UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Fisheries Science Center
Newport Research Station
22032 OSU Drive
Newport, OR 97365

Project Instructions

Date Submitted: April 20, 2017

Platform: NOAA Ship *Bell M. Shimada*

Project Number: SH-17-06 (NWFSC)

Project Title: Northern California Current Ecosystem Survey

Project Dates: **May 15, 2017 to May 26, 2017**

Prepared by: FISHER.JENNIFER.LEA.1456572703 Digitally signed by FISHER.JENNIFER.LEA.1456572703 Date: 2017.05.08 12:20:09 -07'00' Dated: _____
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Cooperative Institute for Marine Resources Studies/Oregon State University

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Commander Brian W. Parker, NOAA
Commanding Officer
NOAA Marine Operations Center – Pacific

I. Overview

A. **Brief Summary and Project Period**. This project continues long-term studies of the Northern California Current (NCC) pelagic ecosystem and includes study of broad-scale patterns of hydrography, phytoplankton and zooplankton and ocean acidification/hypoxia in the NCC Large Marine Ecosystem off Oregon and Washington. Ecosystem studies were initiated in 1996, and studies of ocean acidification/hypoxia were initiated in 2010.

B. Days at Sea (DAS)

Of the _12_ DAS scheduled for this project, 12_ DAS are funded by an OMAO allocation, _0_ DAS are funded by a Line Office Allocation, _0_ DAS are Program Funded, and _0_DAS are Other Agency funded. This project is estimated to exhibit a _medium___ Operational Tempo.

C. Operating Area. Transect sampling in continental shelf and slope waters from Bodega Bay (38.3°N) to Cape Meares (45.5°N) including long transect lines out to 200 nm off Crescent City, CA and Newport, OR.

D. Summary of Objectives. Our routine ecosystem survey will make hydrographic measurements with a CTD, collect water samples for chemical analyses with a Niskin bottle rosette, and collect zooplankton samples with towed plankton nets at an array of stations along transect lines extending across the Oregon and the northern California coast. Beam trawling will also occur at a subset of inshore stations.

E. Participating Institutions. Scientists are from Oregon State University, Pacific States Marine Fisheries Commission, Humboldt State University.

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

Name (Last, First)	Title	Date Aboard	Date Disembark	Gender	Affiliation	Nationality
Jennifer Fisher	Chief Sci.	5/14/17	5/26/17	F	Oregon State Univ.	USA
Sam Zeman	Scientist	5/14/17	5/26/17	F	Oregon State Univ.	USA
Jason Philips	Scientist	5/14/17	5/26/17	M	Oregon State Univ.	USA
Thomas Murphy	Scientist	5/14/17	5/26/17	M	Blue Star Assoc.	USA
David Jacobson	Scientist	5/14/17	5/26/17	M	Oregon State Univ.	USA
Adelaide Rhodes	Scientist	5/14/17	5/26/17	F	Oregon State Univ.	USA

Christine Cass	Scientist	5/14/17	5/26/17	F	Humboldt State Univ.	USA
Mahallelah Shauer	Scientist	5/14/17	5/26/17	F	Humboldt State Univ.	USA
Hilarie Sorensen	Scientist	5/14/17	5/26/17	F	Humboldt State Univ.	USA
Anthony Odell	Scientist	5/14/17	5/26/17	M	Univ. of WA	USA
Lynne Scamman	Scientist	5/14/17	5/26/17	F	Grays Harbor College	USA

G. Administrative

1. Points of Contacts: (1) Jennifer Fisher, Oregon State University, Hatfield Marine Science Center, Newport Oregon 541 867 0109 (o), 541 961 4437 (mobile), jennifer.fisher@noaa.gov (2) William Peterson, NOAA/NWFSC, Hatfield Marine Science Center, Newport Oregon. Contact Info: 541 867 0201 (o), 541 961 2972 (mobile), bill.peterson@noaa.gov

   Operations Officer: LT Bryan Begun (541-867-8923) NOAA Ship *Bell M. Shimada* (OPS.Bell.Shimada@noaa.gov**)**

2. Diplomatic Clearances

   None Required.

