UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NOAA Marine and Aviation Operations
Marine Operations Center
439 W. York Street
Norfolk, VA 23510-1114

APR 29, 2015

MEMORANDUM FOR: Commander G. Mark Miller, NOAA
Commanding Officer, NOAA Ship *Henry B. Bigelow*

FROM: Captain Anne K. Lynch, NOAA
Commanding Officer, NOAA Marine Operations Center-Atlantic

SUBJECT: Project Instruction for HB-15-02
Spring Ecosystem Monitoring Survey

Attached is the final Project Instruction for HB-15-02, Spring Ecosystem Monitoring Survey, which is scheduled aboard NOAA Ship *Henry B. Bigelow* during the period of 19 May to 03 June, 2015. Of the 16 DAS scheduled for this project, 16 days are funded by Line Office Allocation. This project is estimated to exhibit a Medium Operational Tempo. Acknowledge receipt of these instructions via e-mail to **OpsMgr.MOA@noaa.gov** at Marine Operations Center-Atlantic.

Attachment

cc:
William A. Karp, Science and Research Director

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northeast Fisheries Science Center
166 Water Street
Woods Hole, MA 02543-1026

Final Project Instructions

Date Submitted: 14 April, 2015

Platform: NOAA Ship *Henry Bigelow*

Project Number: HB 15-02

Project Title: Spring Ecosystem Monitoring Survey

Project Dates: 19 May – 3 June 2015

Approved by: Russell W. Brown for Date: 4-13-2015
William A. Karp, Ph.D.
Science and Research Director
Northeast Fisheries Science Center

Approved by: Date: 4/28/15
Captain Anne K. Lynch, NOAA
Commanding Officer
Marine Operations Center – Atlantic

I. Overview

A. Brief Summary and Project Period

The principal objective of the survey is to assess the hydrographic, planktonic and pelagic components of the Northeast U.S. Continental Shelf Ecosystem. Specifically we will quantify the spatial distribution of the following parameters: water currents, water properties, phytoplankton, microzooplankton, mesozooplankton, sea turtles and marine mammals. We will use traditional and novel techniques and instruments. A broad array of measurements of the pelagic ecosystem will be made during the 19 May – 3 June 2015 time period.

B. Days at Sea (DAS)

Of the_16_DAS scheduled for this project,_16_DAS are funded by a Line Office Allocation. This project is estimated to exhibit a_Medium_Operational Tempo.

C. Operating Area

The continental shelf from north of Cape Hatteras, NC, including Georges Bank and the Gulf of Maine, to the Nova Scotia Shelf (including stations in Canada's Exclusive Economic Zone). Stations will be occupied in waters with depths ranging between 15 and 500 meters.

D. Summary of Objectives

Operational objectives are to: (1) collect underway data using TSG, SCS, and ADCP; 2) complete CTD and bongo operations at stations throughout area, (2) collect biological data with bongo plankton nets, (3) collect marine mammal and seabird observations, and (4) collect online data and imagery of phytoplankton and ciliates using Imaging FlowCytobot units.

The Ecosystem Monitoring surveys contribute to stock assessments, protected species assessments, ecosystem assessments, and climate assessments. As such, the surveys are multi-objective. Ichthyoplankton and hydrographic data are collected for stock assessments. A range of ecosystem observations are made, from nutrients and ocean acidification to marine mammals, and a number of the measurements are used in NEFSC ecosystem assessment products. The ocean acidification and hydrographic measurements are incorporated into the region’s climate assessments.

This survey is multidisciplinary and as such will integrate all these operations. The cruise plan will evolve with input from scientists as well as the officers and crew of the *Henry Bigelow*. A post-cruise meeting will focus on lessons learned and improvements to make for subsequent surveys of this type.

E. Participating Institutions

NMFS-Northeast Fisheries Science Center
Woods Hole Oceanographic Institute
Princeton University
University of Maine
Canadian Wildlife Service
University of Southern California

F. Personnel/Science Party

Name (Last, First)	**Title**	**Date Aboard**	**Date Disembark**	**Gender**	**Affiliation**	**Nationality**
Prezioso, Jerome	Chief Scientist.	05/19/2015	06/03/2015	M	NMFS	US
Bascunan, Cristina	Lead CTD Specialist	05/19/2015	06/03/2015	F	NMFS	US
Morse, Ryan	Post-doctoral Sci.	05/19/2015	06/03/2015	F	Integrated Statistics	US
Taylor, Christopher	Fishery Biologist	05/19/2015	06/03/2015	M	Integrated Statistics	US
Lueders-Dumont, Jessica	Guest Researcher	05/18/2015	06/03/2015	F	Princeton University	US
Peacock, Emily	IFloCytobot Specialist	05/18/2015	06/03/2015	F	WHOI	US
Foster, Marjorie	Marine Mammal Observer	05/19/2015	06/03/2015	F	Integrated Statistics	US
McKenna, Brigid	Marine Mammal Observer	05/19/2015	06/03/2015	F	Integrated Statistics	US
Toms, Bradley	Seabird Observer	05/18/2015	06/03/2015	M	Canadian Wildlife Service	Canada
Kast, Dieuwertje	Teacher-at-Sea	05/18/2015	06/03/2015	M	University of Southern California	Dutch (US permanent resident card)

G. Administrative

1. Points of Contact:

Email Contact: The following should be included as recipients of the daily e-mail message:

Wendy.Gabriel@noaa.gov	{FEMAD Chief}
Fred.Serchuk@noaa.gov	{Acting READ Chief}
Thomas.Noji@noaa.gov	{EPD Chief}
Bill.Karp@noaa.gov	{Science and Research Director}
Russell.Brown@noaa.gov	{Deputy Science and Research Director}
Nathan.Keith@noaa.gov	{NEFSC Vessel Coordinator}
Jon.Hare@noaa.gov	{Oceanography Branch Chief}
Tamara.Holzwarth-Davis@noaa.gov	{Oceanography Branch}
CO.Henry.Bigelow@noaa.gov	{Commanding Officer – *Henry B. Bigelow*}
Michael.S.Abbott@noaa.gov	{NEFSC Port Captain}

2. Diplomatic Clearances

This project involves Marine Scientific Research in waters under the jurisdiction of Canada. Diplomatic clearance has been requested and a Foreign Fishing Vessel License will be on board the vessel.

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:

19 May: Depart Naval Station Newport, RI and depart Narragansett Bay to commence survey.

3 June: Complete cruise operations outside of Narragansett Bay.

B. Staging and Destaging:

18 May: Begin cruise staging at Naval Station Newport. Load and set up

scientific equipment and complete CTD and SCS installations.

3 June: Dock at Naval Station Newport. Disembark scientific personnel, and off-load scientific equipment and samples.

C. Operations to be conducted:

The survey consists of 156 random-stratified and fixed Oceanography stations in the Middle Atlantic Bight, Southern New England, Georges Bank and the Gulf of Maine (Table 1, Figure 1.) These stations are randomly distributed at varying distances, and as such there is no fixed expectation of number to be covered each day. Rather, the progress of the survey will depend on transit time, sea state, and water depth of the stations, with deeper stations requiring more time to complete operations. Some stations will also have more complex operations scheduled, such as a water cast and a bongo tow, which will increase the amount of time spent on-station. There are also 40 additional stations labeled as Mackerel Sampling Stations (Table 2) which are only to be sampled if time permits. Several of the ship's systems will be running and continuously logging: ADCP, TSG, and EK-60 data from the entire track-line. Personnel from Princeton University will be filtering water from the scientific seawater flow-through system to collect phytoplankton for stable carbon and nitrogen isotope analysis. Marine mammal and seabird observers will be stationed on the bridge or flying bridge making continual observations during daylight hours.

