



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

MEMORANDUM FOR: Commander William Mowitt, NOAA
Commanding Officer, NOAA Ship *Pisces*

FROM: Captain Scott M. Sirois, NOAA
Commanding Officer, NOAA Marine Operations Center-Atlantic

SUBJECT: Project Instruction for PC-16-06
NEFSC Benthic Habitat Assessments of Northeast Outer Continental
Shelf Ecosystems

Attached is the final Project Instruction for PC-16-06, NEFSC Benthic Habitat Assessments of Northeast Outer Continental Shelf Ecosystems, which is scheduled aboard NOAA Ship *Pisces* during the period of September 21 – September 30, 2016. Of the 10 DAS scheduled for this project, 10 days are funded by a 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.





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: September 12, 2016

Platform: NOAA Ship *Pisces*

Project Number: PC-16-06 (OMAO)

Project Title: NEFSC Benthic Habitat Assessments of Northeast Outer Continental Shelf Ecosystems

Project Dates: SEPTEMBER 21, 2016 – SEPTEMBER 30, 2016

Prepared by: Vincent G. Guida Dated: 08/08/16
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Chief Scientist
Coastal Ecology Branch, Chief
Northeast Fisheries Science Center
J.J. Howard Marine Laboratory

Approved by: William A. Karp Dated: 12 Sept 2016
William A. Karp, Ph. D. Science and Research Director
Northeast Fisheries Science Center

Approved by: Scott M. Sirois Dated: 14 Sept 2016
Captain Scott M. Sirois, NOAA
Commanding Officer
Marine Operations Center - Atlantic

I. Overview

A. Brief Summary and Project Period

In the interest of the National Marine Fisheries Service (NMFS) Northeast Fisheries Science Center (NEFSC) theme of Science in Support of Ecosystem-Based Fisheries Management, we plan to conduct benthic sampling operations off of the coasts of New York to support its regional Benthic Habitat Assessment (NEFSC BHA) project. Through this work we plan to develop a better sense of the function of benthic and demersal habitats toward fisheries production. In the course of this phase of the NEFSC BHA project, our goals are as follows:

1) characterize offshore benthic habitats that fall within Bureau of Ocean Energy Management (BOEM) designated New Jersey Wind Energy Areas (NJ WEA), and

2) develop benthic habitat maps, models, and other data products that can be used to improve NEFSC's analytical and decision-making capabilities with respect to:

a) offshore energy siting and monitoring,

b) improved essential fish habitat definition, and

c) data in support of conventional and alternative fisheries management strategies in the mid-Atlantic.

Specific to this cruise and our current obligation to BOEM, we will perform multibeam sonar mapping and collect benthic epifaunal samples in order to characterize important physical and biological features of benthic and demersal habitats within the New York Wind Energy Area (NY WEA).

3) A piggyback project will be conducted to sample the nature and density of microplastic particles in the oceanic neuston (air-sea interface) in the inner New York Bight.

B. Days at Sea (DAS)

Of the 10 DAS scheduled for this project, 10 DAS are funded by a Line Office Allocation. This project is estimated to exhibit a medium Operational Tempo.

C. Operating Area

Our areas of operation are located roughly in the range of 12 to 27 nm south of Long Island, NY (Fig. 1). It is a roughly wedge-shaped, lies between major traffic lanes radiating from New York/New Jersey Harbor, and is about 117 square nautical miles (~402 km²) in area. This area spans depths of 19 to 41 meters water depth.

D. Summary of Objectives

The primary operational objectives are to collect the following data from within the NY WEA: (1) high-resolution multibeam mapping data of areas of high priority, including areas of known or suspected value as habitats of managed species, (2) perform sampling at close spatial intervals for sediment characteristics (grabs) and epifauna, including demersal fishes (2 m beam trawl) at benthic stations within the WEA, (3) capture water column hydrographic profiles with vertical CTD casts, and time permitting, (4) capture multi-frequency split beam acoustic data (EK60) in all operating areas for use in water column analysis for fish, and (5) sampling of neustonic microplastic particles with a Manta neustonic skimmer net.

Fig. 1. New York ops area location. BOEM renewable energy lease blocks for the New York Wind Energy Area (NY WEA) are in green. Numbered and lettered blocks outside and inside the NY WEA are BOEM offshore energy lease blocks. The larger numbered blocks are 3 X 3 statute miles, the smaller lettered blocks are 0.75 X 0.75 statute miles).

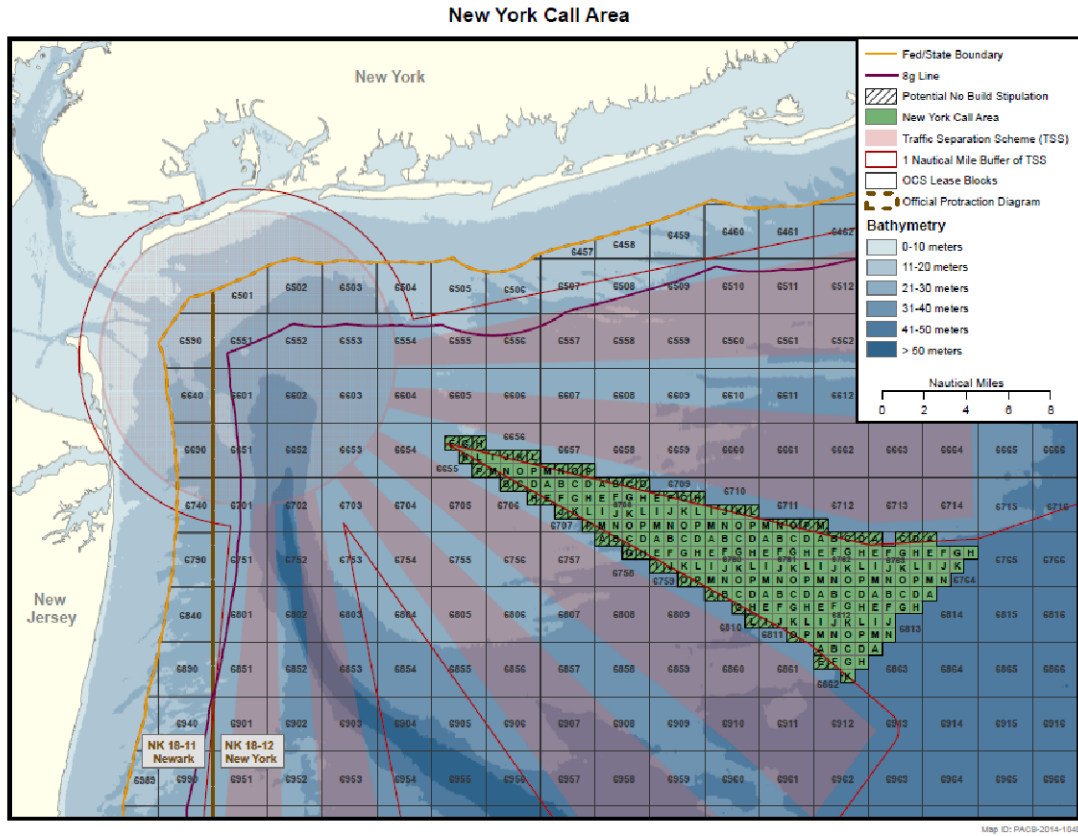
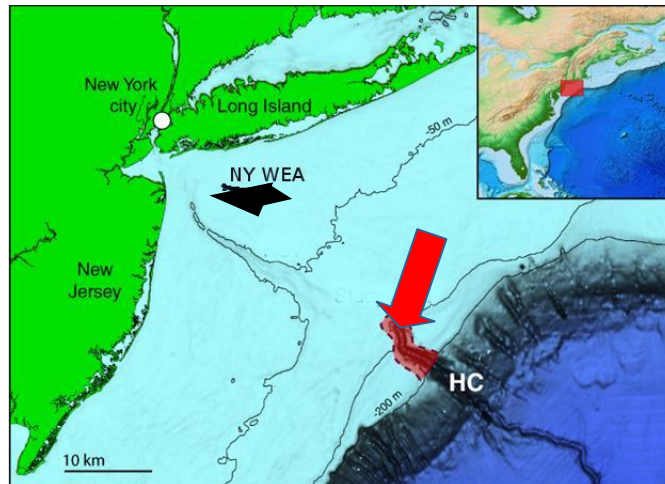


