



## Collaborative Project to Transmit Real-Time Bottom Temperatures to Enhance Fishing Selectivity and Oceanographic Modeling

**T**hanks to a collaborative effort between the Northeast Fisheries Science Center's (NEFSC) Oceanography Branch, Northeast Cooperative Research Program's (NCRP) field staff, and the captains of several NCRP Study Fleet vessels, for the first time ever we now have ocean bottom temperatures being transmitted in real-time from a variety of locations off the New England coast.

The telemetry technology being used combines modifications to NEFSC ocean drifter transmitters used for the past decade, with wireless temperature-depth recorders recently developed for use on fishing gear with NCRP funding. As the fishermen haul their gear with the wireless temperature sensor attached, the temperature-depth data is automatically sent through an onboard computer system. The system detects new data and relays the average temperature and depth information for the tow through the transmitter to the GLOBALSTAR satellite system, along with its latitude/longitude position and time.

Within minutes of the haul, the data arrives on a computer server at the NEFSC laboratory in Woods Hole and is posted on an associated website for the participating fishermen and collaborating scientists. A summary of each haul includes time, approximate position, average temperature, standard deviation of temperature, average depth, range of depth, and time duration of the trawl.

About 200 trawls have been reported so far, and although the website is still under development, all parties are excited about the possibilities, including the participating fishermen. Fishermen can immediately view their data either in the wheelhouse or through the website to make connections between ocean bottom temperatures and catch composition, thus better targeting certain species and minimizing bycatch.

NEFSC scientists and other oceanographers are interested in collecting this data to eventually feed into and improve local ocean models. Though numerical models of our coastal ocean have greatly improved in the past few decades, as in the case of weather models, good models require good data, and lots of it. Such models are now generating hourly estimates of our entire continental shelf, but much more data is needed to tune and validate this output.

Real-time water-column data has been available in the past from a few fishing vessels, NOAA research vessels, and Ocean Observing System moorings. However, it has been difficult to model bottom temperatures because this requires an estimate of

ocean water mixing – how different layers of the water column combine to result in varying salinity levels and temperatures. If this estimate is not accurate, the thermal layering in the model will also be inaccurate, resulting in bottom temperature maps with uncertainties of 1°-2° Celsius. This degree of uncertainty can be much greater than the difference in temperatures affecting where and when a particular species may be found.

This new technology will allow dozens of boats to report actual bottom temperatures from a variety of locations along the entire Northeast continental shelf. The data will be assimilated into the ocean models to help tune and validate model simulations and forecasts. Better ocean temperature forecasts will help fishermen fish more efficiently, and better target some species while avoiding others. With low-cost, custom units engineered specifically for this application by AssetLinkGlobal currently available, we expect that at least a dozen boats will be reporting operationally, with their data incorporated into 3D ocean models by the end of the year.

While the present transmission system relies on the wireless temperature and depth probe developed with Aquatec Group, LTD, other sensors can be incorporated as well. In order to really be useful to the modelers, temperature sensors need to be accurate to 0.1° Celsius, and any instrument with the ability to automatically

report data to the shipboard computer system can be used. Several alternative devices are already under development, including some that report directly to a smartphone instead of a shipboard computer. The software behind the transmission process developed at NEFSC can be modified and enhanced to telemeter other information. Catch data and any other numerical data can now be reported at a fraction of the cost of commercial ship-to-shore transmission systems.

This collaboration shows how a small, low-cost program can develop into a comprehensive data collection program. The data can potentially be collected anywhere there is a fleet of fixed or mobile gear fishermen. Future goals of the project are to build on the present system, develop a protocol to routinely generate quality-controlled data, and begin to contribute to larger oceanographic collaborations such as the Integrated Ocean Observing System.

Beginning with local regions in the Northeast and Mid-Atlantic, the system may soon be exported to other locations like the Alaska region. Ultimately, this data may be very important to improve the collective understanding of the physical dynamics of the marine world.

