion of the project, a Customer Satisfaction Survey is to be completed by the Chief Scientist or Principal Investigator, as appropriate. The form is available at <https://sites.google.com/a/noaa.gov/omao-intranet-dev/operations/marine/customer-satisfaction-survey> and provides a "Submit" button at the end of the form. It is also located at [https://docs.google.com/a/noaa.gov/forms/d/1a5hCCkgIwaSII4DmrHPudAehQ9HqhRqY3J\\_FXqbJp9g/viewform](https://docs.google.com/a/noaa.gov/forms/d/1a5hCCkgIwaSII4DmrHPudAehQ9HqhRqY3J_FXqbJp9g/viewform). Submitted form data is deposited into a spreadsheet used by OMAO management to analyze the information. Though the complete form is not shared

with the ships, specific concerns and praises are followed up on while not divulging the identity of the evaluator.

## **VIII. Miscellaneous**

### **A. Meals and Berthing**

The ship will provide meals for the scientists listed above. Meals will be served 3 times daily beginning one hour before scheduled departure, extending throughout the project, and ending two hours after the termination of the project. Since the watch schedule is split between day and night, the night watch may often miss daytime meals and will require adequate food and beverages (for example a variety of sandwich items, cheeses, fruit, milk, juices) during what are not typically meal hours. Special dietary requirements for scientific participants will be made available to the ship's command at least seven days prior to the project.

Berthing requirements, including number and gender of the scientific party, will be provided to the ship by the Chief Scientist. The Chief Scientist and Commanding Officer will work together on a detailed berthing plan to accommodate the gender mix of the scientific party taking into consideration the current makeup of the ship's complement. The Chief Scientist is responsible for ensuring the scientific berthing spaces are left in the condition in which they were received; for stripping bedding and linen return; and for the return of any room keys which were issued. Unless prior arrangements are made, the science party may move aboard the night before scheduled departure and must move off the ship the day after scheduled arrival (at the end of project). The Chief Scientist/Principal Investigator is also responsible for the cleanliness of the laboratory spaces and the storage areas utilized by the scientific party, both during the project and at its conclusion prior to departing the ship.

All NOAA scientists will have proper travel orders when assigned to any NOAA ship. The Chief Scientist will ensure that all non NOAA or non Federal scientists aboard also have proper orders. It is the responsibility of the Chief Scientist or Principal Investigator to ensure that the entire scientific party has a mechanism in place to provide lodging and food and to be reimbursed for these costs in the event that the ship becomes uninhabitable and/or the galley is closed during any part of the scheduled project.

All persons boarding NOAA vessels give implied consent to comply with all safety and security policies and regulations which are administered by the Commanding Officer. All spaces and equipment on the vessel are subject to inspection or search at any time. All personnel must comply with OMAO's Drug and Alcohol Policy dated May 17, 2000 which forbids the possession and/or use of illegal drugs and alcohol aboard NOAA Vessels.

### **B. Medical Forms and Emergency Contacts**

The NOAA Health Services Questionnaire (NHSQ, NF 57-10-01 (3-14)) must be completed in advance by each participating scientist. The NHSQ can be obtained from the Chief Scientist or the NOAA website <http://www.corporateservices.noaa.gov/noaaforms/eforms/nf57-10-01.pdf>.

NHSQs must be submitted every 2 years for individuals under the age of 50 and every 1 year for ages 50 and above. NHSQs must be accompanied by NOAA Form (NF) 57-10-02 - Tuberculosis Screening Document in compliance with OMAO Policy 1008 (Tuberculosis Protection Program, which requires a yearly PPD or TB exam).

The completed forms should be sent to the Marine Health Services at the applicable Marine Operations Center. The NHSQ and Tuberculosis Screening Document should reach the Health Services Office no later than 4 weeks prior to the start of the project to allow time for the participant to obtain and submit additional information should health services require it, before clearance to sail can be granted. Please contact MOC Health Services with any questions regarding eligibility or completion of either form. Ensure to fully complete each form and indicate the ship or ships the participant will be sailing on. The participant will receive an email notice when medically cleared to sail if a legible email address is provided on the NHSQ.