Fig. 2. Map showing relationship of Hudson Canyon (HC) to NY WEA. Red arrow shows approximate location of Hudson Canyon patch test site.



E. Participating Institutions

NMFS- Northeast Fisheries Science Center
 Bureau of Ocean Energy Management (U.S Dept. of Interior: BOEM)

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

Name (Last, First)	Title	Date Aboard	Date Disembark	Gender	Affiliation	Nationality
Guida, Vincent	Chief Scientist	09/20/2016	9/30/2016	M	NEFSC	US
Deshpande, Ashok	Research Chemist	09/20/2016	09/30/2016	M	NEFSC	US
Estela-Gomez, Erick	Ltjg, NOAA Corps	09/20/2016	09/30/2016	M	NEFSC	US
Welch, Heather	Contract Scientist	09/20/2016	09/30/2016	F	NEFSC	US
Timmons, DeMond	Contract Scientist	09/20/2016	09/30/2016	M	NEFSC	US
Boyce, Delan	Contract Scientist	09/20/2016	09/30/2016	M	NEFSC	US
Gilruth, Jordan	Contract Scientist	09/20/2016	09/30/2016	M	NEFSC	US

G. Administrative

1. Points of Contacts:

Chief Scientist – Vincent Guida, Ph.D.
 office: 732-872-3020; email: Vincent.guida@noaa.gov

Ops. Officer- LTJG Nathan Gilman, ops.pisces@noaa.gov

Agent: Nathan Keith, Vessel Coordinator
 office: 508-495-2224

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

- Thomas.Noji@noaa.gov {E&A Division Chief}
- Susan.Gardner@noaa.gov {Deputy Science and Research Director}
- Bill.Karp@noaa.gov {Science and Research Director}
- Nathan.Keith@noaa.gov {NEFSC Vessel Coordinator}

CO.Pisces@noaa.gov { Commanding Officer – PISCES }
ops.Pisces@noaa.gov { Operations Officer – PISCES }
Michael.S.Abbott@noaa.gov { NEFSC Port Captain }

For any sailing delays or deviance from standard operating procedure that may affect scientific objective(s), primary or otherwise, Chief Scientist shall notify:

Nathan.Keith@noaa.gov {NEFSC Vessel Coordinator}

2. Diplomatic Clearances:

None Required.

3. Licenses and Permits:

This cruise is operating under current Northeast Fisheries Science Center (NEFSC) Marine Mammal Letter of Authorization and Endangered Species Act Incidental Take Statement.

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:

21 September: Depart from Davisville, RI and commence cruise operations upon arrival in the operational area.

30 September: Complete cruise operations, and steam for Davisville, RI to arrive on 30 August.

B. Staging and Destaging:

20 September: Begin cruise staging in Davisville. Embark scientific personnel Monday and complete CTD, grab sampling, trawl and trawl processing work station setup.

21 September: Complete cruise staging, load, and setup remaining scientific equipment and scientific personnel Embark scientific (if needed).

30 September: Dock in Davisville, disembark scientific personnel, and off-load scientific equipment and data.

C. Operations to be Conducted:

Operations Summary: This cruise represents the condensation into a single cruise of two planned cruises: one for acoustic mapping and the other for performing habitat sampling. Limitation of ship availability and time have the urgency to meet reporting deadlines have necessitated that some of each must be performed on this single cruise. Embarkation and overnight accommodation of the scientific crew is requested aboard *Pisces* on Tuesday, 9/20/16, as members must travel from New Jersey to Rhode Island in order to ensure on-time departure on 9/21/16. For this reason, dates aboard in Section F. are listed as 9/20 rather than 9/21. Only sleeping accommodations are requested; no meals for that day.

Scientific operations will commence upon arrival in the Hudson Canyon operating area. A patch test for the ME70 will be conducted there with the purpose of compensating for the ship's pitch, roll and heave characteristics. This needs to be performed in an area with a correct configuration of flat and sloped bottom surfaces. Parallel lines along the east wall of Hudson Canyon (Fig. 3) has the ideal combination of a long, moderately sloped wall (10-12° slope) in immediate proximity to a very level (<1° slope), flat surface, all within a depth range of about 90 to 200 m. Parallel lines orthogonal to the slope (Table 1) can be traversed at speeds of 4 and 8 kt. to perform the test and make the necessary adjustments to ME70. The same location was used successfully for patch testing with ME70 aboard NEFSC Benthic Habitat cruises HB11-04 and HB15-05. While this location is about 60 nmi. southwest of the NY WEA ops area, it is the closest known location with adjacent bottom contours featuring the moderate slope and very flat bottom in close proximity to one another.

Following a transit to the NY WEA ops area (Figs. 1, 2), a program of multibeam sonar mapping, hydrographic sampling, bottom grab sampling, and beam trawling will be conducted within the NY WEA off Long Island.

Figure 3. Slope map of Hudson Canyon derived from NEFSC multibeam mapping (2007-2010) showing location of parallel patch test lines (green).

