

# NEFSC Report to Councils December 2017



## NOAA FISHERIES

### UPCOMING EVENTS

**Jan 30 – Feb 1**  
NEFMC Meeting  
Portsmouth, NH

**Feb 6-8**  
ASMFC Winter Meeting  
Arlington, VA

**Feb 13-15**  
MAFMC Meeting  
Raleigh, NC

**March 1-3**  
Maine Fishermen's Forum  
Rockport, ME



New NEFSC Operations, Management and Information Division Chief Garth Smelser joined Captain Rodman Sykes and his crew aboard the F/V *Virginia Marise* out of Pt. Judith, RI for a December day at sea to learn more about the study fleet and commercial fishing operations.

### Top Story

## Cooperative Fall Gulf of Maine Longline Study Completed



Left: Cooperative Research Program staff member Giovanni Ganesin measures an Atlantic cod during the spring 2016 longline survey. Right: Vessel captain Eric Hesse helps Giovanni Ganesin recover the GoPro video camera system in its custom built housing. The camera helps "ground truth" the different types of bottom at pre-selected stations. Photo credit: NOAA Fisheries/Calvin Alexander, NEFSC.

Staff from the Northeast Fisheries Science Center's Cooperative Research Branch and two Massachusetts commercial fishing vessels completed the fall Cooperative Gulf of Maine Bottom Longline Survey on November 2. During the four-week effort the team collected hundreds of age and maturity samples from white and red hake, haddock, Atlantic cod, cusk, redfish, Atlantic halibut, Atlantic wolffish, and some skates.

According to Dave McElroy, project lead from the Cooperative Research Branch, this year's fall survey concluded another successful season. "We caught thousands of pounds of spiny dogfish and had strong catches of large white hake, good catches of haddock and cusk, as well as thorny and barndoor skates, some cod, red hake, pollock, other skates, and data-poor species." The survey will run again in the spring of 2018, with plans to continue funding through at least 2019.

The survey has been conducted each spring and fall for the past four years and targets groundfish using tub-trawl bottom longline gear. It provides more data on species that use rocky habitat that is difficult to survey using research trawl gear. The crews first spent several days staging the 50-foot F/V *Mary Elizabeth* from Scituate with Captain Phil Lynch and the 40-foot F/V *Tenacious II* with Captain Eric Hess. The *Tenacious II* took the first leg, departing from Sesuit Harbor in East Dennis on October 10. In all, five two-to-four day trips were made.

"The longline survey provides critical biological information such as maturity at age that has the potential to significantly improve the stock assessments for species that are less effectively sampled by our bottom trawl surveys because of their preferred habitats," said Russell Brown, NEFSC's Population Dynamics Branch chief. "We



An immature Atlantic wolffish awaits measuring and sampling. The knife provides some scale; the fish is about 13 inches long. Photo credit: NOAA Fisheries/Calvin Alexander, NEFSC



Deployment of a Marine Autonomous Recording Unit, or MARU, used to record sound on the ocean floor. Photo credit: NOAA Fisheries/NEFSC



A Cuvier's beaked whale with the R/V *Hugh Sharp* in the distance. Photo credit: NOAA Fisheries/Danielle Cholewiak, NEFSC

recognize that to gain a better understanding of these marine ecosystems, we must employ a variety of sampling approaches, and we are optimistic that the information being collected through this collaborative effort will improve our stock assessments."

The survey occurs at about the same time as the long-running NEFSC bottom trawl survey, and the 45 sampling stations are distributed over six of the same sampling areas used for the federal survey. This makes it easier for analysts to use the longline survey data along with that collected in the bottom trawl survey. The bottom longline gear deployed in this survey is one nautical mile long, about the distance covered by one pass of the federal trawl survey gear.