Oceanographic station locations and cruise track will be provided to the vessel prior to sailing to allow the navigation officer ample time to load this information into the navigational computer. The Commanding Officer and Chief Scientist will jointly modify the track during the cruise as weather conditions and time constraints vary to best achieve the cruise objectives. **Highest reasonable cruising speeds should be employed to improve the potential to complete the cruise missions. Transiting between stations located 15 or more nautical miles apart at speeds of 12 knots or greater when possible can greatly improve the coverage of the survey area within the 16 allotted days for this cruise.**

Oceanography Stations: A Seabird CTD profiler attached to a bongo net will be deployed at approximately 125 stations. In addition, a Seabird CTD profiler will be deployed alone to collected data at deep stations (>200 m) and to collect water for salinity calibrations, nutrient, DIC and total alkalinity analysis. A 911 CTD will be deployed at a subset of stations for more detailed oceanographic data and water for numerous measurements. These deployments will use the two oceanographic winches and the CTD computer located in the dry lab.

Acoustic Survey Operations: EK-60 operations will be conducted continuously throughout the cruise track at the highest safe transit speed possible, and during scientific gear deployments.

Scientific Computer System (SCS): *Henry Bigelow's* SCS system is a PC-based server, which continuously collects and distributes scientific data from various navigational, oceanographic, meteorological, and sampling sensors throughout the cruise. The SCS EventLog program has

also been configured for NEFSC Fisheries Acoustic Survey operations, and will be used by the scientists to document all operational events (*e.g.*, beginning and end of gear deployments). Date and time for data collections from computers, instrumentation, and logsheets recording will be synchronized using the vessel's GPS master clock and Dimension IV software. The NEFSC and *Henry Bigelow's* ET are responsible for ensuring data collection and logging.

1.Continuous Underway Sampling:

1.1. SCS

1.1.1. Navigational, meteorological, and environmental data will be archived throughout the cruise using *Henry Bigelow's* Scientific Computer System (SCS).

1.1.2. Ship Requirements

1.1.2.1. SCS system should be running for duration of cruise

1.2. ADCP

1.2.1. Current speed and direction

1.2.2. Backscatter at 150 kHz

1.2.3. Ship Requirements

1.2.3.1. ADCP running during cruise and logging data

NOTE: The ADCP is set with an external trigger to be a slave with the EK60. There still is some minor interference we are seeing on the 120kHz EK60. This issue needs to be resolved.

1.3. Flow-through system

1.3.1. TSG - salinity, temperature, density

1.3.2. pCO2 system surface water and atmospheric CO2

1.3.3. Discrete samples – drawn from flow-through by scientists

1.3.3.1. DIC – dissolved inorganic carbon

1.3.3.2. salt – for salinity calibrations

1.3.4. Ship Requirements

1.3.4.1. Flowthrough system cleaned prior to cruise (freshwater flush)

1.3.4.2. Flowthrough system running during cruise and logging data

1.3.4.3. Ability to draw water samples from system

1.4. Fisheries acoustics

1.4.1. EK-60

1.4.2. Ship Requirements

1.4.2.1. Acoustics running during cruise at all frequencies and logging data

NOTE: Extraneous echo sounders should be turned off to eliminate or at least minimize acoustic interference with the EK60.

1.5. Fisheries acoustics

1.5.1. EK-60

1.5.2. Ship Requirements

1.5.2.1. Both acoustics running during cruise at all frequencies and logging data

NOTE: Extraneous echo sounders should be turned off to eliminate or at least minimize acoustic interference with the EK60.

1.6 Surface observations

1.6.1 Marine mammal observations made during daylight hours by two observers rotating on a 4 hour schedule.

1.6.2 Ship Requirements

1.6.2.1 110 VAC available either on the flying bridge or bridge for the observer's laptop.

1.7 Water Bottle Cast – deployed at subset of stations surface to 500 m or 5 m from bottom

1.7.2 SBE19 – Temperature, conductivity, depth

1.7.3 Water bottles – tripped manually with a messenger for salinity calibrations.

1.7.4 Ship Requirements

1.7.4.1 None

Data: At the end of the cruise the ship will provide the chief scientist with three copies of the data from the EK60 transducer, the ADCP unit and the SCS system. A copy of the SCS data should also be provided to DMS personnel in Woods Hole.

D. Dive Plan

Dives are not planned for this project.

E. Applicable Restrictions

Conditions which would preclude normal operations may include the following:

Adverse weather – Marginal conditions such as high seas and winds that make deploying gear over the side hazardous to personnel, and secondarily to the equipment, warrant having operations suspended until the command deems conditions safe again. One way to mitigate such interruptions would involve coordination between the chief scientist and the command to adjust the cruise track to avoid the worst weather and continue operations in a more sheltered area where they can be conducted safely.

Equipment failures - if scientific, may involve the adjustment of sampling strategies to permit survey operations to continue with functional equipment. Vessel equipment failures will be worked out on an ad hoc basis between the scientists and command to permit survey operations to continue with the understanding that the safety of the vessel is always the top priority.

III. Equipment

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

Ship Requirements for Acoustics

Simrad EK60 Scientific Sounder: The Simrad EK60 Scientific Sounder will be the primary sampling gear used during fisheries acoustic surveys for providing species-specific abundance estimates. The EK60 operates four transducers mounted on the retractable keel (18, 38, 120, and 200 kHz split-beam transducers). EK60 data are logged to the EK60 data server, which is on the ships and scientific networks. RS232 connections are used for navigational (Differential GPS) input. The SCS Event Logger will be used to record all operational events (e.g., begin and end points of transects, stations, gear deployments, and other events that affect the track cruise and vessel speed) during the cruise.

The EK60 will be synchronized to the ADCP and ship's EK60 echo sounders. All extraneous echo sounders need to be turned off to eliminate or at least minimize acoustic interference with the EK60. At the beginning of the cruise, it may be necessary to turn off sounders to determine sources of interference. The ADCP is set with an external trigger to be a slave with the EK60. There still is some minor interference at 120kHz on the EK60 and thus, the ADCP may need to be turned off at times during the cruise.

Acoustics running during cruise at all frequencies and logging data.
NOTE: Extraneous echo sounders should be turned off to eliminate or at least minimize acoustic interference with the EK60.

Scientific Computer System (SCS): *Henry Bigelow's* SCS system is a PC-based server, which continuously collects and distributes scientific data from various navigational, oceanographic, meteorological, and sampling sensors throughout the cruise. The SCS EventLog program has also been configured for NEFSC Fisheries Acoustic Survey operations, and will be used by the scientists to document all operational events (*e.g.*, beginning and end of deployments). Date and time for data collections from computers, instrumentation, and logsheets recording will be synchronized using the vessel's GPS master clock and Dimension IV software. The NEFSC and *Henry Bigelow's* ST and ET are responsible for ensuring data collection and logging.

Ship Requirements for Side Sampling Station and Oceanographic Operations

SBE911 connected to conducting cable on forward winch.
Terminations be redone prior to cruise and redone if necessary.
Slip rings be checked prior to cruise and redone if necessary.

SBE19 connected to conducting cable on aft winch for bongo deployments.
NEMA Data String for CTD Computer.
Disposal of waste water cannot happen before, during, or right after CTD rosette operations.
Smoking is not allowed on Oceanography deck owing to nutrient collections and carbonate chemistry collections.
NEMA Data String to Computer Lab.
Ultra-cold (-80^{o}C) freezer (tested prior to embarkation) for storage of samples.

Ship Requirements for Continuous Underway Sampling

SCS - Navigational, meteorological, and environmental data will be archived throughout the cruise using *Henry Bigelow's* Scientific Computer System (SCS). SCS system should be running for duration of cruise.