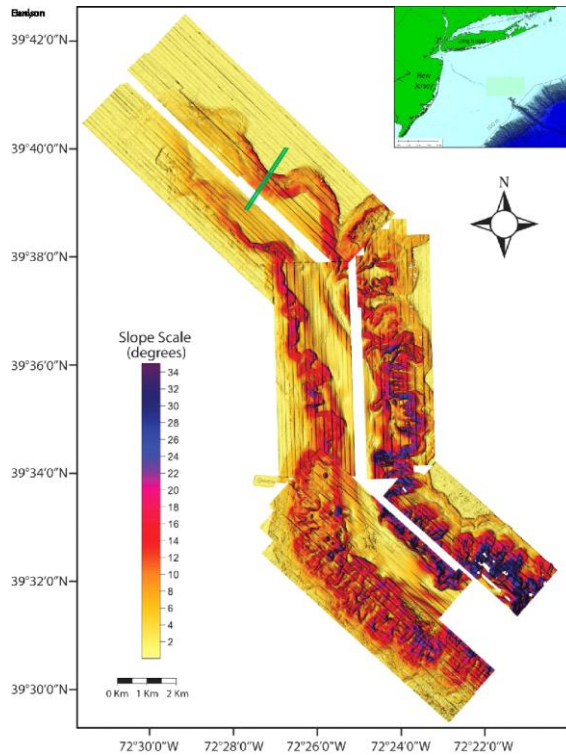


Table 1. Coordinates and speeds of parallel lines for multibeam sonar patch testing in Hudson Canyon utilized during both HB15-05 and HB11-04.

line #	N Lat ddmm.mmm	W Lon ddmm.mmm	Dec Lat dd.dddd	Dec Lon dd.dddd	pass a sp. (kt)	pass b sp. (kt)	pass c sp. (kt)
1	3939.921	7226.427	39.6654	-72.4404	8	4	4
	3838.783	7227.740	38.6464	-72.4623			
2	3838.826	7227.794	38.6471	-72.4632	4	--	--
	3939.964	7226.481	39.6661	-72.4413			

All production mapping and sampling planned for this cruise will take place inside the NY WEA. This area, lies outside of and between major traffic lanes radiating from the NY-NJ Harbor, hence its wedge shape. Its bottom slopes gently from northwest to southeast (Fig. 4). Depths in the WEA range from 18 to 42 m. Previous sampling by our group and by the U.S. Geological Survey indicate largely sand and gravelly sand bottom sediments, but there is some indication of the presence of full gravel and mud substrates. Fishing records suggest that the southeastern end of the WEA may be sea scallop habitat. Gravelly habitats further north may support patches of black sea bass and scup habitat. As complete mapping coverage is not possible within the limited period of this single cruise, ME70 multibeam sonar mapping will be limited to two bands (Zone 1 and Zone 2: Fig. 5A, B), corresponding to suspected important habitat areas for sea scallops and

black sea bass, respectively. Coordinates for the mapping lines seen in Fig. 5 will be provided separately from this Cruise Instruction.

Fig. 4. Low-resolution bathymetric contour map of the NY Wind Energy Area.

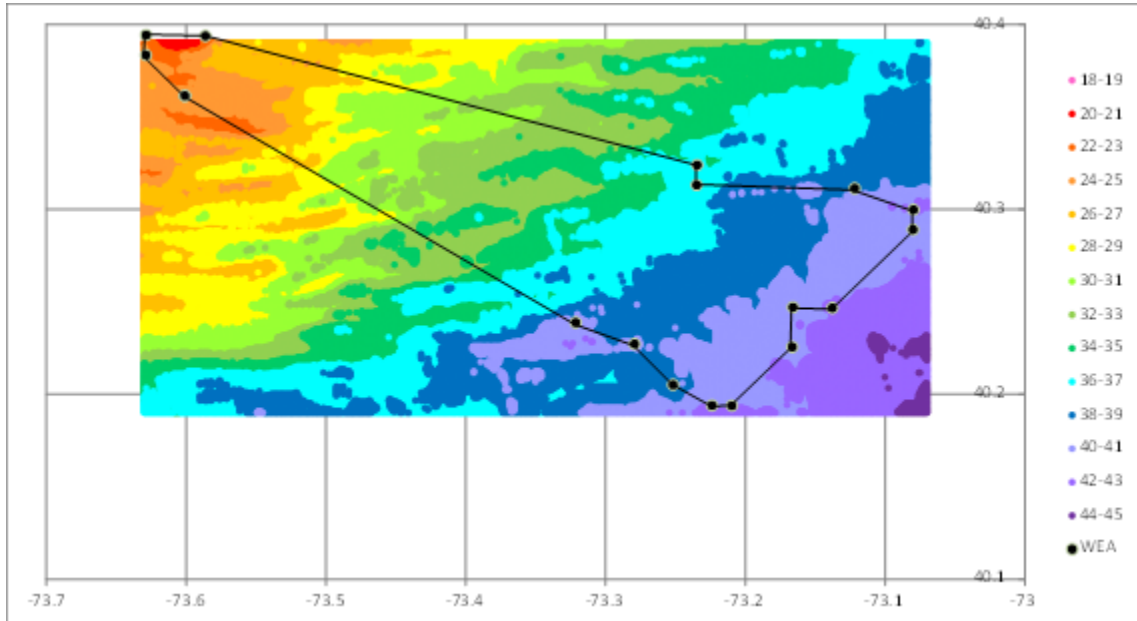
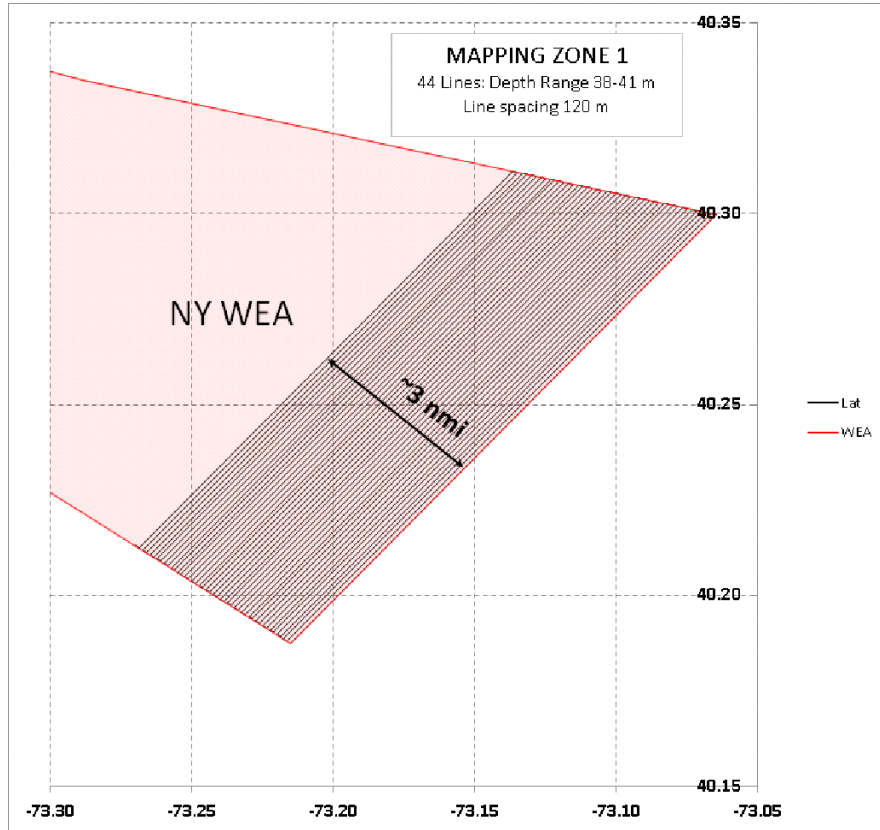
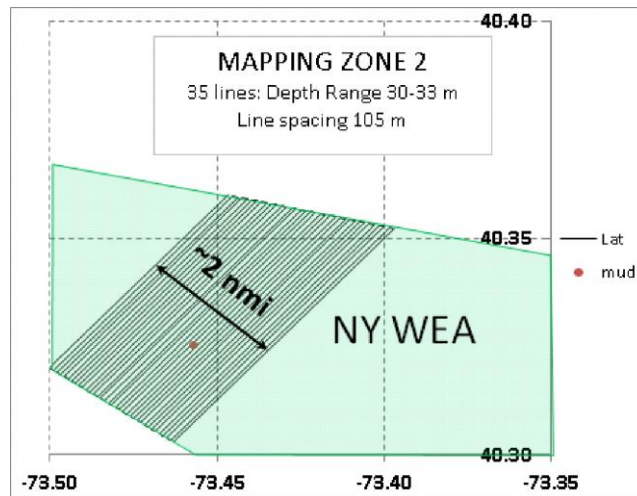