3. Licenses and Permits

   Oregon DFW Scientific Take Permit #20364

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.

A. Project Itinerary: We will conduct standard CTD casts and plankton net tows at each station. Station locations are listed at the end of this project plan;

15 May 2017	Depart San Francisco and begin sampling the Bodega Bay Line. Continue sampling north, modifying the order of stations to be sampled according to the weather.

26 May 2017 Arrive in Newport, OR

B. Staging and Destaging:

Most sampling gear is already aboard. Only hand carry items will be loaded in SF May 14, 2017. Unloading will occur after a May 26 arrival (high tide) at MOC-P Newport.

C. Operations to be conducted:

Plankton and CTD sampling

The following operations will occur throughout the day (i.e. 24 hr. operations). CTD, vertical net, and bongo net will be sampled once at each station. Stations will be sampled sequentially and the order of stations (onshore to offshore, or offshore to onshore) and transects will be dependent on weather and determined the day prior to departure and might be modified underway. The number of stations sampled within each day will be dependent on the water depth (wire time) and transit time between stations (some stations are close together while others are farther apart).

Order of operations at each station are as follows:

At each station we will conduct a CTD cast and collect water samples from 10 Liter Niskin bottles on the CTD Rosette. Maximum depth for CTD operations will be 1000 m in deep water stations although the majority will be only to 500 m. In shallow waters, CTD casts should be within 5 m of the bottom, weather permitting. Wire speed on the downcast is 30 m/min until 100 m and then can be increased as the Survey Tech allows.

Following the CTD cast, at each station, we will collect a 0.5 m vertical net sample while the ship is still stationary. This net will be deployed vertically to 100 m or within 3 meters of the bottom if shallower than 100 m with a wire speed on deployment and recovery of 30 m/min.

Following the vertical net, at each station, we will collect a bongo net tow while the ship is travelling approximately 1.5 kts. The bongo net is deployed obliquely to 100 m (approximately 140 m of wire out) then hauled back to the surface with a wire speed on deployment and recovery of 30 m/min. In water depths less than 100 m depth, the tows will be from within 5 m of the bottom to the surface. On the NH Line, we will do ‘shallow’ bongo net tows, sampling just the upper 30 m (40 m wire out) at the shelf stations (NH01 – NH25).

We will also conduct a 5 min neuston tow while the ship is approximately 1.5 kts. Neuston tows will be conducted only along the NH line at the stations located 1-85 miles from shore.

Beam Trawls

At a subset of stations (see station list in the appendix), we will deploy a beam trawl to sample bottom dwelling fishes. The beam trawl is sampled along the bottom for 10 min at a speed of ~2 kts. Prior to each transect, we will run a mock transect for 10 minutes (length of each transect) to select the best path that is free of crab pots. We will then sample along that path back towards the start point.

The beam trawl will be deployed off the stern (pictures in Appendix 3). The beam trawl has a mouth opening of 1.5 m by 0.6 m and it weights ~100 lbs. Wire is slowly let out to a length of 4 times the water depth and then the net is towed for 10 min. Ship's speed during deployment should be 4kts and 2kts after the desired wire length has been reached. After 10 min, the net is recovered. Hydrowire is not needed.

We will provide a portable winch for the beam trawl (detailed notes and pictures on winch in Appendix 4). The base plate of the winch is 2'-3" square with mounting holes drilled through the plate 2' apart. The mounting holes are 1-1/8" diameter. The winch is powered by hydraulics and is equipped with ½" hoses for the source-line and the case-drain. The hydraulic return line is ¾".All hoses have ½" quick-connect fittings, such as Parker 60 series (BH4-61) or Hansen Series 4 HKP.

