



NOAA FISHERIES

UPCOMING EVENTS

September 18-21

ICES Annual Science Conference,
Ft. Lauderdale, FL

September 23

Working Waterfront Festival,
New Bedford, MA

September 26-28

New England Fishery Management Council
Meeting, Gloucester, MA

October 10-12

Mid-Atlantic Fishery Management Council
Meeting, Riverhead, NY

October 12

Regional Association for Research on the
Gulf of Maine (RARGOM) Annual Science
Meeting, Portland, ME

November 5-9

Coastal and Estuarine Research Federation
24th Biennial Conference, Providence, RI

January 8-10, 2018

Milford Aquaculture Seminar, Shelton, CT

January 17-18, 2018

9th Atlantic Salmon Ecosystem Forum,
UMaine, Orono

Top Story

Sweep Efficiency Study Targets Summer Flounder



Left: F/V *Karen Elizabeth* crew members Joe Alverness and Denny St. Amand secure the nets during haul back. The rockhopper sweep is visible on the net at left. Right: Calvin Alexander (left) and Jeff Pessutti of the NEFSC measure samples using the Fisheries Scientific Computing System (FSCS) aboard the *Karen Elizabeth*. Photo credit: NOAA Fisheries/Giovanni Giancesi, NEFSC.

Testing the efficiency of different sweep types on fishing nets was the focus of twin trawling operations August 18-28 aboard the F/V *Karen Elizabeth* from Point Judith, RI. The target species: summer flounder, also known as fluke, with red hake and winter flounder a secondary priority.

This sweep efficiency experiment, like those conducted in 2015 on yellowtail flounder and in 2016 on winter flounder and American plaice, was recommended by the Northeast Trawl Advisory Panel, a joint advisory panel for the Mid-Atlantic and New England Fishery Management Councils that is composed of fishermen, scientists, and managers.

The results of this experiment will be used to refine the research survey-based estimate of summer flounder population abundance, which will then be available for use in the 2018 summer flounder benchmark stock assessment. The data for other species captured in the study will also be available to help improve other NEFSC assessments.

The team included Chris Roebuck and his four-person crew aboard the 78-foot western-rigged stern trawler *Karen Elizabeth* and five staffers from the NEFSC's Northeast Cooperative Research and Fisheries Ecology and Oceans and Climate branches. The study targeted summer flounder in Southern New England from Montauk, Long Island to Nantucket and red hake in the western Gulf of Maine off Cape Ann, making 103 good tows and collecting more than 73,000 fish of the targeted species.

More here: https://www.nefsc.noaa.gov/press_release/pr2017/news/nr1711/



Brian Linton discusses the *Bigelow's* random stratified sampling design at stations from Cape Hatteras through the Gulf of Maine at the August 18 groundfish stock assessment port outreach meeting in Gloucester, MA. Photo credit: Ariele Baker, NEFSC.



NOAA Ship *Henry B. Bigelow*. Photo credit: NOAA Fisheries/NEFSC.



Euphausiids, or krill, are small shrimp-like crustaceans that are consumed by many baleen whales. Photo credit: NOAA Fisheries/Elisabeth Broughton, NEFSC.

Northeast Groundfish Operational Assessments Update

Eight meetings were held between August 15 and September 7 in groundfish ports from Montauk, Long Island to Portland, Maine to talk with fishermen about the upcoming groundfish operational assessments as well as the Northeast Trawl Advisory Panel and Cooperative Research Program plans to better connect industry-based research with upcoming assessments. Discussions were lively and productive. Local GARFO port agents and NEFSC Cooperative Research Branch staff participated, along with Population Dynamics Branch stock assessment scientists and staff. The peer review meeting was held in Woods Hole, MA September 11-15. More here: <https://www.nefsc.noaa.gov/groundfish/operational-assessments-2017/>