Figure 5. Mapping lines for full coverage by ME70 in the NY WEA. A. Zone 1 (sea scallops), B. Zone 2 (black sea bass-scup).

A.

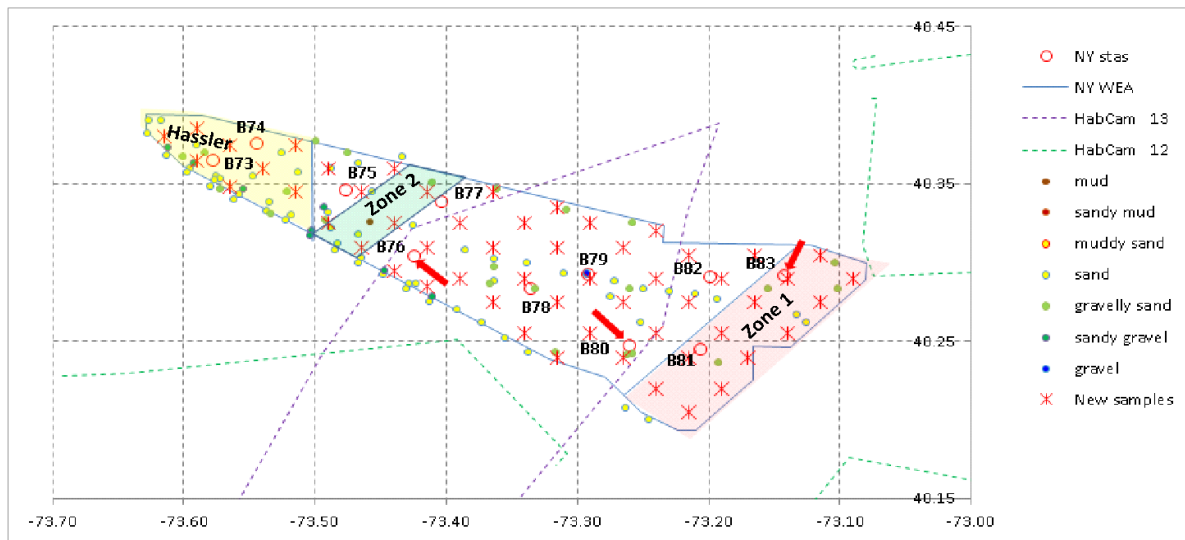


B.



Benthic sampling stations within the NY WEA includes 11 stations from the FY14 AMAPPS cruise aboard NOAA ship *Gordon Gunter* to be re-sampled on this cruise to detect differences plus a grid of 55 new stations to provide close spatial coverage (Fig. 6). Of particular interest will be those samples taken within the mapped areas as these can provide the catch corresponding to the acoustic mapping signature. Coordinates for these sampling sites will be provided separately from these Cruise Instructions.

Figure 6. NY WEA Benthic Survey sampling grid superimposed on mapping areas. Pink area: Mapping Zone 1, green area: Mapping Zone 2, yellow area: zone mapped by NOS aboard NOAA ship *Ferdinand Hassler*, red asterisks: new benthic sampling grid, large red circles: AMAPPS cruise sampling grid, small colored circles: USGS sediment data. Red arrows point to AMAPPS stations where sea scallops were collected.



At each of these sites two types of benthic sampling will be performed: benthic infauna (grab sample) and benthic epifauna (2 m beam trawl). Vertical CTD casts will be made at every third station. Multiple-frequency split beam sonar (EK60) will be collected continuously during the passages through the WEAs for the purpose of fish detection in the water column. The scientific crew will provide a 10 TB drive for collection of EK60 data and additional drives for ME70 data. Multibeam sonar (ME70) will also be operated continuously within WEAs for purposes of mapping of bottom topography and collection of backscatter data. In addition, intensive multibeam sonar mapping of bottom topography and backscatter distribution will be undertaken in two zones within the WEA.

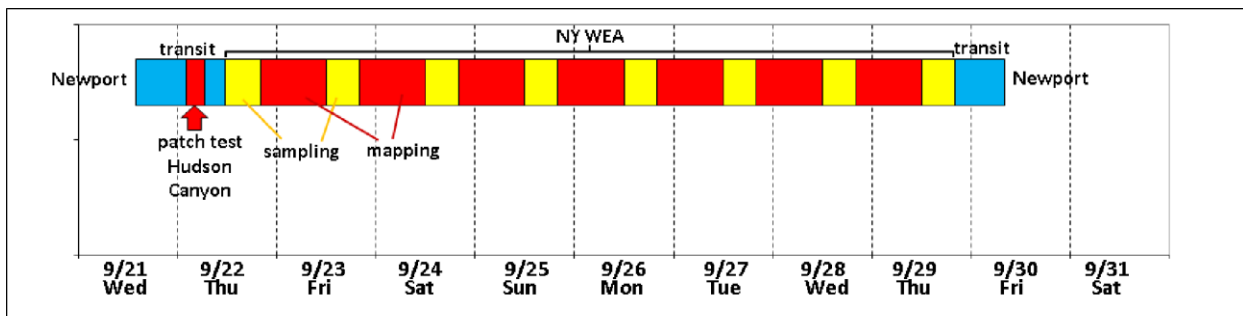
The bridge crew on watch should be creating electronic records in the ship's SCS of all sampling events, including grabs and trawls and start-stop times for multibeam mapping line operations. Examples of SCS reports (templates) for beam trawl events from *Bigelow* are displayed in Appendices A-C. The reports in C and either A or B are desired for beam trawls. The ELG file

in Appendix D can be used as a template for the report of bottom grab samples and Manta net deployments, although these two should be reported as separately named and numbered series, i.e. Bottom Grab 001 – 0XX and Manta Net 001 – 0XX.