*For more information on this groundbreaking work, contact Jim Manning, NEFSC, at [James.Manning@noaa.gov](mailto:James.Manning@noaa.gov).*

## Atlantic Highly Migratory Species Essential Fish Habitat to be Updated

**N**OAA Fisheries will soon begin updating the essential fish habitat (EFH) provisions in the 2006 Consolidated Atlantic Highly Migratory Species (HMS) Fishery Management Plan (FMP). The Magnuson-Stevens Fishery Conservation and Management Act requires that NOAA Fisheries reviews new EFH information every 5 years to determine whether revisions to existing EFH descriptions and designations are needed. The Atlantic HMS Management Division just completed the most recent 5-year review, and concluded that new information for several HMS justifies a re-analysis of current EFH boundaries.

“The upcoming EFH amendment will consider all EFH components, including individual species EFH descriptions, EFH conservation and enhancement recommendations for fishing and non-fishing effects on EFH, and identification of Habitat Areas of Particular Concern (HAPCs), as well as scientific feedback and public comment,” said Margo

Schulze-Haugen, HMS division chief.

During the current 5-year review, NOAA Fisheries reviewed scientific literature available since the previous 5-year review was completed in 2009. We found new information that warranted EFH revision for several Atlantic HMS, including bluefin tuna. For other Atlantic HMS, new information was either unavailable or did not warrant EFH revision.

The upcoming FMP amendment will analyze new observer, survey, and tag/recapture data to further consider revisions to all species' EFH. These datasets have not been comprehensively updated since the original analyses were completed in Amendment 1 to the 2006 Consolidated HMS FMP.

A Notice of Intent to prepare an FMP amendment and Notice of Availability for the 5-year review was published in the Federal Register on July 1, 2015. To obtain a copy of the 5-Year review report, please contact [Dianne.Stephan@noaa.gov](mailto:Dianne.Stephan@noaa.gov). You can download the report from the following link: [http://www.nmfs.noaa.gov/sfa/hms/documents/2015\\_final\\_efh\\_review.pdf](http://www.nmfs.noaa.gov/sfa/hms/documents/2015_final_efh_review.pdf)

**THIS SUPPLEMENT PROVIDED BY NOAA FISHERIES SERVICE'S NORTHEAST REGIONAL OFFICE**

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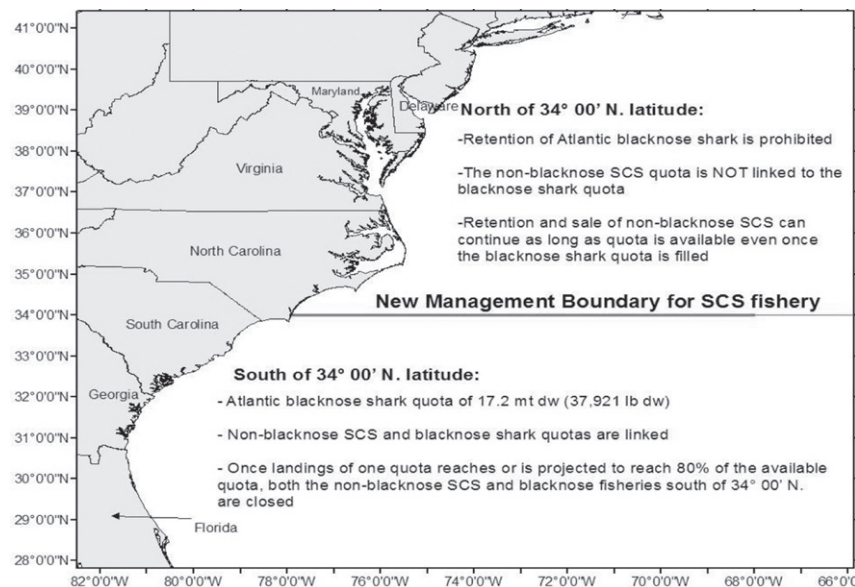
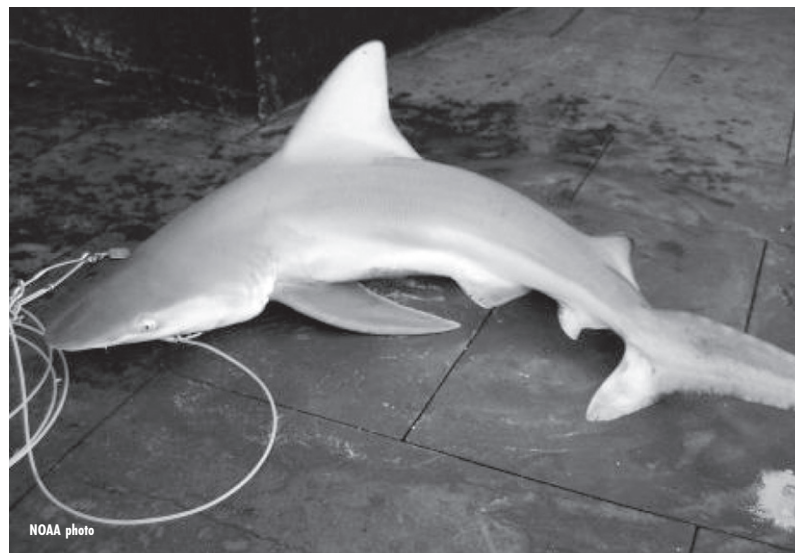
## New Regulations for Shark Fishermen