Typical hydraulic use is 5 – 10 GPM. I am not sure of the typical pressure (PSI) in the system. The winch is rated for 1300 lbs of line pull at 1800 PSI. We have used it on ships with 25 GPM and 60 GPM pumps and it seemed to work fine. There was likely a diverter valve installed on the 60 GPM pump so that we could limit the amount of oil going to the winch and provide better control.

D. Dive Plan

Dives are not planned for this project.

E. Applicable Restrictions

Conditions which preclude normal operations: We expect to encounter poor weather conditions and will adjust our work accordingly. We understand that there may be equipment failures and other unforeseen circumstances that may lead to loss of opportunities to complete our work at sea. This is the nature of our business. All weather related decisions will be made in consult with the Commanding Officer. The Commanding Officer may require stations to be moved or delayed to maintain his/her comfort margin for safety. As the ship nears each station, the operation will be evaluated, along with prevailing weather, functionality of ship's systems, vessel traffic, and proximity to hazards. The Chief Scientist will be notified of all changes.

III. Equipment

A. Equipment and Capabilities provided by the ship (itemized):

1. Hydrographic winch with conducting cable, with CTD attached.
2. Seabird 9/11 CTD system with operational/calibrated altimeter, duplicate temperature, conductivity and oxygen sensors (SBE-43) and Wetlabs fluorometer, and rosette with 10 Liter Niskin bottles. We would like to have 12 bottles mounted on the rosette if possible.
3. ITI sensor that reads depth off bottom or water depth so that we know where the beam trawl is.

4. Hydrographic winch with bare wire operated over starboard side for vertical plankton net tows and Bongo tows.
5. Continuous underway measurements of conductivity, temperature and fluorescence using the ship's flow-through system.
6. Freezer space for storage of small plastic bottles (125 ml) frozen for later analysis of nutrient concentration in sea water and for storage of chlorophyll samples and other water samples. We will need access to the -80°C freezer as well as the regular -20°C freezer.
7. Saltwater hose with spray nozzle that will be used to wash down plankton nets.
8. Scientific Computing System for logging of all operations.
9. We would like the Simrad EK60 acoustics system and ADCP to be operational and to have all data logged.
10. We would like to use the temperature controlled room in the wet lab that must maintain constant temperatures of approximately 8-12°C.

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

Category	**Shimada May 2017**	**Amt**
Deck	cooler, rectangle (red)	1
Deck	hose nozzles	2
Deck	sample processing, crate to hold supplies on deck	1
Deck	sample processing, funnels	3
Deck	sample processing, kneeling pads	1
Deck	sample processing, rulers	2
Deck	sample processing, sieve 150µm (vertical net)	1
Deck	sample processing, sieve 280µm (bongo net)	1
Deck	wire angleometer (mounted on cutting board) (in Office Box)	1
Deck (nets etc.)	1/2 m ring net, with codend and TSK #7179 flowmeter	1
Deck (nets etc.)	Bongo 60cm: net frame, nets, codends, GO #20227 flowmeter	1
Deck (nets etc.)	codend with collar, white, for 1m net or bongo	1
Deck (nets etc.)	net mending supplies: needles, dental floss, scissors (w/spare nets)	yes
Deck (nets etc.)	spare, 1/2 m net codend	1
Deck (nets etc.)	spare, Bongo codend (n=3) with collar (n=2)	yes
Deck (nets etc.)	spare, Bongo nets	2
Deck (nets etc.)	spare, flowmeter, GO #16943	1
Deck (nets etc.)	spare, flowmeter, TSK #7187	1
Deck (nets etc.)	stainless hardware - shackles (n=3), quick links (n=2) (w/spare nets)	yes
Deck (nets etc.)	Neuston net/frame	1
Deck (nets etc.)	weight, ~80lb, for bongo & 1/2m net	1
Electronics	freezer, portable -80C	1

