



## Electronic Monitoring in New England Groundfish: A Message from John Bullard

**E**lectronic monitoring (EM) is being used for catch monitoring and reporting compliance in fisheries worldwide, but use in the Northeast has been somewhat limited. There are always challenges with ensuring the accuracy of self-reported fisheries catch data, but EM represents a new suite of tools to improve reporting accuracy and increase catch monitoring. If we want to provide scientists with the best information possible and manage our fisheries sustainably, then we need to consider all of the tools in the toolbox.

Here in the Greater Atlantic Region's groundfish fishery, fishermen are considering EM to replace human at-sea monitors. Naturally, people want to compare costs. This is understandable; the cost of at-sea monitors is significant and has been the subject of much discussion, particularly because a portion of the costs are now borne by the industry. However, comparing only the costs of EM and at-sea monitors, as the programs exist today, without any context to what the programs offer, is unfair, difficult, and a bit premature.

Comparing the costs of the two programs is unfair because EM and at-sea monitors offer such different results. Right now, the at-sea monitoring program covers 14 percent of all trips. With a large portion of the fishery going unobserved and recognizing that fishing behavior may be different on unobserved trips, we may be missing out on a lot of critical information. EM could gather data from all trips, which is a quantum leap in the amount of information available to scientists. This could result in better science and potentially lower uncertainty when setting quotas. So while at-sea monitoring is a cost, EM *could be* an investment.

Comparing the costs is difficult because this is a classic case of apples and oranges; certain components

of EM, like purchasing hardware and video review, don't exist in an at-sea monitoring program. The EM cost estimates in our 2015 report were very conservative at every step, and when totaled, were quite high. That was a government exercise in assessing costs, but industry may be able to do better. When the government shifted the costs of at-sea monitoring to the fishing industry, the private sector negotiated lower costs for the same services. Is anyone surprised by that? And just like any electronic technology, EM is getting smaller, faster, and cheaper in a hurry. It is very difficult to project a cost for technology that will likely go into widespread use in a couple of years.

That brings me to my final point. Cost comparisons are premature. We don't know what EM models we might use in the future. We don't know if we can get financial support for startup costs, such as hardware acquisition. We don't know how much of the video will need to be reviewed; review may even be done by computers. We don't know what the required at-sea monitoring coverage will be when EM is fully developed. There are too many critical unknowns right now in EM to compare costs in a meaningful way.

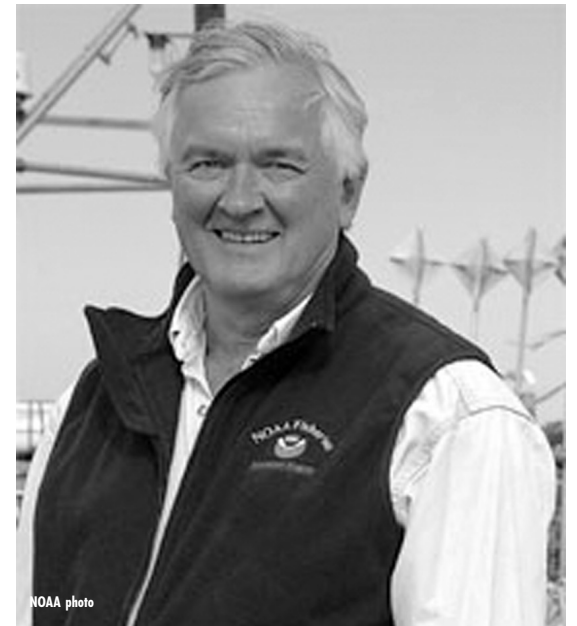
So what do we know?

EM can drastically expand and improve monitoring and accountability, something we could never do if we relied entirely on human observers on a fraction of trips.

EM can turn fishermen's observations and experiences into data. Anecdotes and hearsay are supported by evidence.

EM creates a level playing field for all fishermen.

