

Tech Advances Enable Fishermen to Track Seafloor Temps Wirelessly

Fishermen know that ocean temperatures influence when and where certain marine species can be found from year to year. However, much of the data currently available on ocean temperatures in the Northwest Atlantic reflects the temperature at the surface of the ocean, not at the bottom where many commercially harvested marine species are found.

This sea surface temperature data is commonly collected from satellite images, surface drifters, and oceanic buoys. Similarly, sounding machines installed on many fishing vessels only read the temperature of the water just below the vessel.

Ocean bottom temperatures can vary greatly from the sea surface temperatures above, and even a few degrees difference can affect the behavior of marine species. Thus, bottom temperature can be an extremely useful tool for fishermen trying to selectively and efficiently target certain species.

And because water temperatures can have such strong effects on patterns of distribution, this information also is critical for scientific assessments of fish stocks and marine ecosystems, particularly when ocean climates are changing rapidly.

Research collaboration networks such as the Northeast and Mid-Atlantic Regional Associations of Coastal and Ocean Observing Systems (NERACOOS and MARACOOS), working with many other partners, have begun collecting bottom temperature information from a few sub-surface buoys already in place on the ocean floor.

They also are deploying more sophisticated autonomous underwater gliders that cruise the ocean at all depths, recording data on temperature, salinity, and other dynamic features of the sea.

Fishermen who set or tow their gear across the bottom of the Northwest Atlantic hundreds of times annually can be another important source of this bottom temperature data.

The Environmental Monitors on Lobster Traps Project, familiar to many fishermen as eMolt, is a collaboration of industry people, scientists, and academics to monitor the physical environment of the Gulf of Maine and the Southern New England shelf.

Since early 2001, in a series of phases funded primarily by the Northeast Consortium, nearly 100 lobstermen from all of the major lobster associations in New England, Maine, Massachusetts, Downeast, and Atlantic Offshore, have recorded more than five million



hourly records of temperature.

Through NOAA Fisheries Service's Northeast Fisheries Science Center, the Gulf of Maine Lobster Foundation, and the Marine Science Department at Southern Maine Community College (SMCC), the mission of the eMOLT project primarily is motivated by lobster science and the need to document environmental conditions. But, the vast eMOLT database also is accessible to the general public.

Additionally, NOAA Fisheries' Northeast Cooperative Research Program's (NCRP) Study Fleet includes 30 vessels in the Northeast and Mid-Atlantic groundfish, squid, and scallop fisheries that are equipped with temperature loggers on their gear.

Over several years, this group has collected more than two million bottom temperature and

location records during more than 30,000 commercial fishing tows.

NCRP scientists are now combining bottom temperature and fish capture data gathered during surveys and Study Fleet trips to improve distribution maps of key commercial species.

Temp-depth probe

Until recently, the only inexpensive bottom temperature-depth recording tools readily available to fishermen were devices that had to be removed from the fishing gear and hooked up to a data reader to download the data and reprogram the probe.

This task was problematic at sea, so probes were

retrieved on a monthly basis to download the data so it could be added to GPS location files. Unless fishermen had expensive net systems equipped with temperature sensors, they were not able to view the data immediately. This resulted in data lags and only allowed for retrospective data analysis rather than real-time data use.

In 2011, to give fishermen a better tool to access real-time bottom temperature information, NCRP funded the development of a wireless temperature-depth (TD) probe through the Aquatec Group LTD.

The new probe can transmit temperature and depth information wirelessly from the fishing gear as it is hauled to the surface to a computer located onboard without removing the probe from the gear.

This new technology allows fishermen to view data on a monitor in the wheelhouse and make correlations between the temperature data they are seeing and the marine species they are catching. With this information, they can alter their fishing strategies to be more selective and efficient.

Ten of the wireless TD units are currently being tested by eMOLT and Study Fleet participants, and the feedback has been extremely positive. Another 10 units are currently being manufactured for additional distribution and data collection.

During the testing, the eMOLT project has already discovered more about what happens to lobster gear in certain current situations than was known previously.