Electronics	hard drive, portable, w/cord	1
Electronics	power strip	1
Electronics	SensusUltra pressure sensor for bongo net	1
Electronics	SensusUltra reader for uploading data & software	1
Jars 1	jar, 1/2 pint	90
Jars 2	jar, pint	55
Jars 3	jar, quart (skippy, 32 oz)	16
Jars 4	jar, 1/2 gallon	3
Lab	Jennifer's sorting supplies	1
Lab	microscope, dissecting, Leica #5178210 (designated cruise scope)	1
Lab	microscope, light source	yes
Lab	splitter, four-chamber	1
Office	binder, CTD/Net Tows	1
Office	binder, Event Log	1
Office	clipboards	3
Office	lead refills for automatic pencils (0.7 mm)	yes
Office	Post-It notes	yes
Office	tape, electrical, yellow & white	yes
Office	writing implements: pens, pencils, sharpies	yes
Safety	EPIRBs for all scientists	8
Safety	SDS binder (in Office Box)	yes
Safety	spill cleanup - Spillfyter, absorbent pillows (clear tote with blue lid)	yes
Set-up	tie-down supplies (screw eyes, bungis, nonskid mats, etc.)	yes
Water samples	aluminum foil	2
Water samples	bottles, 125ml, for whole-water phytoplankton samples	14
Water samples	bottles, 1L, brown, numbered, for collecting water from CTD	5
Water samples	bubble wrap to pack around filter rig vacuum bottle	yes
Water samples	filter forceps	1
Water samples	filter rig: manifolds	2
Water samples	filter rig: pump	1
Water samples	filter rig: spare connectors (in 8oz jar)	yes
Water samples	filter rig: spare tubing (in Ziploc bag)	yes
Water samples	filter rig: towers & bases	6
Water samples	filter rig: vacuum bottle w/tubing	1
Water samples	filters, GF/F, 2.5 cm	~220
Water samples	graduated cylinder, 100ml	2
Water samples	Kimwipes, small	2 boxes
Water samples	microscope bulbs, spare	1
Water samples	Nitrile gloves, large	1
Water samples	wash bottle for rinsing chl funnels	2

Water samples	Ziploc bags, gallon size	1
Water samples	Ziploc bags, quart size	1
Jelly sampling	Dip net	1
Beam trawl	Beam Trawl	1
Beam trawl	Net	1
Beam trawl	Bridle	2
Beam trawl	Tickler Chain	1
Beam trawl	Counter Weight	1
Beam trawl	Sorting Bins	4
Beam trawl	Measuring board	1
Beam trawl	2 Coolers	2
Beam trawl	Back-up Lights	2
Beam trawl	Lasers	1
Beam trawl	Cable Clamp for Lasers	1
Beam trawl	Zip Ties	
Beam trawl	Battery Pack Housing	1
Beam trawl	Back-up Batteries	
Beam trawl	Battery Charger	1
Beam trawl	Lights	2
Beam trawl	Pencils	
Beam trawl	Sharpies	
Beam trawl	Sample Bag Labels	
Beam trawl	Data Sheets	
Beam trawl	Harness Cable	1
Beam trawl	Electrical Tape	
Beam trawl	Kim Wipes	
Beam trawl	Connection/O-Ring Lube	1
Beam trawl	Back-up Teflon Spaghetti Seals	
Beam trawl	Sample Bags	
Beam trawl	Volt Meter	1
Beam trawl	Camera in housing	1
Beam trawl	Camera Bag	1
Beam trawl	2 Camera Batteries	2
Beam trawl	Camera Battery Charger	1
Beam trawl	SD Cards	
Beam trawl	9-volt Batteries	
Beam trawl	Tackle Box	1
Beam trawl	Tool Box	1
Beam trawl	Large Wrench	1
Beam trawl	Adjustable Wrenches	1
Beam trawl	Flathead Screwdriver	1
Beam trawl	Angle Finder	1
HABs	Vacuum Pumps	2