Schedule:

Fig. 7 provides an approximate schedule for major cruise operations. Following the transit from Newport, RI and patch test in Hudson Canyon operations in the NY WEA will be conducted 24 hours a day and will alternate between 8-hour periods (noon to 8 PM local time) of sampling and 16-hour periods (8 PM to noon) of running multibeam sonar lines. It is anticipated that Pisces will provide a survey tech during the noon to midnight watch, primarily providing help and advice for mapping and CTD operations. As watches will be noon to midnight and midnight to noon (12-on, 12-off), this means that the noon to midnight watch will be split between 8 hours of sampling and 4 hours of mapping, while the midnight to noon watch will be entirely devoted to mapping. Based on previous experience, sampling protocols for each station are anticipated to require approximately one hour per station (8 stations per sampling session) and the mapping lines plotted are anticipated to require ~100 hours to complete at 7.0 kt.

Figure 7 Approximate timeline for major cruise operations. Blue bars are transits, yellow represents benthic sampling, and red represents multibeam mapping.



Sampling Protocols

The protocols indicated here are nearly identical to those employed during the FY15 Benthic Habitat cruise aboard *Henry Bigelow* (HB15-06).

Benthic Sampling Operations

1. Grab sampling – Bottom grabs will be made at each designated site. Upon stopping the ship at each site, three replicate grabs for grain size will be taken at each of designated station using either a 0.10 m² Young-modified Van Veen grab sampler (Fig. 8: ~100 lbs. empty). The grab sampler will be cocked open and lowered over the side and sent down to the bottom at the fastest

speed allowable by the winch till it hits the bottom, then brought back up and lowered onto its wooden stand. The same operation was performed with the conducting wire mounted on one of the hydrographic winches on the starboard side sampling station aboard *Bigelow*. The lids on top of the Van Veen buckets will be opened and the sample inspected by a member of the scientific crew for adequacy of the sample. Success or failure of the grab will be reported immediately to the bridge. Repositioning of the ship will not be necessary between replicates at a site. No more than three unsuccessful attempts were made to obtain any sample.

While each full grab is on deck its characteristics will be hand-recorded, a photo made of its surface, a 3 cm diameter core will be taken for grain size analysis and stored under refrigeration, and the remaining contents of the grab will be dumped into a dishpan and discarded. The grab sampler can then be washed clean with a salt water hose and readied for the next replicate grab. It is anticipated that ship's crew will handle launch and retrieval of the grab sampler to the point where photos and core subsamples are taken by the scientific crew.

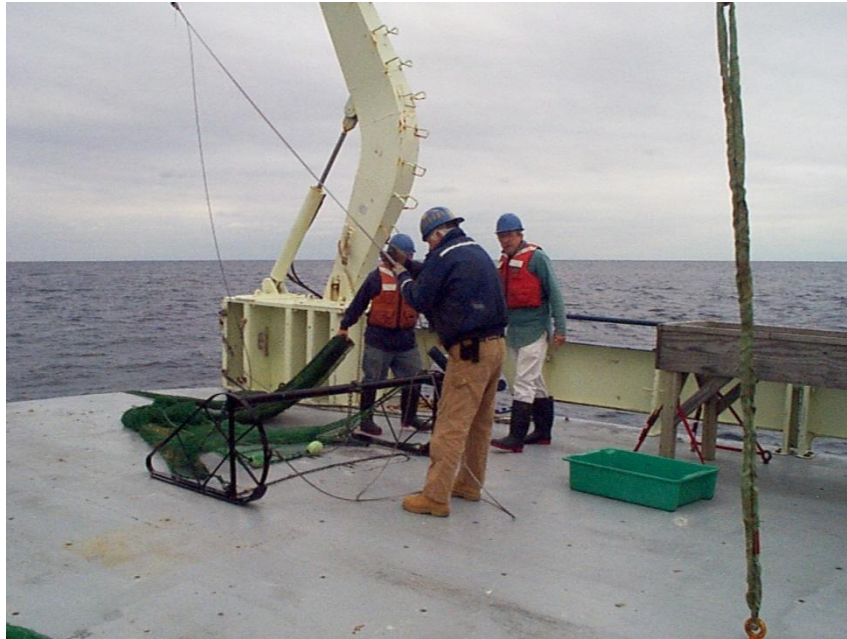
Figure 8. Young-modified Van Veen grab sampler with wooden stand beneath.



2. Trawl sampling – The ship shall be repositioned to pass through the trawl site coordinates for each trawl unless otherwise indicated by the scientific crew. One trawl sample will be performed at each site. A 2 m beam trawl (Figure 9) with ¼ inch mesh net will be deployed on a single 0.25” or other suitable trawl wire. Adjustments can be made for larger wires. Trawl will be done at a speed of ~2 kt using a scope of 2:1 for 15 minutes, or less if catches dictate as determined by the scientific crew. Unsuccessful trawls will be repeated after adjustments of weight and scope until successful. Due to the small size of the catch from this gear, the catch can be dropped from the net’s cod end into buckets or baskets and carried into the inside sorting area; the conveyor system will not be needed. Catch processing will consist of identification, enumeration, weighing

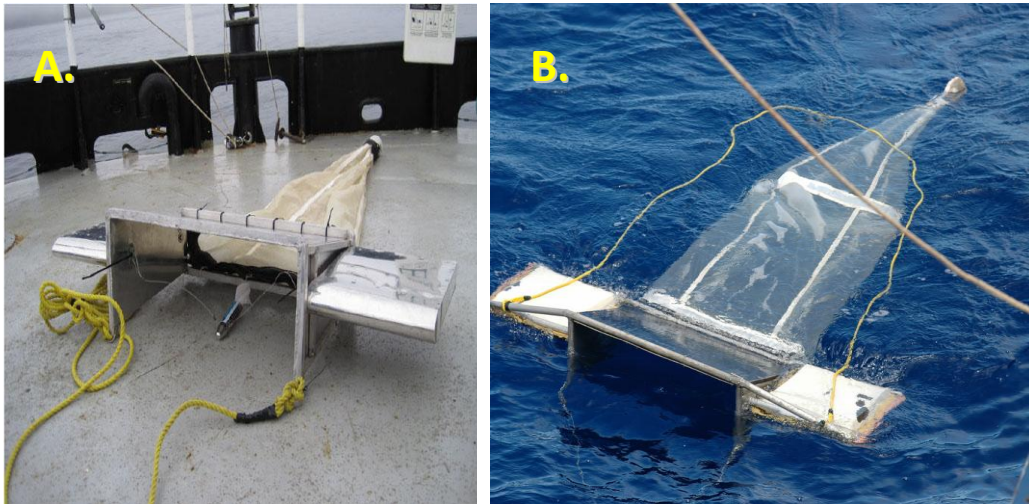
and manual recording. Use of the ship's FSCS system will not be necessary. Catches will be discarded following on-board processing, except possibly for a small number of unusual specimens that may be retained and frozen to be brought ashore. It is anticipated that ship's crew will handle trawl gear, nets, and catch to the point where catches are brought into the sorting area for processing by the scientific crew.