Over its first three and a half years, the Cooperative Gulf of Maine Longline Survey has collected more than 6,200 life history samples and 1,300 samples for detailed reproductive and ageing studies. Data entry and auditing for the fall survey is still underway. More here:

[https://www.nefsc.noaa.gov/press\\_release/pr2017/features/crp-longline-survey/](https://www.nefsc.noaa.gov/press_release/pr2017/features/crp-longline-survey/)

## Science Shorts

### Fish and Ships: Vessel Traffic Reduces Communication Ranges for Atlantic Cod, Haddock

NOAA scientists studying sounds made by Atlantic cod and haddock at spawning sites in the Gulf of Maine have found that vessel traffic noise is reducing the distance over which these animals can communicate with each other. As a result, feeding, mating, and socializing during critical biological periods for these commercially and ecologically important fish may be altered, according to a study published in *Nature Scientific Reports*. Three sites in Massachusetts Bay, two inside Stellwagen Bank National Marine Sanctuary (SBNMS) and one inshore south of Cape Ann, were monitored for three months by researchers at the NEFSC laboratory in Woods Hole, Mass. and at the sanctuary offices in Scituate, Mass. Vocalizations, such as Atlantic cod grunts and haddock knocks, were recorded by bottom-mounted instruments at each site during spawning in winter and spring. Researchers looked at hourly variation in ambient sound pressure levels and then estimated effective vocalization ranges at all three sites known to support spawning activity for Gulf of Maine cod and haddock stocks. Sound levels varied and were largely driven by large vessel activity, with a significant positive correlation with the number of Automatic Identification System (AIS) tracked vessels at two of the three sites. More here:

[https://www.nefsc.noaa.gov/press\\_release/pr2017/scisport/ss1711/](https://www.nefsc.noaa.gov/press_release/pr2017/scisport/ss1711/)

### Scientists Eavesdrop on Little-Known Beaked Whales, How Deeply They Dive

NEFSC scientists reported the first dive depths for either Gervais' or True's beaked whales, two of the least known beaked whale species known as mesoplodonts. The study is also the first to use a towed linear hydrophone array to document dive depths for beaked whales, and researchers say it's a promising method to obtain dive depths for other beaked whale species. More here: [https://www.nefsc.noaa.gov/press\\_release/pr2017/scisport/ss1708/](https://www.nefsc.noaa.gov/press_release/pr2017/scisport/ss1708/)



Visitors learned about fisheries surveys, sampling at sea, ship operations, and careers aboard the R/V *Gloria Michelle* during an October outreach event at State Pier in New Bedford. Photo credit: NOAA Fisheries/Heather Soulen, NEFSC.



Researchers head for the mussel raft in the Bronx River to check on progress. Mussel growing lines are visible in the center of the raft. Photo credit: NOAA Fisheries/ Mark Dixon, NEFSC



Chief Scientist Rich Langton and Victoria Kentner sort through the sediment/mud looking for sea pens. Photo credit: NOAA Fisheries/DeMond Timmons, NEFSC

A downward looking camera photographed this sea pen sitting in mud on the ocean floor.  
Photo credit: Dann Blackwood and Page Valentine, US Geological Survey.



## Research Vessel Visits New Bedford State Pier, Offers Public Tours

Congressman William Keating's New Bedford District Office hosted a visit by R/V *Gloria Michelle* at State Pier. Fishermen, families, students, Cub Scouts, community residents and members of the media attended the event. Staff from the Massachusetts Division of Marine Fisheries office in New Bedford, the Greater Atlantic Regional Fisheries port agent office in New Bedford, and NEFSC staff participated in the visit. A similar event was held in August aboard the *Gloria Michelle* in Boston. More here:

[https://www.nefsc.noaa.gov/press\\_release/pr2017/news/nr1710/](https://www.nefsc.noaa.gov/press_release/pr2017/news/nr1710/)

## Ribbed Mussels Could Help Improve Urban Water Quality

Ribbed mussels can remove nitrogen and other excess nutrients from an urban estuary and could help improve water quality in other urban and coastal locations, according to a study by NEFSC researchers and colleagues in New York City's Bronx River. More here: [https://www.nefsc.noaa.gov/press\\_release/pr2017/scispot/ss1710/](https://www.nefsc.noaa.gov/press_release/pr2017/scispot/ss1710/)