We have been working with partners to investigate the "audit model," where EM runs on all trips and verifies a captain's reported discards. This is probably



better for smaller vessels with lower volumes of catch. We will be announcing several projects on these efforts soon. We are also working with partners to investigate the "maximized retention model," where EM runs on all trips and vessels retain all allocated groundfish. EM then verifies compliance of catch retention requirements and a dockside program verifies landings. This model is probably better for larger vessels with higher volumes of catch, and we will be announcing a project on this too. We hope to learn a lot from these projects, including how to improve data quality for management and science and, yes, we'll learn even more about investing in EM.

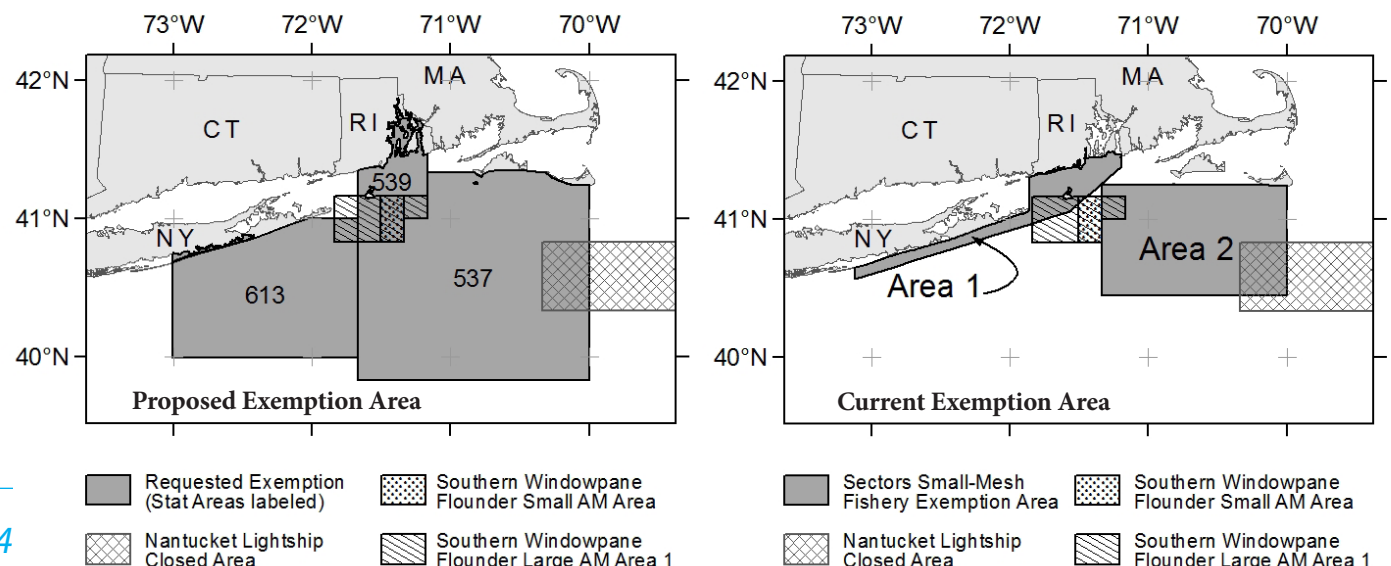
Let's focus on how to maximize the benefits of EM. And let's see if we can find a way to translate significant increases in monitoring and accountability to more fish for fishermen. Let's see if we can make EM an investment we want to make, not a burden we have to shoulder.

John Bullard,  
Regional Administrator for  
NOAA Fisheries Greater Atlantic Region

## Changes Proposed for Groundfish Sectors Small-Mesh Exemption Area

**S**ome changes are in the works for a groundfish sector exemption in Southern New England. Currently, an exemption enables sector vessels to switch from large-mesh to small-mesh in the middle of their trip, in certain areas, as long as they follow specific reporting requirements and use a set of selective small-mesh gears on the second portion of their trip.