Figure 9. Two meter beam trawl and bridle aboard R/V *Oceanus* in 2002.



3. Vertical CTD casts with a simple Seabird 19+ CTD (no rosette sampler). Casts will be made at every third site visited at any time while on station, as long as it does not interfere with grab or trawl operations. We anticipate that the ship's cruise tech(s) will be available for night-time CTD operations, including training scientific crew in *Pisces* CTD protocols and procedures.
4. The Manta neustonic skimmer net (Figure 10) will be deployed from a hydrographic winch on the starboard side every third site visited (alternating with CTDs: not at the same sites) at any time while on station, as long as it does not interfere with grab or beam trawl operations. This gear weighs ~60 lbs., utilizes a large plankton net, and has a metal frame with short wings to ensure that it rides along the surface and captures primarily floating materials. It will be towed at ~2 kt. with enough wire out to maintain sampling of the surface. Tows will be conducted for 15 minutes initially, but this may change in response to particularly large or small catches. Samples require no preservation and will be stored in plastic bags until analysis at the NEFSC J.J. Howard Laboratory.

Figure 10. Manta neustonic skimmer net, A. On deck, B. Deployed.



Hydroacoustic Operations

A series of mapping lines have been plotted (Fig. 5) by the scientific crew to insure adequate coverage of these blocks. These will be transmitted to the ship prior to the cruise. A separation of 120 m between parallel mapping lines is anticipated for Zone 1 and 105 m for Zone 2. Lines will be run at 6-8 kt, weather depending, to ensure good quality of acoustic returns. Additional vertical CTD casts will be made periodically while running mapping lines for the purpose of defining water column speed-of-sound profiles.

It is anticipated that ship's cruise technicians will set up, adjust, and aid in the operation and monitoring of acoustic gear during midnight to noon watches in collaboration with the Chief Scientist. Scientific crew perform the same functions during the noon to midnight watch. Specific data collection will include the following:

1. Multi-frequency split beam sonar (EK60) – The EK60 sonar shall be operated continuously at all frequencies during passage through the WEA areas except during ME70 operations and unless otherwise indicated by the chief scientist. The scientific crew will collect the raw data at the end of the cruise in order to analyze it for water column returns, i.e. fish presence.
2. Multibeam sonar (ME70) – The ME70 sonar shall also be operated continuously during passage through the WEA areas unless otherwise indicated by the chief scientist. This raw data will be collected periodically during the cruise by the scientific crew in order to start processing it while on board. Adjustments to acoustic gain on the ME70 should be avoided. Any adjustments made once mapping operations begin must be recorded and reported to the chief scientist as gain

adjustments affect the calibration and interpretation of backscatter values, whose collection is essential for this cruise.

Data: At the end of the cruise the ship will provide the Chief Scientist with copies of the data from the Ship's navigation system (cruise track), electronic records from sea and weather sensors, CTD cast files, raw EK60 files, ME70 files, and the electronic event log files. A copy of the SCS data should also be provided to DMS personnel in Woods Hole as well.

D. Dive Plan

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

Dives are not planned for this project.

E. Applicable Restrictions

Conditions which preclude normal operations:

Should the sea conditions (e.g. high wind, wave height, visibility etc.) inhibit normal hydroacoustic survey operations, the Chief Scientist and *Pisces*' Captain and Operations Officer(s) will discuss an alternative survey plan. At the discretion of the Captain and/or Operations Officer, we will either seek refuge until poor sea conditions abate or we will seek an alternative survey location.

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

Mitigation for Protected Resources:

Plankton Nets, Small-mesh Towed Nets, Oceanographic Sampling Devices, Video Cameras, and Remotely Operated Vessel (ROV) Deployments

The NEFSC deploys a wide variety of gear to sample the marine environment during many of their research cruises, such as plankton nets, oceanographic sampling devices, video cameras, and ROVs. These types of gear are not considered to pose any risk to protected species because of their small size, slow deployment speeds, and/or structural details of the gear and are therefore not subject to specific mitigation measures. However, the officer on watch and crew monitor for any unusual circumstances that may arise at a sampling site and use their professional judgment and discretion to avoid any potential risks to protected species during deployment of all research equipment.

“Take” of Protected Resources: Under the Marine Mammal Protection Act (MMPA) and Endangered Species Act (ESA) it is unlawful to take a protected species. The MMPA defines take as “harass, hunt, capture, kill, or collect, or attempt to harass, hunt, capture, or collect”. The ESA defines take as “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct.” An incidental take is one that is incidental to, but not the purpose of, otherwise lawful activities.

In the event of an incidental take of a marine mammal or federally listed threatened or endangered species during the cruise, the chief scientist will take the following actions:

Marine turtle, Sturgeon and Atlantic salmon bycatch: Please refer to the Permits & Incidental Take Manual for handling and sampling procedures. Information should be collected on the

Sturgeon & Salmon and Turtle Data Collection Sheets and required information should be submitted within 24 hours of the take to Incidental.Take@noaa.gov, Elizabeth.Josephson@noaa.gov, Nathan.Keith@noaa.gov, Sarah.Pike@noaa.gov for PSIT entry. **Dead turtles, sturgeon, and Atlantic salmon shall, if feasible, be frozen and returned to the Woods Hole Laboratory.**

Marine mammal bycatch: Please refer to the Permits & Incidental Take Manual for handling and sampling procedures. Information should be collected on the Marine Mammal Incidental Take & Data Collection Sheet. **Animals determined to be dead, shall if feasible be frozen and return to the Woods Hole laboratory.** Required PSIT information should be submitted within 24 hours of the take to Incidental.Take@noaa.gov, Elizabeth.Josephson@noaa.gov, Nathan.Keith@noaa.gov, Sarah.Pike@noaa.gov.

Migratory bird salvage: Please refer to the Federal Fish and Wildlife “Special Purpose – Salvage” Permit located in the Permits & Incidental Take Manual for the salvage of dead migratory birds (except species listed as threatened or endangered under the Endangered Species Act; see 50 CFR 17.11).

Stellwagen Bank National Marine Sanctuary:

Please see the permit and requirements located in the Permits and Incidental Take Manual.

III. Equipment

A.