ADCP - Running during cruise and logging data.

NOTE: The ADCP is set with an external trigger to be a slave with the EK60. There still is some minor interference we are seeing on the 120kHz EK60. This issue needs to be resolved.

Flow-through system - TSG - salinity, temperature, density.
Fluorometer – chlorophyll a concentration.

Discrete samples – drawn from flow-through by scientists.
DIC – dissolved inorganic carbon.
chlorophyll a – measured directly.
salt – for salinity calibrations.

Flowthrough system cleaned prior to cruise (freshwater flush).

Flowthrough system running during cruise and logging data.
Ability to draw water samples from system and to plumb in Imaging FlowCytobot instrument from WHOI.

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

CTD Rosette Operations :

A CTD Rosette will be deployed at subset of stations surface to 500 m or 5 m from bottom; approximately 20-50 locations during the course of the cruise.

SBE911 – salinity, temperature, density.
Fluoroprobe – distinguishes among groups of phytoplankton.
Fluorometer – chlorophyll a concentration.
PAR – for light measurement.
Water bottles – tripped automatically from computer in CTD Lab.
Salt - for salinity calibrations.
Nutrients – N, P, Si, others.
Ocean Carbon – DIC, Total alkalinity.
Phytoplankton species composition.
Microzooplankton species composition.

Oceanography Stations:

CTD/Bongo – deployed at most stations surface to 200 m or 5 m from bottom.
SBE19 – Temperature, conductivity, depth deployed with rosette having 10 ten-liter bottles, and radiometer.
61 cm, 333 micron mesh– zooplankton and ichthyoplankton.
20 cm, 165 micron mesh – microzooplankton and zooplankton (20 stations).
45 kg depressor weight for bongo net deployments.

Continuous Underway Sampling:

Imaging FlowCytoBot: An Imaging Flow Cytobot unit will be plumbed into the scientific flow-through system and used throughout the cruise. The unit will require a very small amount of seawater from the flow-through system and 110 VAC.

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 (37%)	2 x 20 liters	Alkalinity, Stored in ship chem. lkr	Jerome Prezioso	F
Ethanol (95%)	4 x 20 liters	Alkalinity, Stored in ship chem. lkr	Jerome Prezioso	E
Mercuric Chloride	1 x 50 ml.	Located in chem. lab hood.	Chris Taylor	M

C. Chemical safety and spill response procedures

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 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.

D. Radioactive Materials

No Radioactive Isotopes are planned for this project.

V. Additional Projects

A. Supplementary ("Piggyback") Projects

No Supplementary Projects are planned.

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

B. Responsibilities: *Under Development*

Protected Resources:

North Atlantic right whale protection: The vessel is requested to adhere to right whale protection regulations. Information on Seasonal Management Area (SMA) and Dynamic Management Area (DMA) regulations and information for protecting right whales from collisions with vessels are provided through the NOAA Protected Resources website (http://www.nmfs.noaa.gov/pr/shipstrike/), Right Whale Sighting Advisory System (SAS) website (http://www.nefsc.noaa.gov/psb/surveys/), the U.S. Coast Guard's "Notices To Mariners" and NOAA weather radio.
Mariners are urged to use caution and proceed at safe speeds in areas where right whales occur. U.S. Law (50 CFR 224.105) prohibits operating vessels 65 feet (19.8 meters) or greater in excess of 10 knots in Seasonal Management Areas (SMAs) along the U.S. east coast. Mariners are also requested to route around voluntary speed restriction zones, Dynamic Management Areas (DMAs) or transit through them at 10 knots or less. Approaching within 500 yards of right whales is prohibited, unless the Chief Scientist is in possession of an ESA/MMPA permit allowing such approaches.

Whale sightings: Sightings of right whales, or dead or entangled whales of any species, are extremely valuable and reports are urgently requested. Please report all right whale sightings north of the Virginia-North Carolina border to 866-755-6622; right whale sightings south of that border should be reported to 877-WHALE HELP. Right whale sightings in any location may be reported to the U.S. Coast Guard via VHF channel 16. Protocols for reporting sightings are described in the Guide to Reporting Whale Sightings placard. The placard is available online (http://www.nefsc.noaa.gov/psb/surveys/documents/20120919_Report_a_Right_Whale.pdf) and laminated copies will be provided by the Protected Species Branch upon request. It is requested that this placard be kept on the bridge for quick reference and to facilitate rapid reporting (via satellite phone if necessary). Opportunistic sightings of other marine mammal species that are live and well

may be reported using the Platforms of Opportunity (POP) forms and protocols. To information regarding the WhaleALERT application http://stellwagen.noaa.gov/protect/whalealert.html. For information on reporting a dead whale http://www.nefsc.noaa.gov/psb/surveys/documents/20120919_Report_a_Dead_Whale.pdf.

Endangered Species Act and Marine Mammal Protection Act reporting requirements: This reporting is required and is in addition to the reports in the above two sections. If the ship has an interaction with a sturgeon, Atlantic salmon, whale, dolphin, porpoise, marine turtle, or seal (e.g., collision with a whale or bycatch of a sea turtle), the NMFS Greater Atlantic Regional Fisheries Office must be notified within 24 hours of the interaction. All e-mail correspondences should be made to the following e-mail address: incidental.take@noaa.gov. Please indicate in the subject line which protected species was encountered. If the take involves a marine mammal, or sea turtle that is alive, injured and in need of assistance or monitoring, please call the NOAA Northeast Region marine animal hotline at: 866-755-6622. The chief scientist will be notified before reports are made.
If the vessel's company notices an animal that is entangled, injured, in distress, or dead, outside the scope of scientific operations, they should contact the Northeast Regional Office's 24-hour hotline at 866-755-6622 to report the incident and receive further instructions.

Marine turtle, Sturgeon and Atlantic salmon bycatch: All marine turtles, sturgeon and Atlantic salmon taken incidental to fishing activities must be handled, resuscitated (turtles only) and documented according to established procedures in the Endangered Species Act Section 7 Consultation Biological Opinion issued on November 30, 2012. Please see appendices for specific sampling procedures and documentation guidelines. Dead turtles shall, if feasible, be frozen and returned to the Woods Hole Laboratory.

Marine mammal bycatch: All marine mammals taken incidental to fishing activities must 1) be completely disentangle from gear 2) take photographs, document any injuries, and returned to the sea immediately 3) for dead specimens, be clearly photographed (multiple views if possible, including at least one photograph of the head, 4) be identified to the species level, 5) weigh(kg) and measure(cm)if possible (snout to tail (seals), beak to the notch in the fluke/tail (whales, dolphins and porpoises)) 6) attached a carcass tag 7)have supporting data recorded including GPS or Loran coordinates recorded describing the location of the interaction; time of interaction; date of interaction; condition of the animal upon retrieval (alive uninjured, alive injured, fresh dead, decomposed, comatose or unresponsive.

Stellwagen Bank: Any artifacts brought aboard the vessel due to fishing in the Stellwagen Bank National Marine Sanctuary must be immediately returned, as near as possible, to the location of interception. An artifact is defined as anything of man-made origin with the exception of modern fishing gear. Stations located within Stellwagen Bank will be identified prior to the cruise and reported to the chief scientist.

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 hours 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.

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. The form is available at http://www.omao.noaa.gov/fleeteval.html and provides a "Submit" button at the end of the form. 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 make-up 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. 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 – Atlantic
439 W. York Street
Norfolk, VA 23510
Telephone 757-441-6320
Fax 757-441-3760
Email MOA.Health.Services@noaa.gov

Prior to departure, the Chief Scientist must provide an electronic listing of emergency contacts to the Operations 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 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 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.