In response to a range of management issues raised by the shark fishing industry, NOAA Fisheries developed Amendment 6 to the 2006 Consolidated Atlantic Highly Migratory Species Fishery Management Plan. These issues included quota overages, increased

discards, complex regulations, declining numbers of fishing permits, and declining market prices.

Based on input from the shark industry, this amendment implements

a range of management measures that includes modifications to retention limits, a new management boundary in the Atlantic region, sub-regional commercial quotas in the Gulf of Mexico region, modifications to quota linkages in both the Atlantic and Gulf of Mexico regions, modifications to the total allowable catches (TACs) and commercial quotas for non-blacknose small coastal shark (SCS) in both the Atlantic and Gulf of Mexico



regions, and upgraded vessel restrictions. These management measures became effective on August 18, 2015.

Specifically, Amendment 6:

Increased the large coastal shark (LCS) commercial retention limit for shark directed limited access permit holders from 36 LCS (other than sandbar sharks) per trip to a maximum of 55 LCS (other than sandbar sharks) per trip, with a default of 45 LCS (other than sandbar sharks) per trip;

Adjusted the sandbar shark research fishery quota from 257,066 pounds dressed weight to 199,943 pounds dressed weight ;

Established a management boundary in the Atlantic region along 34° 00' N. latitude (approximately at Wilmington, North Carolina) for the SCS fishery; maintained the non-blacknose SCS and blacknose shark quota linkage south of the 34° 00' N. latitude; and prohibited the retention and landings of blacknose sharks and removed the quota linkage between non-blacknose SCS and blacknose shark quotas north of the 34° 00' N. latitude;

Established an Atlantic non-blacknose SCS TAC of 1,078,722 pounds dressed weight and increased the Atlantic non-blacknose SCS commercial quota from 388,222 pounds dressed weight to 582,333 pounds dressed weight;

Split the Gulf of Mexico regional commercial quotas for aggregated LCS, blacktip, and hammerhead sharks along 88° 00' W longitude;

Established a Gulf of Mexico non-blacknose SCS TAC of 2,182,576 pounds dressed weight, increased the Gulf of Mexico non-blacknose SCS commercial quota from ?? to 248,215 pounds dressed weight, prohibited the retention of blacknose sharks in the Gulf of Mexico, and removed the linkage between non-blacknose SCS and blacknose shark quotas; and

Removed current commercial vessel upgrading restrictions for all shark directed limited access permit holders.

For further information, visit the HMS Management Division website at <http://www.nmfs.noaa.gov/sfa/hms/> or contact LeAnn Hogan, Guý DuBeck, Delisse Ortiz, or Karyl Brewster-Geisz at (301) 427-8503.