## Warming Climate Could Increase Bacterial Impacts on Chesapeake Bay Shellfish

Researchers have found that three common species of *Vibrio* bacteria in Chesapeake Bay could increase with changing climate conditions by the end of this century, resulting in significant economic and healthcare costs from illnesses caused by exposure to contaminated water and consumption of contaminated shellfish. The study, the first to apply a new way of downscaling global climate models to the Chesapeake Bay, was conducted by NOAA/NEFSC scientists and colleagues. Researchers used four different global climate models and data from eight locations in and around the bay and its tributaries to project how warming temperatures and changing freshwater inputs might impact the three *Vibrio* bacteria in the bay and its oyster populations by the end of this century. More here: [https://www.nefsc.noaa.gov/press\\_release/pr2017/scispot/ss1707/](https://www.nefsc.noaa.gov/press_release/pr2017/scispot/ss1707/)

## The Curious Relationship Between Acadian Red Fish and Sea Pens

For decades, a single species of sea pens, *Pennatula aculeata*, has been observed on soft muddy bottoms in the Gulf of Maine. These soft corals resemble a quill pen made from a bird feather. They have no commercial value, but have raised curiosity and questions about their role in the Gulf's ecosystem. NOAA Fisheries researchers aboard the R/V *Gloria Michelle* made a short trip Oct. 10-12 to the Gulf of Maine to collect sea pens as part of an on-going study of their relationship with larval redfish. More here:

[https://www.nefsc.noaa.gov/press\\_release/pr2017/features/sea-pens/](https://www.nefsc.noaa.gov/press_release/pr2017/features/sea-pens/)

## Cold-Stunned Turtles Find Temporary Home at Woods Hole Science Aquarium

Twelve Kemp's ridley sea turtles rescued from Cape Cod beaches are recovering at NOAA Fisheries' Woods Hole Science Aquarium (WHSA). The animals, the smallest of the endangered marine turtles, came ashore in November after being cold stunned – a kind of hypothermia – when local water temperatures suddenly dropped. More here:[https://www.nefsc.noaa.gov/press\\_release/pr2017/features/cold-stunned-turtles-whsa/](https://www.nefsc.noaa.gov/press_release/pr2017/features/cold-stunned-turtles-whsa/)

## Latest NEFSC Publications

Packer DB, Nizinski, MS, Bachman MS, Drohan AF, Poti M, Kinlan BP (2017) State of the Deep- Sea Coral and Sponge Ecosystems off the Northeast United States. In: Hourigan TF, Etnoyer PJ, Cairns SD (eds) The State of Deep-Sea Coral and Sponge Ecosystems of the United States: 2015. NOAA Technical Memorandum NMFS- OHC-X, Silver Spring, MD. pp. 9-1 –9-65. <https://deepseacorraldata.noaa.gov/library/resolve uid/f682ba96d1364c00809da908eed19a07>

Updated northeast deep-sea coral species list (Dave Packer et al.) is also on the web site.

Packer DB, Nizinski MS, Cairns SD, Hourigan TF (2017) Deep-Sea Coral Taxa in the U.S. Northeast Region: Depth and Geographical Distribution. <https://deepseacorraldata.noaa.gov/library/resolve uid/95df948cc33444b7bea34ae78db8b600>

Callier MD, CJ Byron, DA Bengtson, PJ Cranford, SF Cross, U Focken, GH Wikfors, F O'Beirn. (2017). Attraction and repulsion of mobile wild organisms to finfish and shellfish aquaculture: a review. *Reviews in Aquaculture*.

Santos BS, DM Kaplan, MA. Friedrichs, SG Barco, KL Mansfield, JP Manning. 2017. Consequences of drift and carcass decomposition for estimating sea turtle mortality hotspots, In Ecological Indicators, Volume 84, 2018, Pages 319-336, ISSN 1470-160X, <https://doi.org/10.1016/j.ecolind.2017.08.064>

Bell RJ , Gervelis B, Chamberlain G, Hoey J. 2017. Discard Estimates from Self-Reported Catch Data: An Example from the U.S. Northeast Shelf. *North American Journal of Fisheries Management* 37:5. Doi:10.1080/02755947.2017.1350219

Baumgartner MF, Wenzel FW, Lysiak NSJ, Patrician MR. 2017. North Atlantic right whale foraging ecology and its role in human-caused mortality. *Mar Ecol Prog Ser.* 581: 165–181. <https://doi.org/10.3354/meps12315>

Josephson E, Wenzel F, Lyssikatos MC. 2017. Serious injury determinations for small cetaceans and pinnipeds caught in commercial fisheries off the Northeast US Coast, 2011-2015. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 17-15; 32 p.