This exemption exists because approved small-mesh fisheries, such as squid and whiting, allow vessels to target species using smaller mesh than that used in the groundfish fishery; however, they are prohibited from keeping or landing



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Olivia Rugo • Managing Editor • 978-675-2167 • olivia.rugo@noaa.gov

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## Adjusting Our Focus: Fisheries Catch Monitoring in New England

**A**s fisheries worldwide look to improve catch monitoring, electronic monitoring (EM) is an increasingly used tool to replace human observers and reduce monitoring costs to industry. While EM program requirements vary, the components that make up an EM system are fairly standard and consist of video cameras, gear sensors, and electronic reporting systems incorporated into a vessel's fishing operations.

Camera systems are potentially more affordable than human observers and, as such, a well-designed EM program may be able to reduce monitoring costs. However, moving away from human observers has its trade-offs, as the type and quality of data can differ between EM and observers. Balancing monitoring requirements and data needs with monitoring costs is an ongoing effort, and is key to designing a successful EM monitoring program. To do this, we are working with a number of regional partners to test four different approaches to developing and implementing EM in our region.

### Audit Model:

#### Phase 1 Electronic Monitoring Project

In this project, we are collaborating with the Gulf of Maine Research Institute, the Maine Coast Fishermen's Association, The Nature Conservancy, and the Cape Cod Commercial Fishermen's Alliance to fully implement an EM program in the groundfish fishery. Through this collaboration, we issued an Exempted Fishing Permit (EFP) to vessels from the Sustainable Harvest Sector, Maine Coast Community Sector, Georges Bank Cod Fixed Gear Sector, and Northeast Fishery Sectors 5 and 11 to use EM in place of human observers on trips selected for at-sea monitoring.

Captains report discards for each haul on EM trips and an authorized third-party reviews 100 percent of the video from each trip and report discards independently. We then compare the captain and third-party discard reports for consistency. The intent is to test the feasibility of an "audit model", where EM runs on all trips and a portion of each trip is reviewed.

### Audit Model:

#### Phase 2 Electronic Monitoring Project

In addition, we are working with various partners and fishermen to collect more data in 2017 to support EM development, and are considering granting two additional EFPs that would require vessels to run EM on every trip. By working with our existing partners to further develop the "audit model," participating vessels will run EM on 100 percent of trips. As part of this potential project, participating vessels may be granted incentives such as access to portions of closed areas and certain gear exemptions, in return for being fully monitored and accountable for all their catch. The audit approach to EM offers potential cost savings in the long-run, and is manageable for smaller vessels with space constraints.

### Max-Retention Electronic Monitoring Project

We are also working with GMRI and the Environmental Defense Fund to examine the "maximized retention model," where EM runs on 100 percent of trips and vessels would retain all allocated groundfish species. For this project, EM would be used to verify compliance of catch retention requirements and a dockside program would verify all landings. This approach has fewer catch handling requirements compared to the audit model and is preferable for large vessels handling high volumes of catch. Vessels in

this project may also be granted closed area and gear exemptions, because the trips would be fully monitored.

### Electronic Monitoring Implementation Project for Atlantic Herring and Mackerel Midwater Trawl Fisheries

In addition to the groundfish fishery, stakeholders in the Atlantic herring and mackerel fisheries have been interested in increased monitoring for the past several years for several reasons:

- to better estimate catch and bycatch;
- to minimize reliance on industry-reported data in these fisheries;
- to track the catch of target species against annual catch limits and incidental catch against fishery catch caps; and
- to monitor discarded catch in the midwater trawl fishery.

There is support within the fishing industry and environmental advocacy arena to develop an efficient and cost effective EM and dockside sampling program as a means of increasing monitoring for the midwater trawl fishery. Beginning in 2016, we partnered with Saltwater Inc. to pilot EM aboard 11 midwater trawl vessels participating in the herring and mackerel fisheries. EM Video data is being collected to evaluate the effectiveness of EM in identifying and classifying discards on midwater trawl vessels, and to determine the viability of EM as a monitoring option on these vessels. The project will continue through the end of 2017.