## Standardized Bycatch Reporting Methodology (SBRM): What Does it Mean?

Maybe you have heard the term SBRM, you know that it has something to do with observers, but you do not fully understand what it is. You are not alone! Essentially, to assign observer coverage for the purpose of estimating bycatch in commercial fisheries across the Greater Atlantic Region, the SBRM process divides commercial vessels into fleets based not on what they fish for, but rather on the type of fishing gear they use and where they fish (New England or Mid-Atlantic).

For commercial fisheries, information about bycatch is primarily collected by at-sea observers. Without an observer on every trip, we need to use information from observed trips to estimate the discard on the trips that don't carry observers. The observer coverage assigned to each fleet is primarily driven by the variability in discards of the managed fish species.

For example, if boats using a certain gear always discard ten pounds of a particular species for every 100 pounds of fish landed, we could easily estimate how much an unobserved trip discarded since we know how much fish was landed for each trip.

However, if the amount discarded by vessels using a certain gear type is highly variable, it is more difficult to estimate discards on unobserved trips. Generally, more observer coverage leads to both a better understanding of discard variability and a more precise estimate of total discards.

In response to a 2011 court ruling, we revised our SBRM, which now uses a formulaic process to distribute limited observer coverage across the various fleets in our region. In some cases, this change results in more observers being assigned to fleets that have had little or no observer coverage in recent years, such as vessels that fish with hydraulic clam dredges or lobster pots.

Some monitoring programs, like the Groundfish Sectors At-Sea Monitoring Program, are separate from the SBRM. Also, some funding used in the past for At-Sea Monitoring is now required to be used for SBRM.

For more information, see the SBRM Amendment and the recent final rule, available here: [www.greateratlantic.fisheries.noaa.gov/regs/2015/June/15SBRMOmnibusAmend.html](http://www.greateratlantic.fisheries.noaa.gov/regs/2015/June/15SBRMOmnibusAmend.html)

# Greater Atlantic Region Proposals Recommended for Funding under the FY14/FY15 Saltonstall-Kennedy Program

The Greater Atlantic Regional Fisheries Office received 99 applications for funding under the FY2014/2015 Saltonstall-Kennedy (SK) grant program. This represents 35% of the 279 proposals received from all over the United States. Of the 88 projects selected nationally, 33 projects are from the Greater Atlantic Region, requesting approximately \$8.8 million in federal funding.

The goal of the SK program is to fund projects that address the needs of fishing communities, optimize economic benefits by building and maintaining sustainable fisheries, and increase other opportunities to keep working waterfronts viable. This year's recommended projects fall into four broad themes and touch on every aspect of marine research, including socioeconomics, fishing gear and bycatch, aquaculture, fisheries management, and the effects of climate.

An application being recommended is not an authorization to begin performance of the project, and is not a guarantee of funding. Final approval is subject to funding availability as well as final review and approval by both NOAA Grants Management Division and Department of Commerce Financial Assistance Law Division. No application is "awarded" until it has been signed by the official Grants Officer.

All applications recommended for funding are currently undergoing internal review and clearance for approval by the Grants Officer. For more information, contact Susan Olsen, Greater Atlantic Region, at (978) 281-9330 or email her at <Susan.Olsen@noaa.gov>. You may also contact the National SK Coordinator Dan Namur at (301) 427-8730.

## New Trap Transfer Program for the American Lobster Fishery

We recently announced a new Trap Transfer Program for the American lobster fishery. This program provides permit holders with the flexibility to buy and sell trap allocations for Lobster Conservation Management Areas 2, 3, and the Outer Cape.

To facilitate the exchange of information between buyers and sellers, we posted trap allocation and contact information on our website at: <http://www.greateratlantic.fisheries.noaa.gov/sustainable/species/lobster/lobsterallocationspretransfer2016.pdf>.