Equipment and Capabilities provided by the ship (itemized)			
	Purpose	Item	Quantity
1	CTD Sampling	Computer(s) (meeting NOAA security standards) and electronic storage for running and retrieving CTD cast data	1
2	Hydroacoustic Surveys	EK60 Split Beam, multi-frequency sonar	1
3	Hydroacoustic Surveys	ME70 Multibeam Sonar	1
4	Hydroacoustic Surveys/CTD Sampling	Computer(s) (meeting NOAA security standards) and electronic storage for running and logging hydroacoustic operations	ample
5	Grab Sampling	Refrigerator (preferred) or Freezer space (if available)	
6	Grab Sampling	Walky-Talkies	ample
7	Grab Sampling	Deck hose	1

B.

Equipment and Capabilities provided by the scientists (itemized)			
1	Grab Sampling	0.10 m ² Van-Veen Grab Sampler with wooden stand	1
2	Grab Sampling	Grab Sampler Toolbox, inc:	1
3	Grab Sampling	WD-40	1
4	Grab Sampling	Zip ties (various sizes)	ample
5	Grab Sampling	Duct tape	ample
6	Grab Sampling	Electrical Tape	ample
7	Grab Sampling	Wrenches	set
8	Grab Sampling	Scientific Fisher Rulers for measuring sediment depth	ample
9	Grab Sampling	Coring tubes and caps (3 cm or 1 3/16" and larger)	ample
10	Grab Sampling	Core labels	ample
11	Grab Sampling	Sharpies	ample
12	Grab Sampling	Baggies (for double packing samples)	ample
13	Grab Sampling	Digital Camera (for photographing grab samples, water-resistant and drop-proof ideal)	2
14	Grab Sampling	Waterproof Paper Grab Sample Manual Log Sheets	ample
15	Grab Sampling	Waterproof Paper cut into small strips (for labeling photos, and double cores)	ample
16	Beam Trawling	2 m Beam Trawl Frames, bridle	2
17	Beam Trawling	Spare Beam Trawl Nets	4
18	Beam Trawling	Spare Sash Weights for Trawl	ample
19	Beam Trawling	Buckets, 5 gal.	ample
20	Beam Trawling	Fish Baskets, 1.5 bu	ample
21	Beam Trawling	Waterproof Paper Manual Trawl Log and Stroke Tally Sheets	ample
22	Beam Trawling	Fish Measuring Boards, manual	2
23	Beam Trawling	Waterproof inside labels for sample jars	ample
24	Beam Trawling	Marel Electronic Scale (small: countertop model)	1
25	Beam Trawling	Marel Electronic Scale (large: deck model)	1
26	Beam Trawling	Glass Sample Jars with caps, various sizes	ample
27	Grab & Trawl	¾" Deck Hose & Fittings suitable for salt water	
28	Hydrographic	SeaCat SBE19+ CTD profiler	2
29	Data Retrieval/Logs	2TB Hard Drive	1
30	Data Retrieval/Logs	Rite in Rain Field Notebooks	3
31	Data Retrieval/Logs	Pens and pencils	ample
32	Data Retrieval/Logs	Premade datasheets in three ring binders for grab samples	ample
33	Data Retrieval/Logs	Laptop computer (meeting NOAA security standards) for cruise tracking and data manipulation in field	ample
34	Data Retrieval/Logs	Scientific Drybox	1
35	Personal Protective Equipment	Formalin respirator	1
36	Personal Protective	Foul Weather Gear (for scientific crew)	ample

	Equipment		
37	Personal Protective Equipment	Hard Hats (for scientific crew)	6
38	Personal Protective Equipment	Boots (for scientific crew)	6
39	Personal Protective Equipment	Work Gloves (for scientific crew)	6 pair
			6 pair

IV. Hazardous Materials

A. Policy and Compliance

No Hazardous Materials are being brought aboard the ship for this project (no formalin)

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*

VII. Meetings, Vessel Familiarization, and Project Evaluations

- A. Pre-Project Meeting: The Chief Scientist and Commanding Officer will conduct a meeting of pertinent members of the scientific party and ship's crew to discuss required equipment, planned operations, concerns, and establish mitigation strategies for all concerns. This meeting shall be conducted before the beginning of the project with sufficient time to allow for preparation of the ship and project personnel. The ship's Operations Officer usually is delegated to assist the Chief Scientist in arranging this meeting.
- B. Vessel Familiarization Meeting: The Commanding Officer is responsible for ensuring scientific personnel are familiarized with applicable sections of the standing orders and vessel protocols, e.g., meals, watches, etiquette, drills, etc. A vessel familiarization meeting shall be conducted in the first 24 hours of the project's start and is normally presented by the ship's Operations Officer.
- C. Post-Project Meeting: The Commanding Officer is responsible for conducted a meeting no earlier than 24 hrs. before or 7 days after the completion of a project to discuss the overall success and ~~shortcomings~~~~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: <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, ships~~², 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. Arrangements should also be made to ensure that NEFSC scientists with dietary restrictions are accommodated.

Name (Last, First)	Title	Date Aboard	Date Disembark	Dietary Needs
Guida, Vincent	Chief Scientist	09/20/2015	09/20/2015	NA
Deshpande, Ashok	Research Chemist	09/20/2016	09/30/2016	vegetarian
Estela-Gomez, Erick	Ltjg, NOAA Corps	09/20/2016	09/30/2016	NA
Welch, Heather	Contract Scientist	09/20/2016	09/30/2016	vegetarian
Timmons, DeMond	Contract Scientist	09/20/2016	09/30/2016	NA
Boyce, Delan	Contract Scientist	09/21/2016	09/30/2016	NA
Gilruth, Jordan	Contract Scientist	09/21/2016	09/30/2016	NA

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/nf57-10-02.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 (<http://www.oma.noaa.gov/find/media/documents/oma-1008-tuberculosis-protection-program>). See https://localonly.nefsc.noaa.gov/ships/tb_screening_form.pdf for forms.

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 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.

E. 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.

F. 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.

G. 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.

Appendix A. Benthic Habitat Event 001 HDR file

ST-CruiseCode=201505
ST-StationNumber=d28
ST-VesselName=HB
ST-DesSpd=2.0
ST-Comments=None
Chief Scientist=Vince Guida
ST-HullSurfaceTemp=25.80
ST-StartLon=07435.7545W
ST-StartLat=3836.8335N
ST-StopLat=3837.3591N
ST-StopLon=07436.2548W
ST-DesignatedWireout=
ST-StartTrawlTime=08/13/2015-
19:20:22
ST-StopTrawlTime=08/13/2015-
19:40:25
ST-StartDepth=31.44
ST-StopDepth=31.27
ST-Heading=329.4
ST-COG=326
ST-TSGSalinity= 31.5109
ST-TSGTemperature=24.6856
ST-Duration=20.050
ST-MinDepth=29.9900
ST-MaxDepth=32.7100
ST-AvgDepth=31.0295
ST-MinGroundSpeed=0.5000
ST-MaxGroundSpeed=6.2000
ST-TracklineLength=1.575
ST-Distance=0.655
ST-MinDepth2=29.9900
ST-MaxDepth2=32.7100
ST-AvgDepth2=31.0295
ST-Young-AvgRelWindSpd=4.2005
ST-Young-MinRelWindSpd=0.4000
ST-Young-MaxRelWindSpd=7.1100
ST-AvgSOG1=2.1636
ST-MinPitch=0.0000
ST-MaxPitch=63.1700
ST-Pitch=12.5700
ST-MinRPM=0.0000
ST-MaxRPM=63.1700
ST-RPM=12.5700