Tholke C, Wigley SE, Mood M, Palmer MC. 2017. A brief description of Greater Atlantic Region fish and invertebrate discard estimation for the National Bycatch Report First Edition Update 3. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 17-12; 143

## Shifting Presence of North Atlantic Right Whales Tracked with Passive Acoustics

A new study confirms what marine mammal researchers have suspected for a while: right whales use nearly the entire eastern seaboard during the winter, and they move around a lot more than was previously thought. How long they spend in some areas of their range has also changed in recent years. The findings were based on passive acoustic monitoring. Using bottom-mounted listening devices deployed along the coast, researchers can record whale calls 24/7 and obtain new insights into how whales use all habitats. More than 35,600 days of data from 324 listening devices deployed from Florida to Canada were processed for the study using an automated classification and detection system. The data confirmed the nearly year-round presence of North Atlantic right whales along the entire East Coast, particularly north of Cape Hatteras. More here: [https://www.nefsc.noaa.gov/press\\_release/pr2017/scispot/ss1709/](https://www.nefsc.noaa.gov/press_release/pr2017/scispot/ss1709/)

## Vessel and Field Updates

### NOAA Ship Henry Bigelow Update

Due to delays in obtaining parts, NOAA Ship *Henry B. Bigelow* remained in drydock in Norfolk, Va., undergoing motor repairs throughout the fall and early winter. The ship is expected to get underway on or about March 5 for the Northeast Fisheries Science Center's annual spring bottom-trawl survey. NOAA's Office of Marine and Aviation Operations operates and maintains the vessel, and has been overseeing both the emergency replacement of the motors and planned repairs to the ship since August.

More here: [https://www.nefsc.noaa.gov/press\\_release/pr2017/news/nr1709/](https://www.nefsc.noaa.gov/press_release/pr2017/news/nr1709/)

### Observer Outreach in New England, Mid-Atlantic Area

Ken Keene, the new Mid-Atlantic Area Fisheries Observer Program Lead, and other Observer Program staff members traveled to Barnegat Light, Point Pleasant, and Belford, NJ in October to conduct dock outreach and informally connect with fishermen to answer any questions or concerns they have regarding the Observer Program and sea day coverage in the area. They also used this opportunity for introductory meetings with other industry members, stakeholders, and collaborators to build FSB presence in this region. Observers also participated in Delaware Coast Day in Lewes, DE as part of the University of Delaware's Coast Day celebration. Additional Fishery Sampling Branch/Observer Program outreach was conducted in November in Maryland, Virginia, and North Carolina to engage with industry and various stakeholders about the observer program and changes that have occurred over the past couple of years. Port visits were also made to Point Judith, RI in November to communicate coverage requirements, target coverage rates, and answer any questions. They worked with the observer provider coordinators in the area to further communicate about vessels that needed outreach, and with the fleet about vessel selection.

### Cooperative Research Program Outreach

NEFSC CRP staff and GARFO colleagues met with a number of NJ vessel captains and facility/business leaders during December port visits to talk about the study fleet, opportunities for collaboration and other topics. Staff visited vessels and shoreside facilities in Barnegat Light's Viking Village, Cape May, and Port Norris.

Latest NEFSC Publications (*continued*)

Davis, Genevieve E Davis, Mark F. Baumgartner, Julianne M. Bonnell Joel Bell, Catherine Berchok, Jacqueline Bort Thornton, Solange Brault, Gary Buchanan, Russell A. Charif, Danielle Cholewiak, Christopher W. Clark, Peter Corkeron, Julien Delarue, Kathleen Dudzinski, Leila Hatch, John Hildebrand, Lynne Hodge, Holger Klinck, Scott Kraus, Bruce Martin, David K. Mellinger, Hilary Moors Murphy, Sharon Nieuwirk, Douglas P. Nowacek, Susan Parks, Andrew J. Read, Aaron N Rice, Denise Risch, Ana Širović, Melissa Soldevilla, Kate Stafford, Joy E. Stanistreet, Erin Summers, Sean Todd, Ann Warde, and Sofie M. Van Parijs. Long-term passive acoustic recordings track the changing distribution of North Atlantic right whales (*Eubalaena glacialis*) from 2004 to 2014. *Scientific Reports* 7 13460.

doi:10.1038/s41598-017-13359-3

Winton, M, G Fay, HL Haas, M Arendt, S Barco, MC James, C Sasso, R Smolowitz. In Press at Marine Ecology Progress Series. Estimating the distribution and relative density of satellite-tagged loggerhead sea turtles in the western North Atlantic using geostatistical mixed effects models.