The information includes the permit holder and vessel name, contact information, and trap allocations for Areas 2, 3, and Outer Cape. The trap allocations have been adjusted to reflect the 2016 fishing year reductions. We are posting this information so that potential trap allocation buyers and sellers can more easily find and contact each other.

Potential buyers and sellers should contact each other directly to negotiate trap transfers, including the number of traps, the price, and the timeline for payment, prior to submitting an application. All transfers are not final until approved by NOAA Fisheries.

You can find a detailed description of the Trap Transfer Program at: <<http://www.greateratlantic.fisheries.noaa.gov/nr/2015/June/15lobtraptapransprogrampl.pdf>>. Please contact our Sustainable Fisheries Division at (978) 281-9315 or our Permit Office at (978) 282-8438 with any questions.

Proposal Number	Applicant	Project Title	Federal Amount Requested: Total
15GAR007	VA Institute of Marine Science	Assessment of the genetic stock structure of Tautog, Tautoga onitis, along the U.S. Atlantic coast from Massachusetts to Virginia	\$206,709.00
15GAR010	Bigelow Laboratory for Ocean Sciences	Forecasting protozoan parasites in the Gulf of Maine and the risk of bioaccumulation of human waterborne pathogens in oysters	\$394,694.00
15GAR014	Coonamessett Farm Foundation, Inc.	Improving an ecosystem friendly scallop dredge	\$237,528.00
15GAR018	Coonamessett Farm Foundation, Inc.	Investigating offshore Essential Fish Habitat of Southern New England Winter Flounder	\$259,532.00
15GAR020	VA Institute of Marine Science	Characterizing the behavior and preferences of anglers in the recreational fishery for Atlantic bluefin tuna (Thunnus thynnus) along the U.S. east coast	\$279,899.00
15GAR023	University of Massachusetts Dartmouth	Using archival tagging data to develop geolocation methodologies for North Atlantic groundfish: Application to Atlantic cod, yellowtail flounder, and monkfish	\$131,491.00
15GAR027	Commercial Fisheries Research Foundation	Supporting management of the emerging Jonah crab fishery and the iconic lobster fishery in the Northeast USA: a collaborative fishing vessel research fleet approach	\$399,870.00
15GAR028	University of Connecticut	Development and field testing of novel antifouling coatings for the aquaculture industry	\$336,025.00
15GAR029	Cape Ann Seafood Exchange, Inc.	Supporting infrastructure & innovation	\$363,604.00
15GAR034	VA Institute of Marine Science	Post-release mortality in the Atlantic recreational Billfish fishery: quantifying the effects of air exposure	\$156,710.00
15GAR036	VA Institute of Marine Science	Assessing the effects of Hematodinium perezii on recruitment of the Blue Crab, Callinectes sapidus	\$399,860.00
15GAR039	National Fisheries Institute	A hook and line survey to assess spatial population dynamics of black sea bass	\$392,959.00
15GAR040	Manomet, Inc.	Municipal outreach for restoring and growing the softshell clam industry in Maine through aquaculture	\$287,775.00
15GAR041	Rhode Island Natural History Survey	Creation of a climate change adaptation blueprint for Rhode Island commercial fisheries through industry-led collective visioning	\$75,241.00
15GAR043	The Research Foundation for the State University of New York	Restoring Long Island's winter flounder inshore fisheries - approaches to avoid extirpation	\$399,993.00
15GAR052	VA Institute of Marine Science	Impacts of epizootic shell disease and environmental change on sustainability of the New England lobster stocks, with implications for managing the fisheries.	\$319,971.00
15GAR053	University of New Hampshire	Determining natal sources of adult winter flounder in the GOM and SNE/MA stocks: tracking fish using otolith chemical signatures as natural tags	\$282,432.00
15GAR056	Virginia Polytechnic Institute and State University	Protecting the Chesapeake Bay aquaculture industry from a dynamic carbonate chemistry environment	\$353,766.00
15GAR057	University of Massachusetts Dartmouth	A modified sort-X Grid to reduce the catch of juvenile haddock and cod in the Georges Bank haddock fishery	\$247,502.00
15GAR058	University of Massachusetts Dartmouth	Reducing Yellowtail and Windowpane Flounder bycatch: application of a modified european grid system in the Georges Bank haddock fishery	\$233,535.00
15GAR061	University of Massachusetts Dartmouth	Combining fishermen's knowledge to locate, evaluate, and predict gray meat outbreaks	\$299,551.00
15GAR062	Gulf of Maine Research Institute	Do closed areas promote healthy age structures in New England groundfish?	\$236,198.00
15GAR063	Gulf of Maine Research Institute	Developing an ultra-low-opening groundfish trawl to avoid cod and ensure a prosperous inshore fishing fleet	\$264,827.00
15GAR066	University of Maine	Post-release mortality of Yellowfin Tuna in the U.S. rod and reel recreational fishery	\$281,460.00
15GAR072	Center for Coastal Studies	Tickle dredge: bycatch reduction for the sea scallop fishery	\$96,181.00
15GAR076	University of Maryland Center for Environmental Science	Disease and discard mortality in the blue crab fishery: using new information about an old virus to improve management of the resource	\$299,381.00
15GAR077	Gulf of Maine Research Institute	Maine inshore acoustic survey for Northern Shrimp	\$360,105.00
15GAR084	New England Aquarium Corporation	Estimating the discard mortality rate and deriving best catch- and-release guidelines for haddock (Melanogrammus aeglefinus) discarded in Gulf of Maine recreational fisheries	\$114,249.00
15GAR087	Gulf of Maine Research Institute	Establishing high end and sashimi-grade markets for seafood from the Northeast United States	\$191,768.00
15GAR093	James Odlin	Quality improvement project to optimize utilization of Georges Bank haddock resource	\$250,000.00
15GAR102	New England Aquarium Corporation	Improving the management of an overfished, data poor species: Investigating the movements and stock structure of thorny skates using novel fishery-independent tagging technology	\$320,855.00
15GAR103	New England Aquarium Corporation	Field testing an electric decoy for reducing Elasmobranch bycatch in longline fisheries	\$113,419.00
15GAR104	New England Aquarium Corporation	Evaluation of methods to reverse the acute effects of barotraumas and increase the post-release survival of cusk (Brosme brosme) discarded in the Gulf of Maine recreational fishery	\$226,117.00