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.

Foreign National access must be sought not only for access to the ship involved in the project but also for any Federal Facility access (NOAA Marine Operations Centers, NOAA port offices, USCG Bases) that foreign nationals might have to traverse to gain access to and from the ship. The following are basic requirements.

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 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 that are subject to Export Administration Regulations (EAR).

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.

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 foreign national's sponsor 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 of the foreign national 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 Appendix C (Certification of Conditions and Responsibilities for a Foreign National

VIII. Appendices (all that apply)

1. Figures, maps, tables, images, etc.

Table 1. Station/Waypoint List (coordinates in Latitude, Longitude: degree-minutes)

					Latitude		Longitude	
Name	**Region**	**Strata**	**Deployment**	**Protocol**	**Degrees**	**Minutes**	**Degrees**	**Minutes**
1-MAB-1	MAB	1	CTD/Bongo	STD	35	59.976	74	45.030
2-MAB-1	MAB	2	CTD/Bongo	STD	35	34.986	74	55.026
2-MAB-2	MAB	2	CTD/Bongo	STD	36	24.966	75	25.014
3-MAB-1	MAB	3	CTD/Bongo	STD	35	29.988	75	15.018
3-MAB-2	MAB	3	CTD/Bongo	STD	35	54.978	75	25.014
4-MAB-1	MAB	4	CTD/Bongo	STD	36	44.958	74	45.030
5-MAB-1	MAB	5	CTD/Bongo	STD	37	29.940	75	20.016

5-MAB-2	MAB	5	CTD/Bongo	STD	37	9.948	75	5.022
5-MAB-3	MAB	5	CTD/Bongo	STD	37	24.942	74	45.030
5-MAB-4	MAB	5	CTD/Bongo	STD	37	29.940	74	45.030
5-MAB-5	MAB	5	CTD/Bongo	STD	36	59.952	75	25.014
6-MAB-1	MAB	6	CTD/Bongo	STD	37	24.942	75	25.014
6-MAB-2	MAB	6	CTD/Bongo	STD	37	24.942	75	25.014
7-MAB-1	MAB	7	CTD/Bongo	STD	37	54.930	74	0.048
7-MAB-2	MAB	7	CTD/Bongo	STD	38	34.914	73	45.054
8-MAB-1	MAB	8	CTD/Bongo	STD	38	19.920	74	45.030
8-MAB-2	MAB	8	CTD/Bongo	STD	38	9.924	74	30.036
8-MAB-3	MAB	8	CTD/Bongo	STD	38	49.908	74	5.046
8-MAB-4	MAB	8	CTD/Bongo	STD	38	49.908	74	15.042
9-MAB-1	MAB	9	CTD/Bongo	STD	38	24.918	74	50.028
10-MAB-1	MAB	10	CTD/Bongo	STD	38	49.908	73	5.070
10-MAB-2	MAB	10	CTD/Bongo	STD	38	44.910	73	35.058
10-MAB-3	MAB	10	CTD/Bongo	STD	39	14.898	73	0.072
11-MAB-1	MAB	11	CTD/Bongo	STD	39	14.898	73	20.064
11-MAB-2	MAB	11	CTD/Bongo	STD	38	54.906	73	35.058
11-MAB-3	MAB	11	CTD/Bongo	STD	39	39.888	73	35.058
11-MAB-4	MAB	11	CTD/Bongo	STD	39	29.892	73	35.058
12-MAB-1	MAB	12	CTD/Bongo	STD	38	44.910	74	45.030
13-MAB-1	MAB	13	CTD/Bongo	STD	40	9.876	74	0.048
13-MAB-2	MAB	13	CTD/Bongo	STD	39	29.892	74	15.042
14-SNE-1	SNE	14	CTD/Bongo	STD	39	34.890	72	5.094
15-SNE-1	SNE	15	CTD/Bongo	STD	39	54.882	73	10.068
15-SNE-2	SNE	15	CTD/Bongo	STD	39	29.892	72	45.078
15-SNE-3	SNE	15	CTD/Bongo	STD	39	49.884	73	5.070
15-SNE-4	SNE	15	CTD/Bongo	STD	39	39.888	73	0.072
16-SNE-1	SNE	16	CTD/Bongo	STD	40	39.864	72	45.078
16-SNE-2	SNE	16	CTD/Bongo	STD	40	4.878	72	50.076
16-SNE-3	SNE	16	CTD/Bongo	STD	39	39.888	73	15.066
16-SNE-4	SNE	16	CTD/Bongo	STD	40	44.862	72	30.084
17-SNE-1	SNE	17	CTD/Bongo	STD	40	19.872	73	55.050
18-SNE-1	SNE	18	CTD/Bongo	STD	40	14.874	71	0.120
19-SNE-1	SNE	19	CTD/Bongo	STD	40	49.860	71	35.106
19-SNE-2	SNE	19	CTD/Bongo	STD	40	44.862	71	5.118
19-SNE-3	SNE	19	CTD/Bongo	STD	40	29.868	71	0.120
19-SNE-4	SNE	19	CTD/Bongo	STD	40	9.876	71	45.102
19-SNE-5	SNE	19	CTD/Bongo	STD	40	14.874	71	25.110
20-SNE-1	SNE	20	CTD/Bongo	STD	40	59.856	71	35.106

20-SNE-2	SNE	20	CTD/Bongo	STD	41	19.848	71	15.114
20-SNE-3	SNE	20	CTD/Bongo	STD	41	9.852	71	10.116
21-SNE-1	SNE	21	CTD/Bongo	STD	41	24.846	71	15.114
22-SNE-1	SNE	22	CTD/Bongo	STD	39	59.880	70	5.142
23-SNE-1	SNE	23	CTD/Bongo	STD	40	9.876	69	15.162
23-SNE-2	SNE	23	CTD/Bongo	STD	40	24.870	69	20.160
23-SNE-3	SNE	23	CTD/Bongo	STD	40	14.874	70	15.138
23-SNE-4	SNE	23	CTD/Bongo	STD	40	34.866	70	25.134
23-SNE-5	SNE	23	CTD/Bongo	STD	40	4.878	69	35.154
24-SNE-1	SNE	24	CTD/Bongo	STD	40	44.862	69	15.162
24-SNE-2	SNE	24	CTD/Bongo	STD	40	44.862	70	20.136
24-SNE-3	SNE	24	CTD/Bongo	STD	40	39.864	69	55.146
25-SNE-1	SNE	25	CTD/Bongo	STD	41	4.854	70	5.142
26-GB-1	GB	26	CTD/Bongo	STD	40	29.868	67	20.208
26-GB-2	GB	26	CTD/Bongo	STD	40	19.872	68	15.186
27-GB-1	GB	27	CTD/Bongo	STD	40	39.864	67	50.196
27-GB-2	GB	27	CTD/Bongo	STD	40	44.862	67	30.204
27-GB-3	GB	27	CTD/Bongo	STD	41	4.854	67	15.210
27-GB-4	GB	27	CTD/Bongo	STD	40	54.858	67	5.214
27-GB-5	GB	27	CTD/Bongo	STD	40	39.864	67	45.198
27-GB-6	GB	27	CTD/Bongo	STD	40	24.870	68	40.176
28-GB-1	GB	28	CTD/Bongo	STD	40	59.856	66	30.228
28-GB-2	GB	28	CTD/Bongo	STD	41	9.852	66	20.232
29-GB-1	GB	29	CTD/Bongo	STD	41	54.834	66	15.234
29-GB-2	GB	29	CTD/Bongo	STD	41	4.854	66	50.220
29-GB-3	GB	29	CTD/Bongo	STD	41	34.842	66	15.234
29-GB-4	GB	29	CTD/Bongo	STD	40	54.858	66	50.220
29-GB-5	GB	29	CTD/Bongo	STD	41	54.834	66	5.238
29-GB-6	GB	29	CTD/Bongo	STD	41	9.852	66	45.222
29-GB-7	GB	29	CTD/Bongo	STD	41	34.842	66	55.218
29-GB-8	GB	29	CTD/Bongo	STD	40	59.856	66	50.220
30-GB-1	GB	30	CTD/Bongo	STD	41	29.844	67	35.202
30-GB-2	GB	30	CTD/Bongo	STD	40	59.856	67	45.198
30-GB-3	GB	30	CTD/Bongo	STD	41	14.850	68	0.192
30-GB-4	GB	30	CTD/Bongo	STD	41	19.848	67	15.210
30-GB-5	GB	30	CTD/Bongo	STD	41	9.852	67	35.202
30-GB-6	GB	30	CTD/Bongo	STD	41	14.850	67	40.200
30-GB-7	GB	30	CTD/Bongo	STD	41	34.842	67	10.212
31-GB-1	GB	31	CTD/Bongo	STD	41	34.842	68	10.188
31-GB-2	GB	31	CTD/Bongo	STD	41	49.836	67	35.202