For more information on groundfish EM projects, contact Claire Fitz-Gerald at (978) 281-9255, or e-mail her at [Claire.Fitz-Gerald@noaa.gov](mailto:Claire.Fitz-Gerald@noaa.gov). For more information on the herring and mackerel EM project, contact Dan Luers at (978) 282-8457 or e-mail him at [Daniel.Luers@noaa.gov](mailto:Daniel.Luers@noaa.gov).

## Looking for Gillnetters to Join Our Teams!

**N**OAA Fisheries is currently recruiting gillnetters to participate on the Harbor Porpoise and Atlantic Large Whale Take Reduction Teams, which aim to reduce marine mammal bycatch in commercial fishing gear.

Take Reduction Teams are comprised of federal, state, science, conservation, and fishing industry representatives. Team members meet once or twice a year, either in-person or by webinar. Travel for in-person meetings is reimbursed, including a daily per diem.

We need gillnet fishermen to participate to ensure that the team incorporates industry knowledge and concerns when discussing potential management actions that could impact the industry.

If you are interested in learning more about how to join a Take Reduction team, contact the Take Reduction Team Coordinator, Kate Swails at 978-282-8481 or [kate.swails@noaa.gov](mailto:kate.swails@noaa.gov).

## New Regulations to Protect Dusky Sharks

**O**n April 4, 2017, NOAA Fisheries published a final rule to amend the 2006 Consolidated Atlantic Highly Migratory Species (HMS) Fishery Management Plan. Amendment 5b was developed to end overfishing on dusky sharks and modify the rebuilding plan. The regulations are designed to reduce mortality by 12 percent and to achieve a 35-percent fishing mortality reduction relative to 2015 levels to rebuild the dusky shark stock by the year 2107 (90 years).

### Population decline

Dusky sharks were historically one of the more common large coastal shark species in the U.S. Atlantic, and a target of Southeast and Mid-Atlantic commercial shark fisheries. However, due to population declines and the species' vulnerability to overfishing, their catch has been prohibited since 2000. Dusky sharks cannot be retained, possessed, landed, sold, or purchased. Despite this prohibition, the population is currently declining because it is caught as bycatch in fisheries targeting other species.

A stock assessment in 2006 determined that even though catch was prohibited, dusky sharks

were overfished and experiencing overfishing. New management measures for shark fisheries were subsequently implemented beginning in 2008 as part of a rebuilding plan to reduce bycatch.

### Species management

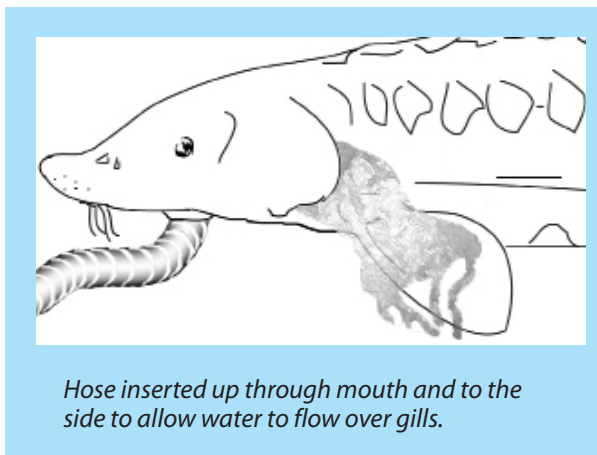
There are a number of ongoing challenges for dusky shark science and management. As with many species of sharks, estimating historic catches is extremely difficult; dusky sharks have been commonly misidentified or not correctly reported in catch data. They are similar in appearance to other "brown" sharks, including sandbar and silky sharks, which were also commonly caught and targeted historically. Also, they are caught in multiple commercial and recreational fisheries stretching from Massachusetts to Texas. Due to the difficulty estimating historical and current dusky shark catch, there is considerable uncertainty in the dusky shark stock assessments.