## Q&A: Transition to Industry Funding for the Groundfish Sector At-Sea Monitoring Program

### Why is at-sea monitoring necessary?

The At-Sea Monitoring (ASM) program verifies commercial groundfish sector vessels' area fished, catch, discards, and gear used. ASM data is used to estimate sector discards so that sectors can manage their allocations, and to estimate total catch in order to prevent overfishing of groundfish stocks. In addition, all of the information collected through ASM coverage is used in groundfish stock assessments.

### When will sectors have to start paying for at-sea monitors?

NOAA Fisheries was able to fund ASM coverage for some of the 2015 fishing year through existing contracts with ASM service providers. This funding will be finished at the end of October and as a result, sectors will begin paying for ASM coverage on Nov. 1, 2015.

### Why do sectors now have to pay for ASM?

Originally, sectors were required to pay for the at-sea costs for ASM beginning in fishing year 2012. However, until now, NOAA Fisheries has been able to provide the funds each year. Because of funding changes required under the SBRM amendment (described on p. X of this issue), NOAA will no longer be able to fund the



program, and sectors will be responsible for paying the at-sea costs associated with ASM before the end of the 2015 calendar year.

### Do I need to hire an ASM service provider?

Contact your sector manager to find out which service provider(s) your sector will be working with.

Sector managers have been working to secure contracts for ASM coverage from the approved ASM service providers. Sectors notify NOAA Fisheries of the ASM service provider(s) they will use.