The participant can mail, fax, or email the forms to the contact information below. Participants should take precautions to protect their Personally Identifiable Information (PII) and medical information and ensure all correspondence adheres to DOC guidance ([http://ocio.os.doc.gov/ITPolicyandPrograms/IT\\_Privacy/PROD01\\_008240](http://ocio.os.doc.gov/ITPolicyandPrograms/IT_Privacy/PROD01_008240)).

The only secure submission process approved by NOAA is [Accellion Secure File Transfer](#) which requires the sender to set up an account using a valid NOAA email address and password. [Accellion's Web Users Guide](#) is a valuable aid in using this service. As a cost-reduction measure under the DOC contract with Accellion, user accounts expire after 30 days of inactivity. Simply re-register to send and receive files.

Persons without a NOAA email account must fax or mail their forms.

Contact information: Include **only** the Pacific OR Atlantic Office as applicable.

Marine Health Services  
Marine Operations Center – Pacific  
2002 SE Marine Science Dr.  
Newport, OR 97365  
Telephone 541-867-8822  
Fax 541-867-8856  
Email [MOP.Health-Services@noaa.gov](mailto:MOP.Health-Services@noaa.gov)

Prior to departure, the Chief Scientist must provide an electronic listing of emergency contacts to the Executive Officer for all members of the scientific party, with the following information: contact name, address, relationship to member, and telephone number.

### C. Shipboard Safety

Hard hats are required when working with suspended loads. Work vests are required when working near open railings and during small boat launch and recovery operations. Hard hats and work vests will be provided by the ship when required.

Wearing open-toed footwear or shoes that do not completely enclose the foot (such as sandals or clogs) outside of private berthing areas is not permitted. At the discretion of the ship CO, safety shoes (i.e. steel or composite toe protection) may be required to participate in any work dealing with suspended loads, including CTD deployment and recovery. The ship does not provide safety-toed shoes/boots. The ship's Operations Officer should be consulted by the Chief Scientist to ensure members of the scientific party report aboard with the proper attire.

### D. Communications

A progress report on operations prepared by the Chief Scientist may be relayed to the program office. Sometimes it is necessary for the Chief Scientist to communicate with another vessel, aircraft, or shore facility. Through various means of communications, the ship can usually accommodate the Chief Scientist. Special radio voice communications requirements should be listed in the project instructions. The ship's primary means of communication with the Marine Operations Center is via email and the Very Small Aperture Terminal (VSAT) link. Standard VSAT bandwidth has increased, on average per ship, to 768 kbs and is shared by all vessel's staff and the science team at no charge to sailing personnel. Increased bandwidth in 7 day increments is available on the VSAT systems at increased cost to the scientific party. If increased bandwidth is being considered, program accounting is required and it must be arranged through the ship's Commanding Officer at least 30 days in advance.

### E. IT Security

Any computer that will be hooked into the ship's network must comply with the *OMAO Fleet IT Security Policy* 1.1 (November 4, 2005) prior to establishing a direct connection to the NOAA WAN. Requirements include, but are not limited to:

- (1) Installation of the latest virus definition (.DAT) file on all systems and performance of a virus scan on each system.
- (2) Installation of the latest critical operating system security patches.
- (3) No external public Internet Service Provider (ISP) connections.

Completion of the above requirements prior to boarding the ship is required.

Computer Operating Systems that the support vendor has identified as reaching "End of Life" for support will not be allowed on the shipboard network. Examples include Microsoft Windows XP and Vista as well as Windows Server 2003.

Non-NOAA personnel using the ship's computers or connecting their own computers to the ship's

network must complete NOAA's IT Security Awareness Course within 3 days of embarking.