To address these challenges, dusky shark stock

*See DUSKY SHARKS, next page*

# Protecting Atlantic Sturgeon

**A**tlantic sturgeon spawn and mature in freshwater rivers before moving to the ocean. Throughout the remainder of their lives, Atlantic sturgeon travel long distances along the eastern coast of North America, typically at 50 meters of depth, resting in coastal bays, sounds, and estuarine areas of large rivers. They return to the rivers they were hatched in to spawn. Because Atlantic sturgeon spawn later in their life cycles, they must survive many years before they have a chance to reproduce. As a result, Atlantic sturgeon can only withstand a small amount of population loss without suffering from population declines. U.S. populations of Atlantic sturgeon are protected by the Endangered Species Act and also by state law.



*Hose inserted up through mouth and to the side to allow water to flow over gills.*

## What to Do If You Catch a Sturgeon

For federal commercial fishermen fishing under monkfish, Northeast multispecies, Atlantic bluefish, Northeast skate complex, spiny dogfish, mackerel/squid/butterfish, and summer flounder/scup/black sea bass fishery management plans, sturgeon are sometimes caught as bycatch. Under these fisheries management plans, you are authorized, but not required, to resuscitate Atlantic sturgeon if appropriate.

Recreational and commercial fishermen fishing under other federal fisheries management plans or state permits, must return Atlantic sturgeon to the water immediately as it is illegal to retain a sturgeon.

## How to Resuscitate an Atlantic Sturgeon (if you are authorized)

If you fish under one of the authorized fisheries management plans and catch an Atlantic sturgeon while fishing, handle the fish with care and return it to the water as soon as possible. If there is a Northeast Fisheries Observer Program observer working on board, the fish can be retained on board long enough for the observer to collect all necessary information, tag, and collect biological samples as required. You are not required to resuscitate Atlantic sturgeon. However, if you determine resuscitation is possible, please follow the following resuscitation guidelines:

## Resuscitation Guidelines

Atlantic sturgeon removed from fishing gear may be nonresponsive. It is often possible to resuscitate these fish by flushing water over the gills until recovery is obvious. The most effective way to resuscitate fish is through the mouth, as if the fish were swimming forward.

Use wet hands or a wet rag and support the belly when handling.

Use a pump and hose with water (For example: 11/2" engine-driven wash down pump).

Place the hose into the mouth and to the side, using a soft piece of sponge/cloth to keep the metal/hard plastic from injuring the inside of the fish's mouth.

Use enough water pressure to gently flush water over gills. Heavy water pressure can harm the fish.

Make sure water is running out and over the gills and NOT down the throat into the digestive tract.

Resuscitation should be attempted on all nonresponsive fish for at least 30 minutes. If the fish remains nonresponsive after 30 minutes, the fish should be considered dead and the carcass returned to the water.

If you accidentally catch a sturgeon, please send an email to [Incidental.Take@noaa.gov](mailto:Incidental.Take@noaa.gov) and report the catch on your fishing Vessel Trip Report.

Atlantic Sturgeon Handling and Resuscitation Instruction Placards are available upon request to keep onboard your boat. For questions regarding resuscitation authorizations or to obtain a Resuscitation Instruction Placard please contact our office: 978-281-9328.

For more information, contact Lynn Lankshear, Protected Resources Division, at 978-281-9473 or email her at [Lynn.Lankshear@noaa.gov](mailto:Lynn.Lankshear@noaa.gov).

## Dusky sharks Continued from previous page

assessments use a "catch-free" modeling approach. This approach relies more on catch rates (rather than actual catch) compared to many other stock assessment approaches. The most recent stock assessments for dusky sharks were conducted through the NOAA Fisheries' South East Data and Assessment Review (SEDAR) process. SEDAR 21 was conducted in 2011. There was an update to that assessment in 2016. These assessments indicated that, despite significant progress in reducing fishing mortality on dusky sharks, the stock was still overfished and experiencing overfishing. Additional management measures are needed to further reduce bycatch mortality, end overfishing, and rebuild the stock.