31-GB-3	GB	31	CTD/Bongo	STD	41	49.836	67	35.202
32-GB-1	GB	32	CTD/Bongo	STD	42	9.828	67	40.200
32-GB-2	GB	32	CTD/Bongo	STD	42	4.830	67	0.216
33-GOM-1	GOM	33	CTD/Bongo	STD	41	49.836	69	50.148
34-GOM-1	GOM	34	CTD/Bongo	STD	41	59.832	69	40.152
34-GOM-2	GOM	34	CTD/Bongo	STD	41	24.846	68	50.172
34-GOM-3	GOM	34	CTD/Bongo	STD	42	19.824	68	40.176
35-GOM-1	GOM	35	CTD/Bongo	STD	42	4.830	70	5.142
36-GOM-1	GOM	36	CTD/Bongo	STD	42	19.824	70	25.134
36-GOM-2	GOM	36	CTD/Bongo	STD	42	59.808	70	10.140
37-GOM-1	GOM	37	CTD/Bongo	STD	42	44.814	69	30.156
37-GOM-2	GOM	37	CTD/Bongo	STD	42	24.822	69	55.146
38-GOM-1	GOM	38	CTD/Bongo	STD	42	14.826	67	45.198
38-GOM-2	GOM	38	CTD/Bongo	STD	42	34.818	68	10.188
38-GOM-3	GOM	38	CTD/Bongo	STD	42	29.820	66	30.228
39-GOM-1	GOM	39	CTD/Bongo	STD	42	34.818	67	15.210
40-GOM-1	GOM	40	CTD/Bongo	STD	43	34.794	70	10.140
41-GOM-1	GOM	41	CTD/Bongo	STD	43	14.802	69	30.156
41-GOM-2	GOM	41	CTD/Bongo	STD	42	49.812	68	45.174
41-GOM-3	GOM	41	CTD/Bongo	STD	43	19.800	69	20.160
41-GOM-4	GOM	41	CTD/Bongo	STD	42	49.812	68	40.176
42-GOM-1	GOM	42	CTD/Bongo	STD	43	19.800	67	25.206
42-GOM-2	GOM	42	CTD/Bongo	STD	43	9.804	67	20.208
42-GOM-3	GOM	42	CTD/Bongo	STD	43	9.804	67	40.200
42-GOM-4	GOM	42	CTD/Bongo	STD	43	14.802	68	15.186
43-GOM-1	GOM	43	CTD/Bongo	STD	43	9.804	67	5.214
43-GOM-2	GOM	43	CTD/Bongo	STD	43	54.786	66	40.224
44-GOM-3	GOM	44	CTD/Bongo	STD	43	54.786	66	35.226
45-GOM-1	GOM	45	CTD/Bongo	STD	44	9.780	67	50.196
46-GOM-1	GOM	46	CTD/Bongo	STD	44	14.778	66	55.218
47-GOM-1	GOM	47	CTD/Bongo	STD	42	34.818	65	15.258
47-GOM-2	GOM	47	CTD/Bongo	STD	42	49.812	66	35.226
47-GOM-3	GOM	47	CTD/Bongo	STD	42	39.816	65	55.242
LNG (Acid 1)	GOM	36	CTD 911+CTD/Bongo	FXD	42	25.008	70	36.797
NE Ch (Acid 2)	GOM	38	CTD 911+CTD/Bongo	FXD	42	13.500	65	46.002
Wilkinson Basin (Acid 3)	GOM	37	CTD 911+CTD/Bongo	FXD	42	30.000	69	40.002
Georges Basin (Acid 4)	GOM	39	CTD 911+CTD/Bongo	FXD	42	22.420	67	2.675
Jordan Basin (Acid 5)	GOM	42	CTD 911+CTD/Bongo	FXD	43	23.999	67	42.000
Acid 6 MAB	MAB	3	CTD Profile 911+	FXD	36	0.018	75	28.315
Acid 7 MAB	MAB	2	CTD Profile 911+	FXD	36	0.018	75	10.370

Acid 8 MAB	MAB	1	CTD Profile 911+	FXD	36	0.018	74	46.631
Acid 9 MAB	MAB	50	CTD Profile 911+	FXD	36	0.018	74	40.158
Acid 10 MAB	MAB	8	CTD Profile 911+	FXD	37	59.967	74	57.418
Acid 11 MAB	MAB	8	CTD Profile 911+	FXD	37	50.604	74	34.758
Acid 12 MAB	MAB	7	CTD Profile 911+	FXD	37	42.072	74	15.336
Acid 13 MAB	MAB	13	CTD Profile 911+	FXD	39	42.489	74	0.224
Acid 14 MAB	MAB	11	CTD Profile 911+	FXD	39	21.684	73	23.532
Acid 15 MAB	MAB	56	CTD Profile 911+	FXD	39	3.228	72	44.679
Acid 16 MAB	MAB	56	CTD Profile 911+	FXD	39	0.764	72	34.968
Acid 17 SNE	SNE	24	CTD Profile 911+	FXD	41	6.306	70	37.334
Acid 18 SNE	SNE	23	CTD Profile 911+	FXD	40	40.200	70	37.334
Acid 19 SNE	SNE	18	CTD Profile 911+	FXD	40	2.226	70	36.068
Acid 20 SNE	SNE	60	CTD Profile 911+	FXD	39	49.950	70	37.333
Acid 21 GB	GB	32	CTD Profile 911+	FXD	42	0.404	67	41.430
Acid 22 GB	GB	30	CTD Profile 911+	FXD	41	28.196	67	41.430
Acid 23 GB	GB	27	CTD Profile 911+	FXD	40	55.718	67	42.510
Acid 24 GB	GB	26	CTD Profile 911+	FXD	40	22.970	67	41.430
Acid 25 GB	GB	62	CTD Profile 911+	FXD	40	14.738	67	41.430
Acid 26 GB	GB	68	CTD Profile 911+	FXD	41	45.144	65	26.528
PF01 (Acid 26)	GOM	40	CTD Profile 911+	FXD	42	59.920	70	25.300
Acid 27 GOM	GOM	47	CTD Profile 911+	FXD	43	1.652	66	20.486
Great South Ch (Acid 28)	GOM	23	CTD Profile 911+	FXD	40	54.000	69	9.444
BI01 (Acid 29)	GOM	48	CTD Profile 911+	FXD	44	29.130	67	13.660
JT04 (Acid 30)	GOM	41	CTD Profile 911+	FXD	43	46.300	68	40.200
Acid 32 GOM	GOM	36	CTD Profile 911+	FXD	42	18.936	70	16.762
Acid 33 GOM	GOM	36	CTD Profile 911+	FXD	42	21.402	70	27.924
Jordan Basin N (Acid 34)	GOM	41	CTD Profile 911+	FXD	44	12.000	67	42.000
Jordan Basin S (Acid 35)	GOM	38	CTD Profile 911+	FXD	42	42.060	67	42.000
Buoy M (Acid 36)	GOM	42	CTD Profile 911+	FXD	43	29.45	67	52.75