HABs	3-place filter manifold	1
HABs	Tubing setup for filtration carboy	
HABs	Extra tubing	
HABs	1 liter side arm flask (?)	
HABs	20-L Filtration carboy	1
HABs	47mm filter holders	3
HABs	In-line Vacuguard filters	3
HABs	Filter forceps	4
HABs	Plankton Nets	2
HABs	1 Liter bottles with marks	3
HABs	500 mL bottles	3
HABs	250 mL bottles	3
HABs	Bottle carrier	1
HABs	47mm, HA filters (pk 100)	6
HABs	2.0 mL cryovials	200
HABs	3 mL Syringes	200
HABs	0.45 micron filter cartridges	200
HABs	1.5 mL microfuge tubes	200
HABs	47mm, 3.0 micron polycarb filters (pk 100)	2
HABs	2.0 mL microfuge tubes	200
HABs	Microfuge tube storage boxes	8
HABs	cryovial boxes	4
HABs	Transfer pipets	25
HABs	20 mL scint vials (tray 100)	4
HABs	20 mL vial rack	1
HABs	Data Sheets	
HABs	50 mL Graduated cylinder	1
HABs	50 mL Falcon tubes	2
HABs	Sharpies	
HABs	pencils	
HABs	Tape	
HABs	Medium Gloves (box)	2
HABs	safety goggles	2
HABs	lab coat	1
HABs	Extra Styro Racks for 15mL tubes	
HABs	Eye screws	
HABs	cable ties	
HABs	tie down cord	
HABs	non-skid shelf liner	
HABs	5 gallon bucket	1
HABs	Line for Bucket	
HABs	Tubing connectors	
HABs	Garbage bags	

HABs	Kimwipes, large box	2
HABs	kimwipes, small box	2
HABs	paper towels (paks)	4
HABs	1.5 mL vial rack	1
HABs	500 mL plastic beaker	2
HABs	Electrical Tape	
HABs	Teflon Squares	

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, SDS, 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 SDS 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. SDS 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.

A. Inventory.

Common Name of Material	**Qty**	**Notes**	**Trained Individual**	**Spill control**
Formaldehyde solution (37%)	6 x 900ml squeeze bottles	For preserving plankton samples	Jennifer Fisher	**F**
Lugol's Solution (4%)	1 liter	Plankton preservation	Jennifer Fisher	**EL**
mercuric chloride	<30 ml	Water preservative	Jennifer Fisher	**MC**

C. Chemical safety and spill response procedures

F: Formalin/Formaldehyde

- 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 using "PIG Pillows".
- Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with vermiculite and place in a chemical waste container.
- We will use "Spilfyter 480001" absorbent material to contain the spill.

EL: Lugol's

- Ventilate area. There is no "kit"; small spills (a few ml) may be wiped up with paper towels then towels placed in chemical hood until dry after which they can be disposed. Larger spill can be handled similarly except that we will also have an absorbent pillow or vermiculite that can be used.

MC: Mercuric chloride

- If spilled, wear gloves, soak up with paper towel and dispose in Ziploc bag

Inventory of Spill Kit supplies

Product Name	Amount	Chemicals it is useful against	Amount it can clean up
Spilfyter 480001	3 x 2 lb bottles	Formaldehyde	> 12 liters
Respirators	2	Formaldehyde	
Gloves	2 pair	Formaldehyde, alcohol, acids	
Plastic bags	6	Storage and disposal of used absorbent materials	

D. Radioactive Materials

No Radioactive Isotopes are planned for this project.

E. Inventory (itemized) of Radioactive Materials.

No Radioactive Isotopes are planned for this project.

V. Additional Projects

A. Supplementary ("Piggyback") Projects

Opportunistic sampling of jellyfish. Our target species are 1) *Chrysaora fuscescens* (Sea nettles) 2) *Aurelia labiata (*Moon Jelly), and 3) *Aequorea spp.* (Crystal Jelly)

Jelly Collection: At station when the ship is stationary, scan for jellyfish for 5-10 minutes to. If jellies abundant, we will use a long-handled pole to dip-net any *Chrysaora fuscescens* or other target species from the surface. The jelly will be placed into an appropriate sized zip-lock bag and the bag will be filled with filtered seawater to completely submerge the jelly. Label appropriate station details on the bag. The jellies will be preserved in a -80°C freezer. I would like a maximum of 10 jellies per station chosen randomly with respect to size. If the 'bite is on' and time permits, it would be ideal to continue to dip-net jellies after operations are complete.