### Amendment 5b

In response to the updated assessment, NOAA Fisheries developed Amendment 5b to the 2006 Consolidated Atlantic Highly Migratory Species (HMS) Fishery Management Plan. The final rule was released on April 4, 2017. The purpose of Amendment 5b is to end overfishing on dusky sharks and make modifications to the rebuilding plan to ensure that the stock is rebuilt as required by the Magnuson-Stevens Fishery Conservation and Management Act. Specifically, the new management measures will end overfishing by reducing mortality by 12 percent and achieve a 35-percent fishing mortality reduction relative to 2015 levels to rebuild the dusky shark stock by the year 2107 (90 years).

Amendment 5b also clarifies that the annual catch limit for the prohibited shark complex (19 species), which includes dusky sharks, is zero. Accountability measures beyond those implemented in Amendment 5b are not currently necessary, but NOAA Fisheries will continue to monitor the bycatch of all prohibited sharks.

Any recreational or commercial fishermen with HMS permits, and any dealers who buy or sell sharks or shark products, may be affected by Amendment 5b. Vessels that fish recreationally for sharks in Federal waters are

already required to hold an HMS Angling or Charter/Headboat permit.

### New Commercial Measures

Amendment 5b includes four new measures that apply to commercial HMS permit holders:

The first measure requires pelagic longline vessels to minimize the trailing gear left on any released sharks by using a dehooker or cutting gangions close to the hook.

The second measure adds new educational components on prohibited shark identification, safe release practices, and other shark regulations to the existing Safe Handling, Identification, and Release workshops. Attendance at these workshops once every three years is already mandatory for commercial highly migratory species fishermen who use longline and gillnet gear.

The third measure implements a fleet communication and relocation system for longline and gillnet vessels to help avoid dusky shark bycatch. When a dusky shark is caught, the vessel will broadcast its location to surrounding vessels, and subsequent fishing sets would have to be at least one nautical mile away from where the interaction took place.

These first three measures became effective on June 5, 2017.

Finally, the fourth new commercial measure requires the use of circle hooks in the bottom longline shark fishery. This measure becomes effective on January 1, 2018.

These new measures are expected to reduce dusky shark bycatch and post-release mortality rates, as well as improve compliance and data collection on prohibited sharks.

### New Recreational Regulations

Amendment 5b includes two new management measures for recreational shark fisheries:

First, recreational shark fishermen will be required to

obtain a "Shark Endorsement" when they get their 2018 permit. To obtain the shark endorsement, fishermen must watch a brief video and take an educational quiz. This brief video and quiz will train fishermen on how to properly identify dusky sharks, how to safely release them, and will summarize other applicable requirements.

The second measure requires recreational shark fishermen to use non-offset, corrodible circle hooks whenever they are fishing for or retaining sharks of any species, with a couple of exceptions. Any shark not caught on a circle hook would have to be released. Fishermen would not need to use circle hooks if they are (1) fishing with flies or artificial lures, or (2) if they are fishing for sharks north of 41° 43' N latitude (near Chatham, MA and the northern limit of the dusky shark's U.S. range).

These measures are expected to reduce mistaken landings of dusky sharks, reduce the mortality rates of dusky sharks that are incidentally caught, and improve recreational data collection. They become effective on January 1, 2018.

### Future Outreach

In addition to these regulatory changes, NOAA Fisheries will be releasing a series of new outreach and educational materials focused on prohibited shark identification and safe handling and release.

Whether you target sharks, or catch them incidentally in your fishery, NOAA Fisheries highly recommends that all fishermen learn how to properly identify and safely release prohibited sharks, including dusky sharks. If you don't know, let it go!