F. Foreign National Guests Access to OMAO Facilities and Platforms

All foreign national access to the vessel shall be in accordance with NAO 207-12 and RADM De Bow's March 16, 2006 memo (<http://deemedexports.noaa.gov>). National Marine Fisheries Service personnel will use the Foreign National Registration System (FNRS) to submit requests for access to NOAA facilities and ships. The Departmental Sponsor/NOAA (DSN) is responsible for obtaining clearances and export licenses and for providing escorts required by the NAO. DSNs should consult with their designated Line Office Deemed Export point of contact to assist with the process.

Full compliance with NAO 207-12 is required.

Responsibilities of the Chief Scientist:

1. Provide the Commanding Officer with the email generated by the Servicing Security Office granting approval for the foreign national guest's visit. (For NMFS-sponsored guests, this email will be transmitted by FNRS.) This email will identify the guest's DSN and Designated Escorts (if any) and will serve as evidence that the requirements of NAO 207-12 have been complied with.
2. Escorts – The Chief Scientist is responsible to provide escorts to comply with NAO 207-12 Section 5.10, or as required by the vessel's DOC/OSY Regional Security Officer.
3. Ensure all non-foreign national members of the scientific party receive the briefing on Espionage Indicators (NAO 207-12 Appendix A) at least annually or as required by the Servicing Security Office.
4. Export Control - Ensure that approved controls are in place for any technologies subject to Export Administration Regulations (EAR) that will be brought aboard the ship.

The Commanding Officer and the Chief Scientist will keep each other informed of controlled technologies belonging to the ship and to the scientific party and will work together to implement any access controls necessary to ensure no unlicensed export occurs.

Responsibilities of the Commanding Officer:

1. Ensure only those foreign nationals with DOC/OSY clearance are granted access.
2. Deny access to OMAO platforms and facilities by foreign nationals from countries controlled for anti-terrorism (AT) reasons and individuals from Cuba or Iran without written approval from the Director of the Office of Marine and Aviation Operations and compliance with export and sanction regulations.
3. Ensure foreign national access is permitted only if unlicensed deemed export is not likely to occur.
4. Ensure receipt from the Chief Scientist or the DSN of the FNRS or Servicing Security Office email granting approval for the foreign national guest's visit.
5. Ensure Foreign Port Officials, e.g., Pilots, immigration officials, receive escorted access in accordance with maritime custom to facilitate the vessel's visit to foreign ports.

6. Export Control - 8 weeks in advance of the project, provide the Chief Scientist with a current inventory of OMAO controlled technology onboard the vessel and a copy of the vessel Technology Access Control Plan (TACP). Also notify the Chief Scientist of any OMAO-sponsored foreign nationals that will be onboard while program equipment is aboard so that the Chief Scientist can take steps to prevent unlicensed export of Program controlled technology. The Commanding Officer and the Chief Scientist will work together to implement any access controls necessary to ensure no unlicensed export occurs of any controlled technology onboard regardless of ownership.
7. Ensure all OMAO personnel onboard receive the briefing on Espionage Indicators (NAO 207-12 Appendix A) at least annually or as required by the Servicing Security Office.

Responsibilities of the Foreign National Sponsor:

1. Export Control - The DSN is responsible for obtaining any required export licenses and complying with any conditions of those licenses prior to the foreign national being provided access to the controlled technology onboard regardless of the technology's ownership.
2. The DSN, if not sailing for the project, shall assign an on-board Program individual, who will be responsible for the foreign national while on board. The identified individual must be a U.S. citizen and a NOAA or DOC employee. According to DOC/OSY, this requirement cannot be altered.
3. Ensure completion and submission of 207-12 Appendix C (Certification of Conditions and Responsibilities for a Foreign National) within three days of the FN's arrival onboard the ship.

**IX. Appendices**

1. Map of proposed travel route for operations in the Mariana Archipelago during SE-18-02.
2. Travel distance and travel time matrix – Mariana Islands
3. Standard operating procedures for Deepwater line fishing, Spear fishing, Water sample collection, and Fish processing operations during SE-18-02.
4. Load plan for SE-18-02.