While underway, we appreciate the bridge keeping an eye out for swarms of jellies. If many are present, we may ask the ship to stop to sample opportunistically.

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. We will allocate data as required once protocols are developed by OMAO.

A. Data Classifications: *Under Development*

a. OMAO Data

b. Program Data

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 short comings 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.

Project Evaluation Report:

Within seven days of the completion of the project, a Customer Satisfaction Survey is to be completed by the Chief Scientist. 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. 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.

D. **VIII. Miscellaneous**

A. Meals and Berthing

The ship will provide meals for the scientists listed above Meal hours are Breakfast (0700-0800), Lunch (1100-1200) and Dinner (1700-1800). For personnel unable to attend a meal time, the stewards will be able to set meals aside and saved for later if requested in advance. 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 Operations Officer by the Chief Scientist. The Chief Scientist and Operations Officer will work together on a detailed berthing plan to accommodate the gender mix of the scientific party taking into consideration the current make-up of the ship's complement. Berthing is available to the scientific party on board the ship one day prior to departure, on the night of May 14, and for one evening upon arrival back in port, on the night of May 26. The chief scientist should communicate to the Operations Officer which scientists will be aboard the ship overnight when the ship is in port. 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. The Operations Officer and the Chief Scientist will jointly inspect the rooms at the end of the project. The Chief Scientist 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 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. All NHSQs submitted after March 1, 2014 must be accompanied by NOAA Form (NF) 57-10-02 - Tuberculosis Screening Document in compliance with OMAO Policy 1008 (Tuberculosis Protection Program).

The completed forms should be sent to the Regional Director of 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).

The only secure email process approved by NOAA is Accellion Secure File Transfer which requires the sender to setup an account. Accellion's Web Users Guide is a valuable aid in using this service, however to reduce cost the DOC contract doesn't provide for automatically issuing full functioning accounts. To receive access to a "Send Tab", after your Accellion account has been established send an email from the associated email account to accellionAlerts@doc.gov requesting access to the "Send Tab" function. They will notify you via email usually within 1 business day of your approval. The 'Send Tab" function will be accessible for 30 days.

Contact information:

Regional Director of 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

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 e-mail and the Very Small Aperture Terminal (VSAT) link. Standard VSAT bandwidth at 128kbs is shared by all vessels staff and the science team at no charge. Increased bandwidth in 30 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 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.

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

Foreign National access to the NOAA ship or Federal Facilities is not required for this project.