For more information, contact Tobey Curtis, Highly Migratory Species Division, at 978-281-9273 or email him at [Tobey.Curtis@noaa.gov](mailto:Tobey.Curtis@noaa.gov). You may also contact Karyl Brewster-Geisz at (301) 427-8503 or [Karyl.Brewster-Geisz@noaa.gov](mailto:Karyl.Brewster-Geisz@noaa.gov).



## Protecting Whales, Sea Turtles, Vessel Crews and Passengers

**D**uring warmer months, marine animals, including whales and sea turtles migrate to waters of the Greater Atlantic to feed, placing them in our waters during the busiest vessel and fishing traffic seasons. Collisions with boats can kill or injure protected these marine animals. Collisions are not only potentially dangerous for protected animals, but also for the crews and passengers as well. For example, boaters have been thrown from vessels, injured, or even killed in whale collisions around the world. To avoid these potentially tragic events, NOAA Fisheries urges boaters and fishermen to keep a safe distance and to follow the recommended guidelines listed below.

### Whales

Whales are present throughout Greater Atlantic waters. These areas serve as important feeding, migration, and nursing habitats. To protect whales:

Never transit or tow gear through bubble clouds or close to feeding whales.

If you see a North Atlantic right whale, it is illegal to get closer than 500 yards (5 football fields) to it. Only vessels with appropriate research permits, commercial fishing vessels in the act of hauling gear, or vessels given prior approval by NOAA Fisheries to investigate a potential entanglement can approach within the 500-yard

buffer. All other vessels must depart the 500-yard area if right whales are sighted.

Stay at least 100 feet away from all whales except right whales.

If you see feeding basking sharks, lines of pink/orange plankton, or strange ripples at the water's surface that are not a shark, fish, or dolphin, slow down and post a lookout. Right whales might be nearby.

When you see birds feeding on bait fish at the surface, use caution, whales might be in the area as well.

When within a mile of a whale sighting, or in areas where whales might be, slow your speed to 10 knots or less.

Wearing polarized sunglasses will make it easier to spot whales, and other wildlife, beneath the surface.

### Sea Turtles

In our region, coastal areas serve as important feeding and developmental habitats for sea turtles when the water temperatures are warm enough. To protect sea turtles:

If you see turtles or jellyfish (a prey species) at the surface, slow down and maintain a dedicated lookout.

Wearing polarized sunglasses will make it easier to spot turtles, and other wildlife, beneath the surface.

If you catch a sea turtle while fishing, handling and resuscitation requirements must be followed. NOAA Fisheries recently distributed wheelhouse cards with

these requirements to all federally permitted vessels. If you would like a copy, please contact our office at 978-281-9328.

To report dead, entangled, stranded, ship struck marine mammals and sea turtles, or to report live right whale sightings, call our hotline at 866-755-6622.

For information on whale and sea turtle fishing regulations, call NOAA Fisheries' Protected Resources Division at 978-281-9328.

## Groundfish sectors

*Continued from page 1*

groundfish on those trips. Likewise, vessels on groundfish trips must use a mesh too large to effectively target many small-mesh species.

By allowing sector trawl vessels to target small-mesh species and large-mesh groundfish species, like flounders or cod, on the same trip in certain areas off Southern New England, we hope to enable more flexibility, decrease costs, and boost revenues for these vessels. Since 2014, the exemption has been modified to increase the area in which it can be used to reach these goals.

### Sectors Bring Idea

While this exemption has been in effect for several years, it has not been widely used. One of the sectors developed the idea to expand the area in which the exemption may be used and requested the changes for the 2017 fishing year.

The sector explained that more vessels might use the exemption if the area were expanded to provide more flexibility in available small-mesh fishing grounds. They also noted that in certain seasons the areas available to fish with small-mesh were far from those where the vessels were catching groundfish, thereby minimizing the benefits of the exemption. The sector also believed that expanding the area would create more opportunities for its members, and that the changes would make the area more understandable and enforceable by linking it to regulatory areas already well understood by fishermen. Therefore, they requested that the area be modified to include all of statistical areas 537, 539, and 613 (see chart page 1).