Appendix B Event Report File 001 TXT file

****Event Report File - SCS 4.0****

Event Header File - Benthic Habitat Event_001.hdr
Event started on 8/13/2015 at 6:38:21 PM

Cruise

ST-CruiseCode:201505
ST-StationNumber:d28
ST-VesselName:HB
ST-DesSpd:2.0
ST-Comments:None
Chief Scientist:Vince Guida

Weather

ST-HullSurfaceTemp:25.80

EventData

ST-StartLon:07435.7545W
ST-StartLat:3836.8335N
ST-StopLat:3837.3591N
ST-StopLon:07436.2548W
ST-DesignatedWireout:
ST-StartTrawlTime:08/13/2015-19:20:22
ST-StopTrawlTime:08/13/2015-19:40:25
ST-StartDepth:31.44
ST-StopDepth:31.27
ST-Heading:329.4
ST-COG:326
ST-TSGSalinity: 31.5109
ST-TSGTemperature:24.6856

StationResults

ST-Duration:20.050
ST-MinDepth:29.9900
ST-MaxDepth:32.7100
ST-AvgDepth:31.0295
ST-MinGroundSpeed:0.5000
ST-MaxGroundSpeed:6.2000
ST-TracklineLength:1.575
ST-Distance:0.655
ST-MinDepth2:29.9900
ST-MaxDepth2:32.7100
ST-AvgDepth2:31.0295
ST-Young-AvgRelWindSpd:4.2005
ST-Young-MinRelWindSpd:0.4000
ST-Young-MaxRelWindSpd:7.1100

StationResults2

ST-AvgSOG1:2.1636
ST-MinPitch:0.0000
ST-MaxPitch:63.1700
ST-Pitch:12.5700
ST-MinRPM:0.0000
ST-MaxRPM:63.1700

Output: Bottom Grab ; Type: File

Output Mode: Snapshot

Fields in output record:

Date
Time
MX420-Lat (DDMM.MM)
MX420-Lon (DDMM.MM)
Meta , ST-StartLat
Meta , ST-StartLon
Meta , ST-StopLat
Meta , ST-StopLon
EK60-18kHz-Depth (Meters)

Output: TrawlEventEntire ; Type: File

Output Mode: Continuous every 1 second(s)

Fields in output record:

Date
Time
Meta , ST-StationNumber
Meta , ST-CruiseCode
EK60-18kHz-Depth (Meters)
EK60-38kHz-Depth (Meters)
ES60-50kHz-Depth (M)
MX420-Time (GMT)
MX420-COG (deg)
MX420-SOG (Knots)
MX420-Lat (DDMM.MM)
MX420-Lon (DDMM.MM)
POSMV-Time (hhmmss)
POSMV-Lon (DDMM.MM)
POSMV-Lat (DDMM.MM)
PASHR-Heave (CM)
PASHR-Pitch (deg)
PASHR-Roll (deg)
LO-Stbd-Port-Value (Meters)
YOUNG-TWIND-Direction (deg)
YOUNG-TWIND-Speed (Knots)
MX420-GLL-Lat (DDMM.MM)
MX420-GLL-Lon (DDDMM.MM)

Output: TrawlActivities ; Type: File

Output Mode: Snapshot

Fields in output record:

Date
Time
Meta , ST-CruiseCode
Meta , ST-StationNumber
MX420-Time (GMT)
MX420-Lat (DDMM.MM)
MX420-Lon (DDMM.MM)
EK60-18kHz-Depth (Meters)

Output: TrawlData ; Type: File
Output Mode: Continuous every 10 second(s)
Fields in output record:
Date
Time
Meta , ST-StationNumber
Meta , ST-CruiseCode
GYRO (deg)
MX420-Time (GMT)
MX420-Lat (DDMM.MM)
MX420-Lon (DDMM.MM)
MX420-COG (deg)
MX420-SOG (Knots)
YOUNG-TWIND-Direction (deg)
YOUNG-TWIND-Speed (Knots)
CenterBoardPos-Value (4->18dwn)
Shaft-RPM-Value (rpm)
POSMV-Time (hhmmss)
POSMV-Lon (DDMM.MM)
POSMV-Lat (DDMM.MM)
POSMV-Heading (deg)
PASHR-Hdg-True (deg)
PASHR-Time (hhmmss)
POSMV-COG (Degrees)
POSMV-SOG (Knots)
EK60-18kHz-Depth (Meters)

Event stopped at 8/13/2015 at 7:45:53 PM

*****End of Report File*****

Appendix C Trawl Activity.001 ELG file

Date,Time,Button,ST-CruiseCode,ST-StationNumber,MX420-Time,MX420-Lat,MX420-Lon,EK60-18kHz-Depth,
08/13/2015,18:38:21,Start Event,201505,d28,183821,3837.1030N,07435.9047W,30.56,
08/13/2015,19:20:22,StartTrawl,201505,d28,192021,3836.8335N,07435.7545W,31.44,
08/13/2015,19:40:25,Haulback,201505,d28,194025,3837.3591N,07436.2548W,31.27,
08/13/2015,19:45:53,Stop Event,201505,d28,194553,3837.5499N,07436.3909W,32.52,

Appendix D Bottom Grab 001 ELG file

Date, Time, Button, MX420-Lat, MX420-Lon, ST-StartLat, ST-StartLon, ST-StopLat, ST-StopLon, EK60-18kHz-Depth,
08/13/2015, 18:44:48, Deployed, 3837.0852N, 07435.9002W, 3837.0852N, 07435.9002W, , , 30.45,
08/13/2015, 18:45:25, Retrieved, 3837.0841N, 07435.8980W, 3837.0852N, 07435.9002W, 3837.0841
N, 07435.8980W, 30.54,
08/13/2015, 18:53:46, Deployed, 3837.0530N, 07435.8981W, 3837.0530N, 07435.8981W, 3837.0841N
, 07435.8980W, 30.54,
08/13/2015, 18:55:01, Retrieved, 3837.0488N, 07435.9043W, 3837.0530N, 07435.8981W, 3837.0488
N, 07435.9043W, 31.02,
08/13/2015, 19:00:34, Deployed, 3837.0269N, 07435.9435W, 3837.0269N, 07435.9435W, 3837.0488N
, 07435.9043W, 30.48,
08/13/2015, 19:01:10, Retrieved, 3837.0243N, 07435.9495W, 3837.0269N, 07435.9435W, 3837.0243
N, 07435.9495W, 30.15,