Some Study Fleet participants use bottom-temperature data to help predict where they may encounter certain species they wish to avoid, such as dogfish. As fishermen become more familiar with the data they are acquiring, they also can use it to target desired species.

Both eMOLT and the NCRP are sharing this important data with NOAA's Integrated Ocean Observing Systems (IOOS), NERACOOS, and MARACOOS. This additional information can help oceanographic modelers better assess and improve models developed through earlier technology and develop new models to forecast not only wave heights and current directions but also ocean bottom temperatures.

Fine-tuning these models and forecasts can help oceanographers provide useful information to end users for strategic decisions and selective fishing practices.

Integrating catch data with fishing gear depth and temperature information also may facilitate and verify ecosystem modeling approaches that are greatly needed to better understand ocean dynamics and how they affect marine species.

The real-time data provided by the wireless TD probe is an important step in this direction and provides another tool to better understand our changing ocean.

For more information on the eMOLT program, e-mail Jim Manning at <James.Manning@noaa.gov>. For more information on NCRP initiatives, e-mail John Hoey at <John.Hoey@noaa.gov>.

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

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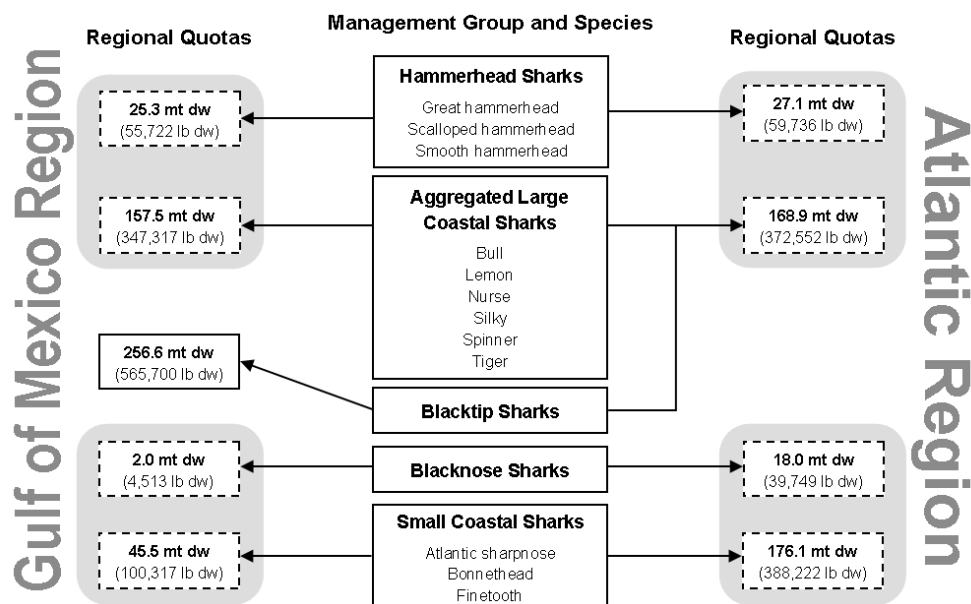
New Regs for Scalloped Hammerhead, Blacktip, and Blacknose Sharks

A mendment 5a to the 2006 Consolidated Atlantic Highly Migratory Species (HMS) Fishery Management Plan (FMP) addresses recent stock assessment results for scalloped hammerhead, sandbar, blacknose, and Gulf of Mexico blacktip sharks. The measures established by Amendment 5a should reduce fishing mortality in order to rebuild overfished Atlantic shark species and/or end overfishing, while maintaining shark-fishing opportunities.

In April, NOAA Fisheries Service published the Final Environmental Impact Statement (FEIS) for Amendment 5a. The final rule, which would implement Amendment 5a, will publish after the end of the FEIS 30-day waiting period.

The amendment re-arranges the existing large and small coastal shark management groups and establishes commercial quotas for these new groups (see figure). Specifically, Amendment 5a:

- Removes the three large hammerhead shark species – scalloped, smooth, and great – from the Atlantic and Gulf of Mexico non-sandbar large coastal sharks (LCS) management groups and establishes separate Atlantic and Gulf of Mexico hammerhead shark quotas;
- Removes Gulf of Mexico blacktip sharks from the non-sandbar LCS management group and establishes a



separate quota for that stock; and

- Establishes quotas for Gulf of Mexico and Atlantic blacknose sharks and non-blacknose small coastal sharks (SCS).