Table 2. Station/Waypoint List for Proposed Mackerel Sampling Stations to be sampled as time permits (coordinates in Latitude, Longitude: degree-minutes)

STATION	**LATITUDE**		**LONGITUDE**	
	Degrees	Minutes	Degrees	Minutes
Mack 1	39	44.886	73	20.064
Mack 2	39	59.88	72	55.074
Mack 3	40	9.876	73	40.056

Mack 4	40	19.872	73	30.06
Mack 5	40	19.872	73	15.066
Mack 6	40	24.87	73	5.07
Mack 7	40	24.87	72	40.08
Mack 8	40	24.87	72	30.084
Mack 9	40	29.868	72	50.076
Mack 10	40	29.868	72	40.08
Mack 11	40	39.864	71	55.098
Mack 12	40	44.862	72	15.09
Mack 13	40	44.862	72	5.094
Mack 14	40	49.86	71	50.1
Mack 15	40	54.858	72	0.096
Mack 16	40	54.858	71	50.1
Mack 17	40	54.858	71	15.114
Mack 18	40	59.856	71	15.114
Mack 19	41	9.852	70	55.122
Mack 20	41	14.85	70	55.122
Mack 21	41	49.836	70	25.134
Mack 22	41	54.834	70	10.14
Mack 23	42	4.83	70	15.138
Mack 24	42	9.828	70	35.13
Mack 25	42	14.826	70	40.128
Mack 26	42	14.826	70	35.13
Mack 27	42	24.822	70	45.126
Mack 28	42	34.818	70	35.13
Mack 29	42	39.816	70	30.132
Mack 30	42	49.812	70	45.126
Mack 31	42	4.83	69	50.148
Mack 32	42	14.826	70	25.134
Mack 33	42	14.826	70	5.142
Mack 34	42	24.822	70	25.134
Mack 35	42	24.822	70	15.138
Mack 36	42	29.82	70	25.134
Mack 37	42	34.818	70	5.142
Mack 38	42	49.812	70	15.138
Mack 39	43	4.806	70	10.14
Mack 40	43	14.802	70	10.14

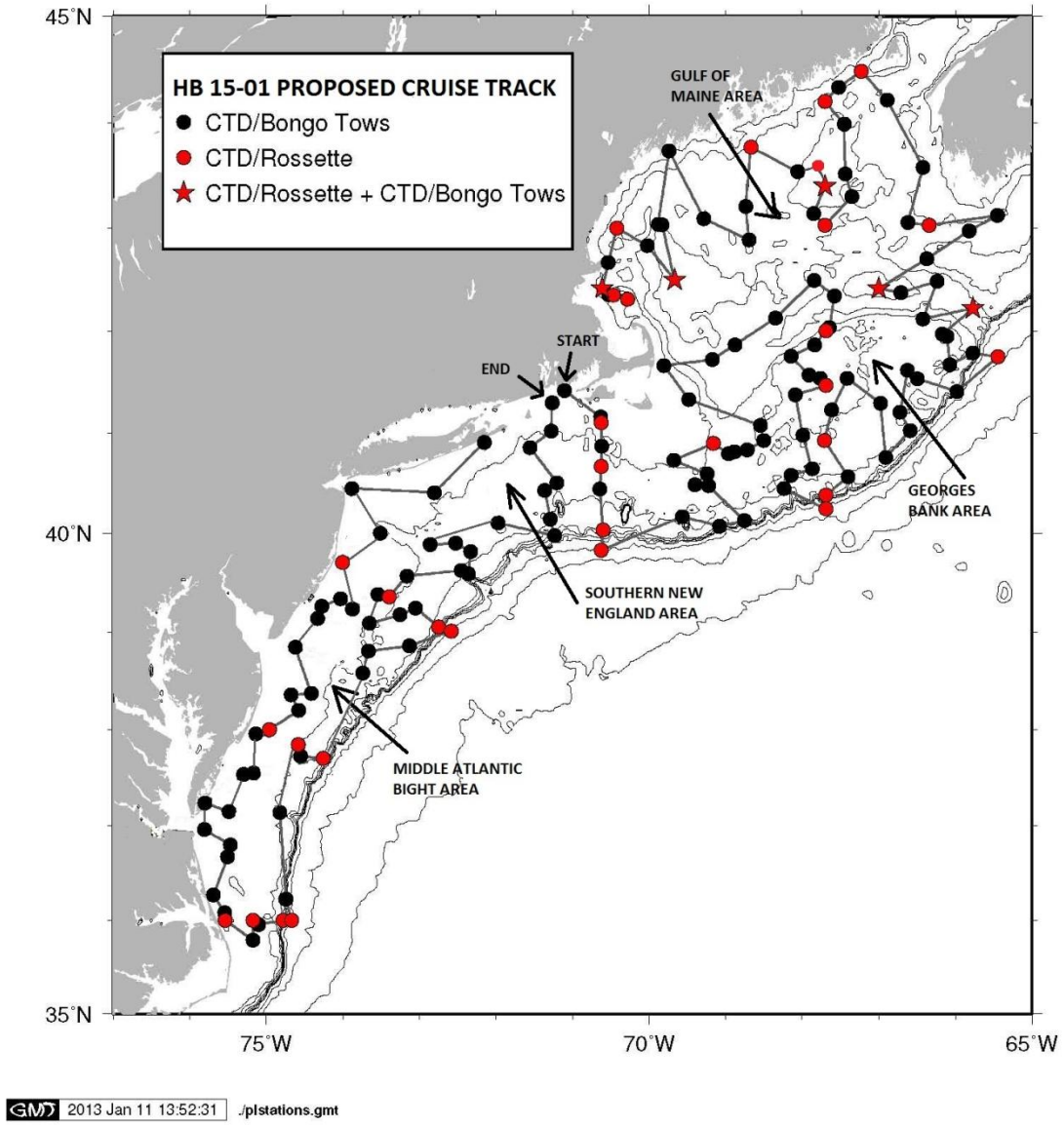


Figure 1. Proposed Cruise Track for HB 15-02 Ecosystem Monitoring Survey 19 May – 3 June 2015.