NOAA Ship *Henry B. Bigelow* Update

NOAA Ship *Henry B. Bigelow* is in dry dock in Norfolk, Va., undergoing motor repairs. The vessel is expected back in service in early November. Several Northeast Fisheries Science Center research cruises have been affected. The summer ecosystem monitoring cruise was canceled. A beaked whale survey was moved to the R/V *Hugh Sharp*, operated by the University of Delaware. The center is working with other NOAA line offices on options for the fall bottom-trawl survey. At press time, the NOAA Ship *Gordon Gunter* was being rescheduled to handle cruises originally planned on the NOAA Ship *Pisces*, including the fall ecosystem monitoring cruise, which usually occurs between September and late November. This allows the NOAA Ship *Pisces* to prepare for use in the NEFSC Fall Bottom Trawl Survey, originally scheduled for the *Bigelow*. More here: https://www.nefsc.noaa.gov/press_release/pr2017/news/nr1709/

Science Shorts

Lessons in Communication from a Stakeholder Driven MSE for Atlantic Herring

NEFSC scientists and others helped organize and facilitate a 2017 American Fisheries Society symposium on stakeholder involvement in the management strategy evaluation (MSE) process. In 2016, the New England Fisheries Management Council approved development of two MSE workshops, held in May and December 2016, to give Atlantic herring stakeholders the opportunity to provide input about their concerns regarding fishery objectives and control rule trade-offs. The workshops, the first ever in the region, revealed some crucial takeaways: words and phrases mean different things to different people with different life experiences. More here: https://www.nefsc.noaa.gov/press_release/pr2017/features/stakeholder-mse-herring/

Digital Media as a Research Tool

A camera just isn't a camera anymore. Cameras still document our exciting times in interesting places with friends and family, but the digital landscape has definitely changed. Today, cameras and smart phones have high resolution video and their ease of use, storage capacity, and distribution pathways make them a valuable research tool for scientists.



Visitors learned about fisheries surveys, sampling at sea, ship operations, and careers aboard the R/V *Gloria Michelle* during an outreach event in August on Boston Harbor. Photo credit: NOAA Fisheries/Shelley Dawicki, NEFSC.



NEFSC staff member Holly McBride extracts a fish earbone from a red hake during the Boston outreach event. An Acadian redfish is on the measuring board at left, a witch flounder at bottom. Photo credit: NOAA Fisheries/Shelley Dawicki, NEFSC.



GoPro video helps scientists at the NEFSC's Milford Laboratory understand how fish like this tautog might use an aquaculture farm's oyster cage as habitat. Photo credit: NOAA Fisheries/Paul Clark, NEFSC.

NEFSC scientists use cameras in a variety of ways, from identifying plankton and measuring a fish egg to tracking fish behavior, estimating fecundity in summer flounder, and tracking growth in larval surfclams. More here: https://www.nefsc.noaa.gov/press_release/pr2017/features/digital-media-research-tools/

Research Vessel Visits Boston, Offers Public Tours

The Northeast Fisheries Science Center's 72-foot research vessel *Gloria Michelle* visited Boston on August 10 and 11, giving the public an opportunity to tour the ship and learn more about its work. The vessel conducts groundfish surveys in state waters each spring and fall for the Commonwealth of Massachusetts, and a summer northern shrimp survey in the Gulf of Maine, as well as projects for NOAA and other scientific research organizations in the Northeast. Several hundred people, along with summer campers and student groups from the New England Aquarium and Congressional staff members, toured the vessel. They learned how a fisheries survey is conducted, saw some of the species found in the Northeast, and met the crew and scientists who work aboard the vessel. The ship was docked adjacent to the John Joseph Moakley United States Courthouse on Northern Avenue, along the Harborwalk on Boston Harbor. Visits to other ports are being considered.

More here: https://www.nefsc.noaa.gov/press_release/pr2017/news/nr1710/

Atlantic Wolffish and Halibut Sampling in the Gulf of Maine

Sampling started slowly, but picked up after a revised experimental fishing permit was issued to the University of New Hampshire, allowing access to Jeffrey's Ledge, which yielded 20 fish, including 11 females. Halibut samples from the study fleet and a cooperating partner were used to train researchers (The Nature Conservancy, University of Massachusetts-Dartmouth) and fishermen (Cape Cod Fishermen's Alliance) to take life history samples and to test methods for attaching satellite tags to mature fish. The work is funded by a Saltonstall-Kennedy grant.