The new Atlantic “aggregated LCS” management group includes blacktip, bull, lemon, nurse, silky, spinner, and tiger sharks, while the Gulf of Mexico aggregated LCS group includes all of those species except blacktip.

To minimize regulatory discards of sharks when a management group is closed, Amendment 5a also establishes quota linkages in both regions for aggregated

LCS and hammerhead sharks. When landings of either regional management group reach 80% of the quota, both management groups will close.

Because fishermen targeting Gulf of Mexico blacktip sharks often do not catch hammerhead or other sharks, that quota will not be linked to any other quotas and will open and close independently.

The blacknose and non-blacknose SCS management groups also will continue to be linked regionally, and we expect that this will continue to effectively manage the SCS fishery.

In reviewing public comments about linked quotas, we reanalyzed the data and determined that, for most quota-linked species, the quotas would fill at approximately the same time. Therefore, major changes to how the LCS and SCS fisheries operate as a result of quota linkages are not expected.

We will allow in-season quota transfers between regions for non-blacknose and hammerhead sharks because the quota is split between regions for management purposes.

For recreational fisheries, Amendment 5a establishes a new recreational minimum size of 78" fork length for

See *SHARK REGS*, next page

Two Areas off Cape Cod Approved for Spiny Dogfish Exempted Fishery

N OAA Fisheries Service has approved an exempted fishery for spiny dogfish in two separate areas: one east of Cape Cod for fishermen using gillnet and longline gear from June through December and handgear from June through August; and one west of Cape Cod for fishermen using longline gear and handgear from June through August.

These areas are referred to as the Eastern and Western Cape Cod Spiny Dogfish Exemption Areas (see figure).

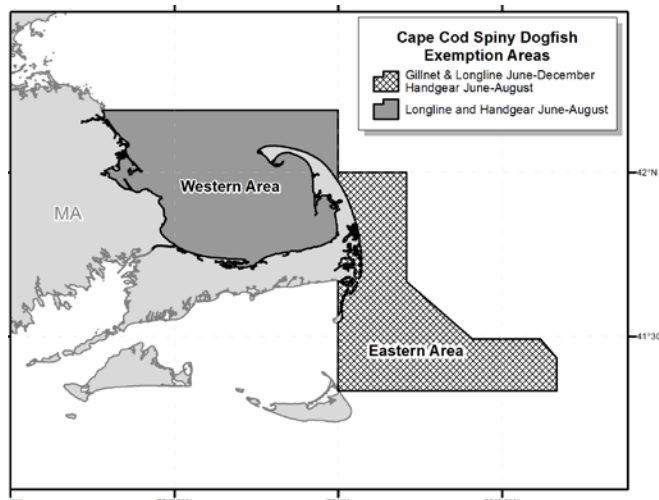
Vessels holding a valid Northeast federal spiny dogfish permit that participate in this exempted fishery may land up to 4,000 pounds of spiny dogfish per trip, but cannot retain any regulated groundfish.

Since these trips are exempt from the requirements of the Northeast multispecies groundfish plan, vessels should declare out of the fishery on their vessel monitoring system unit. Because they are no longer participating in the Northeast multispecies fishery, groundfish discards associated with these trips will not be deducted from a vessel's sector's annual catch entitlement.

These exemption areas were created in response to two industry requests for a spiny dogfish exempted fishery. For an exempted fishery to be approved, the

bycatch of regulated multispecies must be demonstrated to be less than 5% of the total catch. NOAA Fisheries developed these exemptions based on federal and state observer and at-sea monitoring data.

For more information, call Travis Ford, Sustainable Fisheries Division, at (978) 281-9233 or e-mail him at <travis.ford@noaa.gov>.