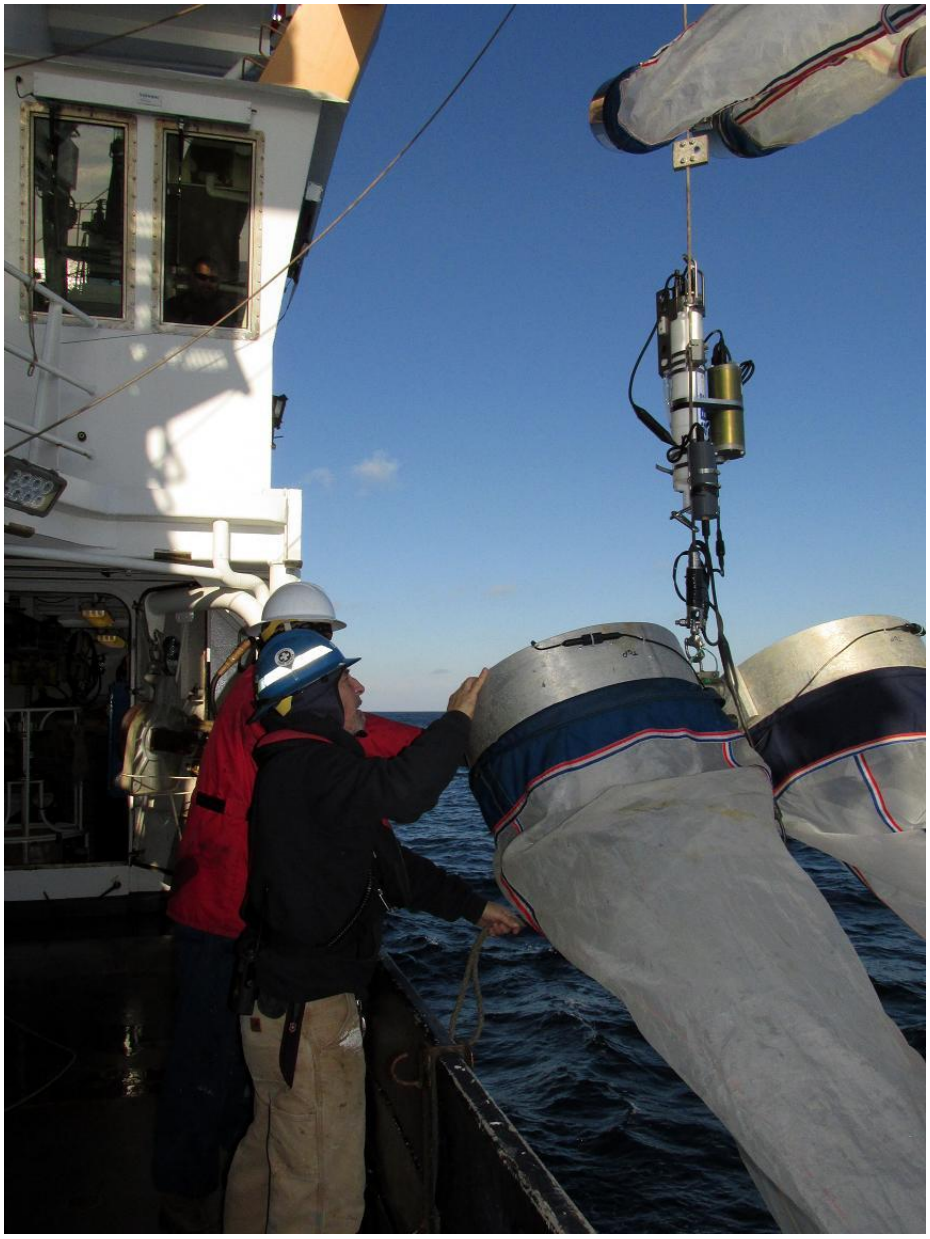


Figure 2. Plankton net sampling array, showing 61 and 20 cm bongo frames, and CTD unit.

Figure 3. A Niskin bottle rosette sampler equipped with 10 liter Niskin bottles.

APPENDIX B

Sea turtle and resuscitation measures as found at 50 CFR 223.206(d)(1).

(d) (1) (i) Any specimen taken incidentally during the course of fishing or scientific research activities must be handled with due care to prevent injury to live specimens, observed for activity, and returned to the water according to the following procedures.

(A) Sea turtles that are actively moving or determined to be dead as described in (d)(1)(i)(C) of this section must be released over the stern of the boat. In addition, they must be released only when fishing or scientific collection gear is not in use, when the engine gears are in neutral position, and in areas where they are unlikely to be recaptured or injured by vessels.

(B) Resuscitation must be attempted on sea turtles that are comatose, or inactive, as determined in paragraph (d)(1) of this section by:

(1) placing the turtle on its bottom shell (plastron) so that the turtle is right side up, and elevating its hindquarters at least 6 inches (15.2 cm) for a period of 4 up to 24 hours. The amount of the elevation depends on the size of the turtle; greater elevations are needed for larger turtles. Periodically, rock the turtle gently left to right and right to left by holding the outer edge of the shell (carapace) and lifting one side about 3 inches (7.6 cm) then alternate to the other side. Gently touch the eye and pinch the tail (reflex test) periodically to see if there is a response.

(2) sea turtles being resuscitated must be shaded and kept damp or moist but under no circumstance be placed into a container holding water. A water-soaked towel placed over the head, neck, and flippers is the most effective method in keeping a turtle moist.

(3) sea turtles that revive and become active must be released over the stern of the boat only when fishing or scientific collection gear is not in use, when the engine gears are in neutral position, and in areas where they are unlikely to be recaptured or injured by vessels. Sea turtles that fail to respond to the reflex test or fail to move within 4 hours (up to 24, if possible) must be returned to the water in the same manner as that for actively moving turtles.

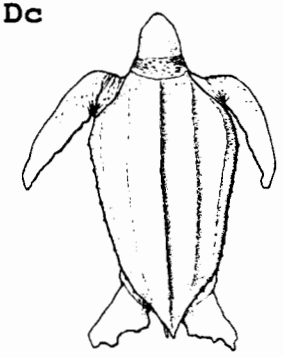
(C) A turtle is determined to be dead if the muscles are stiff (rigor mortis) and/or the flesh has begun to rot; otherwise the turtle is determined to be comatose or inactive and resuscitation attempts are necessary.

APPENDIX C

Identification Key for Sea Turtles and Sturgeon Found in Northeast U.S. Waters

SEA TURTLES

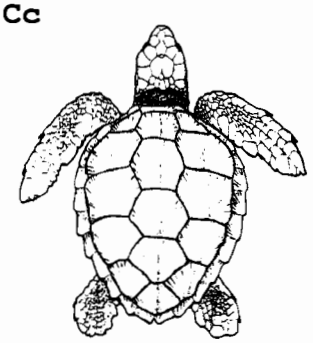
Dc



Leatherback (*Dermocheyls coriacea*)

Found in open water throughout the Northeast from spring through fall. Leathery shell with 5-7 ridges along the back. Largest sea turtle (4-6 feet). Dark green to black; may have white spots on flippers and underside.

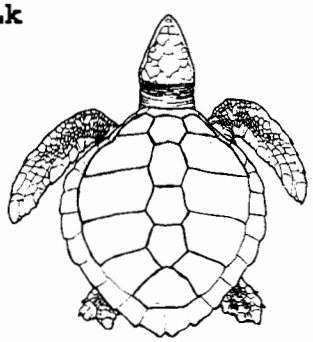
Cc



Loggerhead (*Caretta caretta*)

Bony shell, reddish-brown in color. Mid-sized sea turtle (2-4 feet). Commonly seen from Cape Cod to Hatteras from spring through fall, especially in southern portion of range. Head large in relation to body.

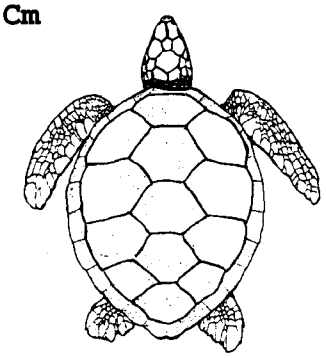
Lk



Kemp's ridley (*Lepidochelys kempi*)

Most often found in Bays and coastal waters from Cape Cod to Hatteras from summer through fall. Offshore occurrence undetermined. Bony shell, olive green to grey in color. Smallest sea turtle in Northeast (9-24 inches). Width equal to or greater than length.