GoPro Camera Oyster Cage Monitoring Near Charles Island Reef

NEFSC staff have been experimenting with *GoPro* cameras to collect video of fish activity around oyster cages. The project is comparing how cage density may affect diversity and abundance of fish associated with oyster cage farms. Water samples were also collected for eDNA.

Studies Look at Effects of Ocean Acidification on Early Life Stages of Fish

Summer experiments at the NEFSC's J.J. Howard Lab focused on how elevated carbon dioxide affects the health and viability of fish in early life stages. The first series of proof-of-concept experiments used the Atlantic silverside as a model species. Summer flounder will be used in an analogous series of studies in the fall.

Aerial Cetacean Survey in Gulf of St Lawrence, Canada

After completing seasonal surveys in U.S. waters, the NEFSC's aerial survey team was deployed in the Gulf of St. Lawrence to assist the Canadian government with right whale sighting and identification. The crew subsequently became an integral part of the response effort when a large number of right whale deaths were confirmed in this area. The operations continued through August. More on the Canadian response here: <http://dfo-mpo.gc.ca/science/environmental-environnement/narightwhale-baleinenoirean/index-eng.html>

Latest NEFSC Publications

Rebecca Selden, Ryan Batt, Vincent Saba, Malin Pinsky. 2017. Diversity in thermal affinity among key piscivores buffers impacts of ocean warming on predator-prey interactions. *Global Change Biology*, in press

Brian D. Grieve, Jonathan A. Hare, Vincent S. Saba. Projecting the effects of climate change on *Calanus finmarchicus* distribution within the U.S. Northeast Continental Shelf. *Scientific Reports* 7, 6264.

Lough RG, Broughton EA, Kristiansen T. 2017. Changes in spatial and temporal variability of prey affect functional connectivity of larval and juvenile cod. *ICES Journal of Marine Science* (2017), 74(6), 1826–1837. doi:10.1093/icesjms/fsx080.

Mercaldo-Allen R, Meseck S, Goldberg R, Clark, P, Kuropat C, Rose J M. 2017. Effects of clam dredging on benthic ecology of two cultivated northern quahog beds with different harvest histories and sediment grain sizes. *Aquaculture International* 25(5):1971-1985.

Georgianna D, Lee MY, Walden J. Contrasting Trends in the Northeast United States Groundfish and Scallop Processing Industries. *Marine Policy*.

Brown SM, Heguy A, Zappale P, Chen H, Goradia A, Wang Y, Hao Y, Roy NK, Vitale K, Chambers RC, Wirgin I. A Dramatic Difference in Global Gene Expression between TCDD-Treated Atlantic Tomcod Larvae from the Resistant Hudson River and a Nearby Sensitive Population. *Genome Biology and Evolution*.



Dave McElroy holds an Atlantic cod at the NEFSC's fish biology and reproduction exhibit at the Woods Hole Science Stroll. Photo Credit: Thomas Kleindinst for NOAA Fisheries/NEFSC.

Study Fleet Vessels Sending Weather Data to National Weather Service

NEFSC Cooperative Research Branch Study Fleet vessels F/V *Lisa Ann III* and F/V *Illusion* are now sending hourly weather reports to the National Weather Service. After a year-long demonstration period, the vessel-based system for gathering meteorological data may now be installed on more boats.