Spiny Dogfish Shark in Tomato and Citrus

Ingredients:

- 1 pound spiny dogfish, cut into 6 pieces
- 1 teaspoon salt
- cup olive oil
- 3 cloves garlic, crushed
- 8 sprigs coriander
- 6 tablespoons pureed tomato
- 2 tablespoons fresh citrus (lemon or lime) juice
- 1 teaspoon dried red chili peppers
- 1/3-cup water

Preheat oven to 425° F. Rub salt well onto dogfish pieces. Use a small amount of oil to coat a shallow baking dish and place dogfish in baking dish. Heat the remaining oil in a skillet and gently fry the garlic. Add the coriander, followed in a few minutes by the pureed tomato and citrus juice. Stir to mix ingredients together. Pour tomato-citrus sauce over the dogfish. Sprinkle the chili peppers over the dogfish and add water to the baking dish. Bake in a 425° F oven for 20 to 25 minutes.

Recipe provided by New York Sea Grant and published on the NOAA Fisheries Service “Fish Watch” website at <www.fishwatch.gov/eating_seafood/recipes/spiny_dogfish_shark>.

What's Going on with Sturgeon?

In February 2012, NOAA Fisheries Service listed five distinct population segments of Atlantic sturgeon under the Endangered Species Act (ESA). The Gulf of Maine population was listed as threatened and the New York Bight, Chesapeake Bay, Carolina, and South Atlantic populations were listed as endangered. Listing determinations under the ESA must be made based on the best scientific and commercial data available.

The Atlantic sturgeon listing determination was based primarily on an analysis of ongoing and future threats to the species because there were no overall population estimates available.

In the listing determination, we used estimates of spawning adults in the Hudson and Altamaha Rivers, which indicated that these populations were quite low – 867 total adults in the Hudson and 343 spawning adults per year in the Altamaha. The primary threats to the species identified in the listing determination were incidental catch in fisheries, vessel strikes, water quality and quantity, and dredging.

Since the listing, however, we have been working on getting more comprehensive population estimates for use in recovery planning for this species. This information also will be used for required consultations (section 7) and permitting (section 10)

under the ESA.

The Northeast Fisheries Science Center developed a model to help estimate the overall population of Atlantic sturgeon in the Atlantic Ocean. The model uses estimates of annual discards from otter trawl and gillnet fisheries in the Northeast for 2006 to 2010 and analyses of a large-scale tagging database maintained by the US Fish and Wildlife Service.

Based on the results of the Atlantic sturgeon population index model developed at the science center, ocean population estimates range from 165,381 to 744,597. This model does not include young fish that have not left their natal rivers or fish that remain out of the area sampled (e.g., in Canadian waters or south of Cape Hatteras).

Northeast Area Monitoring and Assessment Program (NEAMAP) trawl survey data also were analyzed to derive minimum sturgeon biomass estimates for comparison with the population model. Assuming that the NEAMAP survey is 50% efficient at catching Atlantic sturgeon, the overall minimum swept area biomass estimate is approximately 67,776 fish in the ocean.

The new ocean population estimates reflect the total number of Atlantic sturgeon in the ocean from Maine to North Carolina, as determined from data derived primarily from bycatch studies.

As a result, the new estimates are very different from the partial estimates available at the time of listing, which represented only the number of spawning adults in two particular rivers.

Although the new population estimates are encouraging, they represent a mere fraction of the number of Atlantic sturgeon historically present along the East Coast of North America prior to the collapse of the species in the early 1900s.

The Atlantic States Marine Fisheries Commission (ASMFC) will integrate all sources of abundance information, including the science center's model and results and the NEAMAP survey results, into a comprehensive stock assessment, which then will provide a strong basis for future decision-making.

ASMFC's stock assessment is expected to be completed in 2014, and the results will help to determine whether a new status review under the ESA is necessary. If it is, we will draw from the work of the commission's stock assessment committee and focus on addressing information gaps to help inform a new listing determination.

For more information, call Kim Damon-Randall, Protected Resources Division, at (978) 282-8485 or e-mail her at <Kimberly.Damon-Randall@Noaa.gov>.



Shark regs

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great, smooth, and scalloped hammerhead sharks. The recreational minimum size for all other shark species remains the same at 54" fork length.