After discussing this idea with sectors, our regional staff analyzed catch and observer data from the areas to determine if the changes were likely to increase the catch of undersized or legal groundfish when using small-mesh gear. The analysis found little risk for interactions with juvenile or adult groundfish, except inside the Southern Windowpane Accountability Measure (AM) Areas, where catches of cod, flounders, and ocean pout have occurred in the past. Accordingly, we proposed to exclude the windowpane AM areas, regardless of whether any AM is triggered or not, but to otherwise approve the exemption.

The proposed change would nearly double the size of the exemption area and is intended not only to better reflect fishing practices in the region, but also to create more opportunities for sector fishermen, without harming groundfish stocks. We are hoping to finalize the decision of whether to implement this proposed change in the coming months.

For more information, contact Kyle Molton, Sustainable Fisheries Division, at 978-281-9236 or email him at [Kyle.Molton@noaa.gov](mailto:Kyle.Molton@noaa.gov).

## Did Restoration Efforts on the Penobscot River Work?

**D**ams have clogged Maine's salmon rivers for more than a century leading to rapid declines of commercial fisheries (e.g., river herring) and recreational fisheries (e.g., Atlantic salmon). Fish returns have been dwindling for decades, as access to important spawning habitat has been obstructed by the presence of dams and undersized culverts that block fish passage.

With the Penobscot River being one of the last remaining rivers in the U.S. with Atlantic salmon, the Penobscot River Restoration Trust targeted a restoration effort that would reconnect pieces of its fragmented rivers. They led this large scale restoration project with support from NOAA Fisheries, the U.S. Fish and Wildlife Service, the Penobscot Indian Nation, conservation groups, hydropower companies, state and federal agencies.

Four projects completed under this restoration effort included the removal of Great Works Dam in 2012, the removal of the Veazie Dam in 2013, a fish lift at the Milford Dam, and the 2015 construction of a nature-like fish bypass around the Howland Dam. After years spent restoring this section of the Penobscot River, all that was left was to wait and hope that the sea-run fish would respond to these efforts.

In 2012, less than two thousand blueback and alewives river herring were seen at the lowest dam in the Penobscot River. However, in the spring of 2016, more than 1.8 million alewives passed through the restored section of the Penobscot River. These river herring were even seen in locations approximately 130 miles from these restoration sites and into the rivers and tributaries that make up part of the Penobscot watershed. This run of herring is the largest noted

in more than one hundred years! And along with river herring, American shad were counted in the thousands, and shortnose and Atlantic sturgeon now have access to 100% of their historic habitat in the watershed.

Now, on the cusp of the 2017 Spring fish migration, all eyes are on the Penobscot to see how the river, along with 11 species of sea-run fish, will respond to these restoration efforts. With the success of the 2016 alewife run, researchers, managers, and river enthusiasts are looking forward to the 2017 sea-run fish migration season to see if the runs continue to increase, and what it might mean for the future of Maine's commercial and recreational fishing interests.

Towns and Tribes along the Penobscot River are now seeing these fish repopulate the river and tributaries, something that has not happened since the first dams were built hundreds of years ago. Daniel McCaw, Fisheries Program manager for the Penobscot Indian Nation, says "I hope within the next five years to start the discussion with the Tribe on canning alewives, smoking alewives, drying alewives, and eating fresh alewives from the river." He is optimistic about new opportunities that the returning sea-run herring will provide, not just for the resurgence of fisheries that were thought to have been lost, but also for the cultural significance that these fish play in the history of the state. "A Nation of people once made their living off of these fish" McCaw states, "A Tribe that thrived by utilizing the bounty of these sea-run fish, will have that sustenance fishery again."

For more information, contact Rory Saunders, Protected Resources Division, at (207) 866-4049 or email him at [Rory.Saunders@noaa.gov](mailto:Rory.Saunders@noaa.gov).