Cruise Maps Deep-Sea Corals in the Gulf of Maine

The NOAA Ship *Thomas Jefferson* mapped deep sea coral habitats in the Gulf of Maine. The July 29-August 11 cruise, under a NEFSC chief scientist, targeted Lindenkohl Knoll, Georges Bank's north slope, and central Jordan Basin in the middle of the Gulf of Maine as likely areas for deep-sea corals that have not yet been explored. Multibeam backscatter images sent from the ship revealed hills, ridges, mud holes, and possible gas-release pockmarks around Lindenkohl Knoll in the southern Gulf of Maine along the U.S. side of the U.S.-Canadian border. There are areas of heavy trawl tracks, but also areas that appear unscarred by fishing activity. Working up the northern slope of Georges Bank revealed bands of roughly parallel east-to-west tracks (along-slope), but also apparently untrawled bands and rugged terrain on the Bank rim, confirming 2008 observations of a broad, continuous rocky-gravelly band along the Bank rim inside Closed Area II. The final target of the cruise was farther north in central Jordan Basin, around the middle of the Gulf, where rugged, hard-bottom habitat was found on the previously unexplored U.S. side of the border, paralleling known hard-bottom coral habitats on the Canadian side. Collaborating offices and institutions include the NMFS Deep Sea Corals group at NOAA Headquarters, NOAA's National Ocean Service, the University of Connecticut, and the Smithsonian Institution.

Lagrangian Camera Float Study Initiated in Coastal Massachusetts Waters

NEFSC staff and colleagues from the University of Rhode Island Graduate School of Oceanography and The Nature Conservancy deployed a drift camera near Massachusetts Division of Marine Fisheries ventless trap sites in Buzzards Bay and Vineyard Sound. The work is part of a NMFS Habitat Assessment Improvement Plan project to test whether an untethered drift camera system can be used to provide estimates of detectability of species for existing long-term survey indices. Additional sampling will be conducted in conjunction with the Massachusetts Division of Marine Fisheries bottom trawl surveys this fall and in the spring of 2018.

Woods Hole Science Stroll Attracts Large Crowd

Things got off to a soggy start, but by the time it was all over attendance was robust with nearly 2,000 visitors at the third annual science stroll, which featured 18 organizations. The NEFSC had 20 exhibits, demonstrations and hands-on displays under tents on the main lab parking lot and a lot nearby. A life-size inflatable humpback whale, a fish biology exhibit featuring more than a dozen species, and U.S. Coast Guard displays were particular favorites. The Woods Hole Science Aquarium had its busiest day of the year so far, with 1,734 visitors signing in. More here: https://www.nefsc.noaa.gov/press_release/pr2017/features/science-stroll-2017/



Ken Keene is the new Mid-Atlantic Lead/Observer Safety Coordinator for the Northeast Fisheries Observer Program. Ken, a research fisheries biologist, is located at the James J. Howard Marine Sciences Laboratory at Sandy Hook, NJ.

Vessel and Field Updates

FSV Henry B. Bigelow Cetacean and Turtle Survey

The first leg of the annual cetacean and turtle survey got underway July 6 as part of the Atlantic Marine Assessment Program for Protected Species. Learn more on the NEFSC's Field Freshblog: <https://nefsc.wordpress.com/category/turtles/>

R/V Gloria Michelle Conducts Fall Massachusetts Groundfish Survey

The 72-foot vessel is conducting the annual fall groundfish survey for the Massachusetts Division of Marine Fisheries in state waters. The vessel departed Woods Hole September 5 and will return to Woods Hole September 23. During the survey the ship calls at various ports in the state. *Gloria Michelle* has been conducting the spring and fall Massachusetts groundfish surveys since 1982.

Survey of Amphipods in Sandy Hook Bay, NJ

NEFSC staff surveyed the abundance of the tube-dwelling amphipod *Ampelisca abdita* in Sandy Hook Bay using grab-sampling equipment. This species has become scarce. Only small traces were found in one place (the northeast corner); the remaining areas did not have any specimens. The species once covered the full extent of this bay in a nearly continuous meadow, but it has become much less abundant during the past few years.

Atlantic Salmon Sampling in Greenland

Atlantic salmon caught at Qaqortoq, Greenland were sampled August 28-September 9 by a NEFSC staff member, who also explored live-capture options for tagging studies. Learn more about the experience on the NEFSC blog: <https://nefsc.wordpress.com/category/atlantic-salmon/>

Turtle Excluder Device Tested on *F/V Karen Elizabeth*

Gear researchers spent eight days in September testing a cable turtle excluder device (TED) for catch comparisons in the summer flounder fishery and in the squid fishery. The project is a collaborative effort between NOAA's Northeast and Southeast Fisheries Science Centers.