Eve Galimany, Gary Wikfors, Mark Dixon, Carter Newell, Shannon Meseck, Dawn Henning, Yaqin (Judy) Li, and Julie Rose. "Cultivation of the Ribbed Mussel(*Geukensia demissa*) for Nutrient Bioextraction in an Urban Estuary". *Environ. Sci. Technol.*

Herbert, N. A., P. V. Skov, B. Tirsgaard, P. G. Bushnell, R. W. Brill, C. Harvey Clark, and J. F. Steffensen. The whole blood-oxygen binding properties of a large Polar elasmobranch, the Greenland shark *Somniosus microcephalus*. *Polar Biology* 40: 2297-2305.

DOI:10.1111/gcb.13799.

Kristina M. Camme, Sarah Vincze, A. Sky Heller, Brenna A. McLeod, Stephanie A. Wood, W. Don Bowen ,Michael O. Hammill, Wendy B. Puryear Jonathan Runstadler, Frederick W. Wenzel, Michael Kinnison, Timothy R. Frasier Genetic diversity from pre-bottleneck to recovery in two sympatric pinniped species in the Northwest Atlantic. *Conservation Genetics* (2017). <https://doi.org/10.1007/s10592>

Danielle Cholewiak, Annamaria I. DeAngelis, Debra Palka, Peter J. Corkeron, Sofie M. Van Parijs. Beaked whales demonstrate a marked acoustic response to the use of shipboard echosounders, *Royal Society Open Science*. 2017. DOI: 10.1098/rsos.170940

## Fishery Monitoring Update

**Electronic Monitoring:** NMFS Greater Atlantic Region remains committed to advancing EM as an option and is working collaboratively with industry and other stakeholders to test the tool's viability for the groundfish fishery. NMFS has partnered with The Nature Conservancy (TNC), Gulf of Maine Research Institute (GMRI), Maine Coast Fishermen's Association (MCFA), the Cape Cod Commercial Fishermen's Alliance (Alliance), and 17 fishermen in a variety of groundfish sectors to test an audit model. This pre-implementation project is in its second year. More recently, NOAA Fisheries has partnered with the Environmental Defense Fund (EDF), GMRI, and several fishermen to develop a pre-implementation project testing a maximized retention model. This project is expected to launch during Winter 2018.

In August, 2016, GARFO and NEFSC, in cooperation with a EM service provider Saltwater Inc., implemented a project evaluating the utility of EM aboard 11 midwater trawl vessels participating in the herring and mackerel fisheries. The project tested the utility of EM to monitor catch retention and identify discard events in this fleet. The project is expected to produce a final report at the end of January. The agency will be conducting an internal peer review of the report findings and will release the report in early 2018. Information learned through this project will inform the approval process of EM as a suitable monitoring tool in the Industry Funded Monitoring (IFM) Omnibus Amendment.

**Herring/Mackerel Fishery Electronic Monitoring:** The data collection period of the study ended and data analysis and report writing began/continues.

**Industry Funded Monitoring Amendment:** The Fisheries Sampling Branch has met several times over the quarter with the GARFO/implementation team to further evaluate and identify/develop the requirements of the program (certifications/training's/regulations/notification system/vessel selection).

**Pre-Trip Notification System Update:** A newer version of the Pre-Trip Notification System (PTNS) will be rolled out for the start of the 2018 Groundfish fishing year (May 1, 2018). Starting in February, NMFS will be conducting a variety of port visits and webinars to explain the PTNS's newer features.

Northeast Groundfish			
Program	Sea days	Trips	Coverage rate (16% target)
At-Sea Monitoring	254	86	6.15%
Northeast Fishery Observer Program (NEFOP) monitoring	405	149	10.65%
All NEFOP <sub>1</sub>			
1 From Oct 2017 through Dec 2017. Includes industry funded scallop monitoring.			
	1,220	2,732	