### Who are the approved ASM service providers?

There are five service providers approved to provide ASM coverage. These providers include: ACD USA Ltd. ([www.atlanticcatchdata.ca](http://www.atlanticcatchdata.ca)) A.I.S., Inc. ([www.aisobservers.com](http://www.aisobservers.com)) East West Technical Services ([www.ewts.com](http://www.ewts.com)) Fathom Research, LLC. ([www.fathomresearchllc.com](http://www.fathomresearchllc.com)) MRAG Americas, Inc. ([www.mragamericas.com](http://www.mragamericas.com))

### How do I find out if I need to carry an industry-funded monitor on my trip?

Trip notification procedures will remain the same after the transition to industry funding. You notify NOAA Fisheries 48 hours in advance of upcoming groundfish trips through the Pre-Trip Notification System (PTNS). Instructions on how to notify for a trip through PTNS are available here: [http://www.nefsc.noaa.gov/fsb/ptns/PTNS\\_Instructions\\_Combo.pdf](http://www.nefsc.noaa.gov/fsb/ptns/PTNS_Instructions_Combo.pdf).

If you have additional questions, contact Mark Grant, Sustainable Fisheries Division, at (978) 281-9145 or email him at [Mark.Grant@noaa.gov](mailto:Mark.Grant@noaa.gov).

## 2015 Northeast Groundfish Stock Assessments on Track for September Review

**N**OAA Fisheries Northeast Fisheries Science Center (NEFSC) assessment scientists are working to update assessments for 20 Northeast groundfish stocks. The peer review of their work is scheduled for Sept. 14-18 at the NEFSC laboratory at Woods Hole, MA. Results will be forwarded to the relevant New England Fishery Management Council committees in early October for use in developing management measures including acceptable biological catches and annual catch limits for Fishing Year 2016, which begins on May 1.

While about two dozen assessment products – from simple updates to full benchmarks – are typically produced in a given year, the recent increase in fishery management plans with annual catch limits means more of the 61 federal and commission-managed stocks need attention each year. The groundfish assessments will be *operational*, which means they are conducted using the existing, accepted peer-reviewed model with only limited scope for revisions. New data that has been collected since the last assessment will be incorporated, and the result will be current stock status information needed by fishery management councils/the commission to set annual catch limits.

Operational assessments have two levels of review – an Assessment Oversight Panel, and a peer review.

The Assessment Oversight Panel for the groundfish assessments met July 27 in Woods Hole. The lead government analyst for each stock presented the assessment plan to the panel for approval, including advice regarding setting catch limits in the event that the operational assessment is not accepted by the September peer review panel. The oversight panel is made up of the New England and Mid-Atlantic Council Science and Statistical Committee (SSC) chairs or a designee, and a senior NEFSC fishery stock analyst.

The peer review in September will accept or reject each of the operational assessments, and decide whether they provide a suitable scientific basis for management. The lead analyst for each stock will present the assessment. The peer review panel will include the Council Scientific and Statistical Committee member with the lead for that stock, and at least one external reviewer.

Operational assessments were conducted in 2014 for pollock, Gulf of Maine winter flounder, Georges Bank winter flounder, and Gulf of Maine cod; and for Atlantic herring this year. So what's new? The 2015 groundfish operational assessments are a step

toward greater standardization of the process for use with all stocks. These 2015 operational assessments follow guidance from the Northeast Regional Coordinating Council on allowable changes from the existing modeling approach. The Coordinating Council is the regional body that negotiates the annual stock assessment schedule and members include the executive directors and chairs of the New England and Mid-Atlantic Fishery Management Councils, and the Atlantic States Marine Fisheries Commission. Additional new features will include a streamlined assessment report and web-based public access to extended data and model inputs.

To explain the relatively new process associated with these operational assessments, the Science Center has increased its outreach efforts. In July, assessment analysts met with fishermen in Portland, Gloucester, Woods Hole, and New Bedford to talk about the operational assessment process and timeline, and to gather information to help focus future research. Webinars on the same topics were held for fishery outreach staff in the region, groundfish sector managers, and New England Fishery Management Council groundfish and recreational fishing advisors. There is also a dedicated website at <http://www.nefsc.noaa.gov/groundfish/operational-assessments-2015/>.