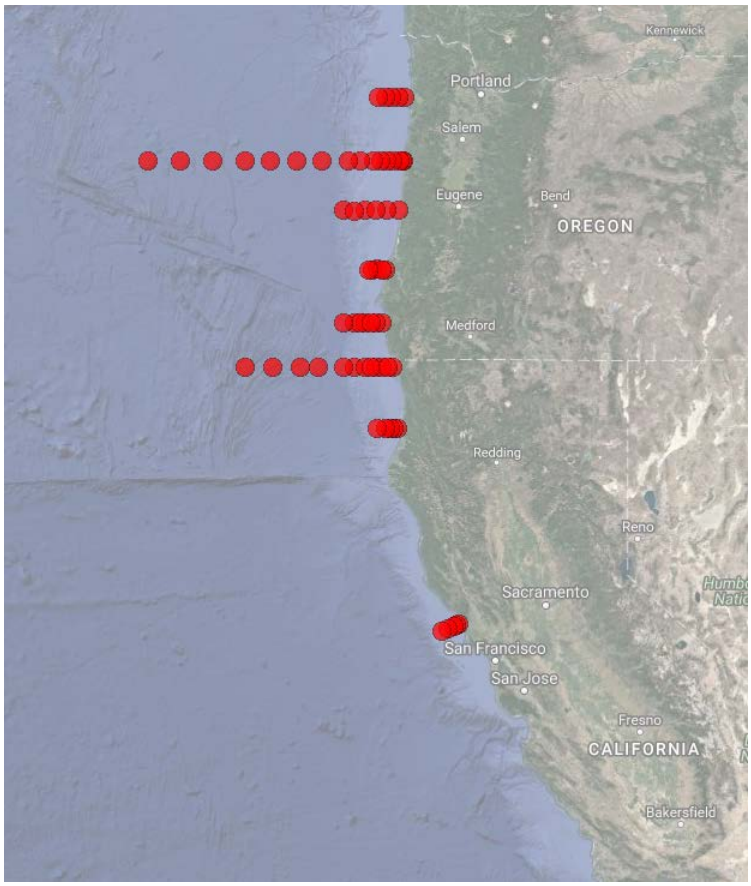
IX. Appendices

1. List of station locations (order of sampling will be determined based on weather)

Station	Depth (m)	Latitude	Longitude
SanFrancisco		37.75	-122.38
BB01	39	38.310	-123.088
BB1.5	80	38.290	-123.136
BB02	100	38.272	-123.188
BB03	120	38.234	-123.289
BB04	230	38.196	-123.401
TH01	35	41.05833	-124.204
TH02	75	41.05833	-124.267
TH03	140	41.05833	-124.342
TH04	410	41.05833	-124.433
TH05	780	41.05833	-124.583
CC01	39	41.903	-124.301
CC02	63	41.897	-124.392
CC03	117	41.899	-124.502
CC04	495	41.899	-124.607
CC05	645	41.899	-124.701
CC06	687	41.899	-124.801
CC07	852	41.900	-125.000
CC08	2745	41.897	-125.197
CC10	2948	41.901	-125.666
CC11	3400	41.901	-125.999
CC125	3259	41.903	-126.505
CC150	*3000*	41.901	-126.999
RR07	3013	42.500	-125.203
RR06	1866	42.503	-125.000
RR05	1000	42.501	-124.900
RR04	550	42.501	-124.800
RR03	160	42.500	-124.699
RR02	88	42.500	-124.601
RR01	38	42.501	-124.499
FM01	36	43.221	-124.432
FM03	60	43.220	-124.498
FM04	84	43.225	-124.590
FM05	158	43.221	-124.670
FM06	310	43.212	-124.745
HH07	1600	44.001	-125.198
HH05	950	44.000	-125.001
HH04	100	44.001	-124.798
HH03	150	44.001	-124.604
HH02	115	44.001	-124.399
HH01	52	44.001	-124.199

NH01	30	44.652	-124.100
NH03	48	44.652	-124.130
NH05	60	44.652	-124.175
NH10	80	44.652	-124.295
NH15	90	44.652	-124.412
NH20	140	44.652	-124.528
NH25	296	44.652	-124.650
NH35	700	44.652	-124.883
NH45	670	44.652	-125.117
NH65	1600	44.652	-125.600
NH85	2850	44.652	-126.050
NH105	2900	44.652	-126.551
NH125	2900	44.650	-127.000
NH150	3000	44.651	-127.590
NH175	2900	44.651	-128.178
NH200	3000	44.650	-128.772
CM05	80	45.480	-124.090
CM10	135	45.480	-124.200
CM15	179	45.480	-124.320
CM20	238	45.480	-124.440
CM25	457	45.480	-124.560
YaqBay NAV BUOY		44.6041	-124.113