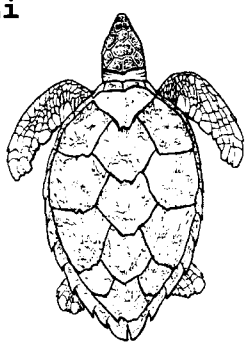
Cm



Green turtle (*Chelonia mydas*)

Uncommon in the Northeast. Occur in Bays and coastal waters from Cape Cod to Hatteras in summer. Bony shell, variably colored; usually dark brown with lighter stripes and spots. Small to mid-sized sea turtle (1-3 feet). Head small in comparison to body size.

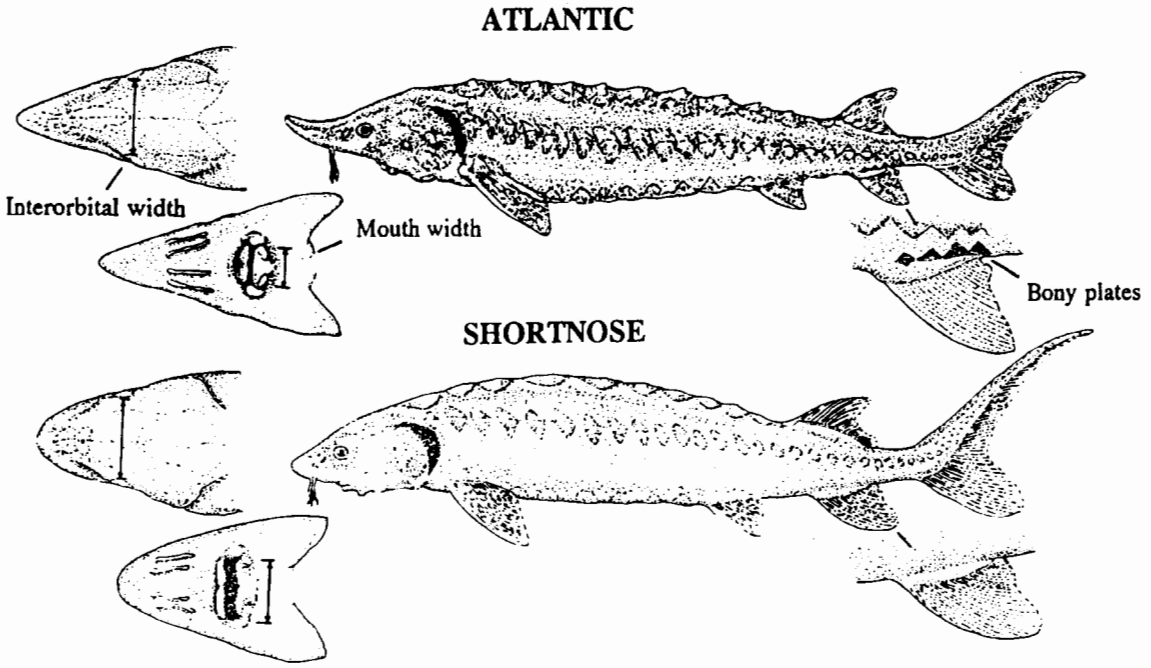
Ei



Hawksbill (*Eretmochelys imbricata*)

Rarely seen in Northeast. Elongate bony shell with overlapping scales. Color variable, usually dark brown with yellow streaks and spots (tortoise-shell). Small to mid-sized sea turtle (1-3 feet). Head relatively small, neck long.

APPENDIX C continued
Sturgeon Identification



Distinguishing Characteristics of Atlantic and Shortnose Sturgeon

Characteristic	Atlantic Sturgeon, *Acipenser oxyrinchus*	Shortnose Sturgeon, *Acipenser brevirostrum*
Maximum length	> 9 feet/ 274 cm	4 feet/ 122 cm
Mouth	Football shaped and small. Width inside lips < 55% of bony interorbital width	Wide and oval in shape. Width inside lips > 62% of bony interorbital width
*Pre-anal plates	Paired plates posterior to the rectum & anterior to the anal fin.	1-3 pre-anal plates almost always occurring as median structures (occurring singly)
Plates along the anal fin	Rhombic, bony plates found along the lateral base of the anal fin (see diagram below)	No plates along the base of anal fin
Habitat/Range	Anadromous; spawn in freshwater but primarily lead a marine existence	Freshwater amphidromous; found primarily in fresh water but does make some coastal migrations

* From Vecsei and Peterson, 2004

APPENDIX D

Procedure for obtaining fin clips from sturgeon for genetic analysis

Obtaining Sample

1. Wash hands and use disposable gloves. Ensure that any knife, scalpel or scissors used for sampling has been thoroughly cleaned and wiped with alcohol to minimize the risk of contamination.

2. For any sturgeon, after the specimen has been measured and photographed, take a one-cm square clip from the pelvic fin.

3. Each fin clip should be placed into a vial of 95% non-denatured ethanol and the vial should be labeled with the species name, date, name of project and the fork length and total length of the fish along with a note identifying the fish to the appropriate observer report. All vials should be sealed with a lid and further secured with tape Please use permanent marker and cover any markings with tape to minimize the chance of smearing or erasure.

Storage of Sample

1. If possible, place the vial on ice for the first 24 hours. If ice is not available, please refrigerate the vial. Send as soon as possible as instructed below.

Sending of Sample

1. Vials should be placed into Ziploc or similar resealable plastic bags. Vials should be then wrapped in bubble wrap or newspaper (to prevent breakage) and sent to:

   Julie Carter
   NOAA/NOS – Marine Forensics
   219 Fort Johnson Road
   Charleston, SC 29412-9110
   Phone: 843-762-8547

   a. Prior to sending the sample, contact Russ Bohl at NMFS Northeast Regional Office (978-282-8493) to report that a sample is being sent and to discuss proper shipping procedures.

APPENDIX E

Incident Report: ESA Listed Species Take

Photographs should be taken and the following information should be collected from all listed fish and sea turtles (alive and dead) collected.

Observer's full name:_____
Reporter's full name:_____

Species Identification:_____

Type of Gear and Length of deployment:

_____
_____

Date animal observed:_____ Time animal observed: _____
Date animal collected:_____ Time animal collected:_____

Environmental conditions at time of observation (i.e., tidal stage, weather):

_____
_____

Water temperature (°C) at site and time of observation:_____
Describe location of animal and how it was documented (i.e., observer on boat):

_____

Sturgeon Information:
Species _____

Fork length (or total length) _____ Weight _____

Condition of specimen/description of animal

_____
_____
_____
_____

Fish Decomposed: NO SLIGHTLY MODERATELY SEVERELY
Fish tagged: YES / NO *Please record all tag numbers.* Tag # _____

Photograph taken: YES / NO
(please label *species, date, geographic site* and *vessel name* when transmitting photo)

Genetics Sample taken: YES / NO
Genetics sample transmitted to: _____ on ____/_____/2012

APPENDIX E continued

Sea Turtle Species Information: *(please designate cm/m or inches.)*
Species _____ Weight (kg or lbs)_____

Sex (circle): Male Female Unknown How was sex determined? _____

Straight carapace length _____ Straight carapace width _____

Curved carapace length _____ Curved carapace width _____

Plastron length _____ Plastron width _____

Tail length _____ Head width _____

Condition of specimen/description of animal_____
_____

Existing Flipper Tag Information
Left _____ Right _____
PIT Tag # _____

Miscellaneous:
Genetic biopsy taken: YES NO
Photos Taken: YES NO Is this a Recapture: YES NO

Turtle Release Information:
Date _____ Time _____
Lat _____ Long _____
State _____ County _____

Remarks: (note if turtle was involved with tar or oil, gear or debris entanglement, wounds or mutilations, propeller damage, papillomas, old tag locations, etc.)
_____
_____