2. Rudimentary map of sample stations

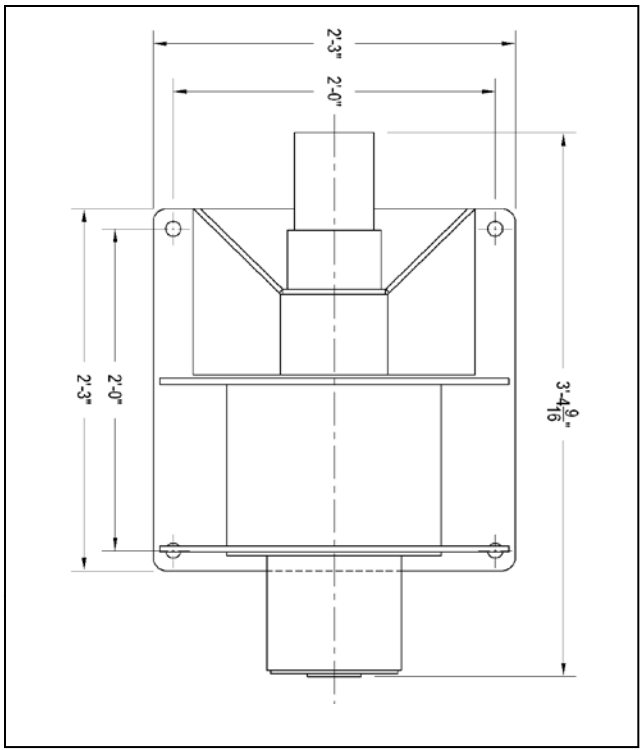


3. Portable Winch Details and Notes

Winch was designed and built by Yaquina Boat in Toledo, OR in 2006

The base plate of the winch is 2'-3" square with mounting holes drilled through the plate 2' apart. The mounting holes are 1-1/8" diameter.

The line drawing is a top-view of the winch showing the size of the base plate and the location of the mounting holes. The drum of the winch is 12" wide with a core diameter of 16" and is designed to hold 650m of ¼" wire.



NOTE: The drum is positioned along the right-hand side of the base-plate (from the view of the operator standing behind the winch) with the center of the drum ~6" inboard of the mounting holes.

POWER

The winch is powered by hydraulics and is equipped with ½" hoses for the source-line and

the case-drain. The hydraulic return line is ¾". The hoses are approx. 25' long.

All hoses have ½" quick-connect fittings, such as Parker 60 series (BH4-61) or Hansen Series 4 HKP.

Typical hydraulic use is 5 – 10 GPM. I am not sure of the typical pressure (PSI) in the system. The winch is rated for 1300 lbs of line pull at 1800 PSI. We have used it on ships with 25 GPM and 60 GPM pumps and it seemed to work fine. There was likely a diverter valve installed on the 60 GPM pump so that we could limit the amount of oil going to the winch and provide better control.

INSTALLATION

There is not a level-wind on the winch. The wire will spool on the winch pretty well if you can keep the "fleet angle" under 2 degrees. For this winch, with a 12" wide drum, that means mounting the winch at least 14 feet away from the block.

The spool of the drum is off-center (see drawing above), and this will need to be taken into consideration when lining it up with the location of the block.

The hydraulic control valve is "open center" and the system requires a source, return and case-drain connection.

INSTRUMENTED BLOCK (3PS Inc., Cedar Park, TX)

We often use an instrumented block, manufactured by 3PS Inc., with the winch. The block provides readings of tension, wire out (meters) and wire speed (m/sec).

The block has a 16" diameter sheave and a 1" diameter eye for mounting. The block is powered by 24 V DC and as of March 2010 is wired into transformer so that it can be plugged directly into 110 V AC.

There is a 60' data cable that needs to run from the block to the readout panel mounted on the winch.

The power cable is 25' long.

The sheave is specifically designed to be USED ONLY WITH ¼" DIA. CABLE or WIRE ROPE.

ADDITIONAL NOTES:

21 October 2014

The winch was installed on the Elakha to test it out and to install new wire. The winch did not work when connected to hydraulic source/return via the control valve. The control valve was bypassed and connected to a spare control valve on the Elakha's hydro-winch.

The old wire was removed and 655 m of ¼" hydrowire (3x19) was installed. The wire was purchased in Feb. 2010 from WireCo World Group in Missouri.