We are developing additional outreach materials on shark species identification for distribution to recreational fishermen in order to increase awareness of recreational rules and regulations.

Overall, these actions will end overfishing of scalloped hammerhead and Atlantic blacknose sharks. These measures will reduce fishing mortality of scalloped hammerhead sharks while allowing fishermen to take full advantage of the quota for healthy Gulf of Mexico blacktip sharks.

Recreational anglers still will be allowed to retain "trophy-sized" hammerhead sharks. Additionally, increased outreach efforts will improve compliance in the recreational fishery. These management measures were designed to minimize any adverse socio-economic impacts to the extent possible.

This amendment, originally known as Amendment 5, also addressed dusky sharks at the proposed rule stage, but, after considering public comment, we decided to address dusky sharks in a separate, upcoming amendment called "Amendment 5b."

For more information, please visit the HMS Management Division website at <www.nmfs.noaa.gov/sfa/hms> or contact Peter Cooper, HMS Management Division, by phone at (301) 427-8503 or by e-mail at <peter.cooper@noaa.gov>.

Handle Sea Turtle Encounters with Care

Fishermen in the Northeast from Maine through Virginia may encounter any of five species of sea turtles – green, hawksbill (rare visitor), Kemp's ridley, and, most commonly, leatherback and loggerhead.

All sea turtles in US waters are protected under the Endangered Species Act (ESA). Populations of these turtles have declined from historical numbers due to many causes, including hunting and egg harvesting, destruction of habitat, vessel strikes, and capture in fishing gear. To help these ESA-listed species recover, it is important to reduce serious injury and mortality.

Sea turtles often are found in the same places fishermen fish and are captured in a wide range of gears, including pound nets, weirs, dredges, trawls, gillnets, pot/traps, longlines, and hook-and-line gear. Some of these interactions result in serious injury or death for the turtles.

Fishermen are required to handle sea turtles caught during fishing with care to prevent injury to live animals. Prompt and proper handling and resuscitation of a turtle caught in active gear can reduce risk to the animal and increase its chances for survival.

NOAA Fisheries Service has developed a sea turtle handling and resuscitation guide, which is available online at <www.nero.noaa.gov/prot_res/stranding/SeaTurtleHandlingResuscitationv1.pdf>.

Fishermen and other mariners may encounter sea turtles entangled in fixed fishing gear, especially vertical line. Due to the challenging nature of such entanglements, we ask that you report these events immediately by calling our Northeast region hotline at 1-866-755-NOAA (6622).

In 2012, we received reports of 41 turtles entangled

in vertical line. It is likely that more turtles were entangled but went unreported.

To increase an entangled turtle's chances for survival, it is important to ensure that all of the gear is removed

before the animal is released. Even a small amount of gear, such as a small piece of line wrapped around a turtle's flipper, can eventually lead to serious injury or death.

We manage a disentanglement network of trained sea turtle responders and, when we receive a report on the hotline, we work with the reporting party and local responders to determine what is needed for a successful response.

When possible, trained responders will travel to the site to disentangle the animal. It is important that the reporting party work with us on the hotline and stand by the turtle, if possible, to ensure that we can find it.

In some cases, however, factors such as distance from shore or weather prohibit responders from reaching the entangled turtle in a timely manner. To prepare for these situations, fishermen with permits to participate in the Atlantic mackerel/squid/Atlantic butterfish, Northeast multispecies, Atlantic bluefish, American lobster, monkfish, Northeast skate, spiny dogfish, and summer flounder/scup/black sea bass fisheries are authorized to disentangle turtles from their gear. All of these permit holders should have received a placard describing guidelines for sea turtle disentanglement.

In addition to calling in these events to the number listed above, please remember that sea turtles caught in fishing gear also must be reported on your Fishing Vessel Trip Report.

For more information, call Kate Sampson at (978) 282-8470 or e-mail her at <kate.sampson@noaa.gov>.

**If you encounter an entangled sea turtle or marine mammal, please contact the NMFS hotline immediately.
1-866-755-NOAA (6622)**

Northern Area Monkfish Possession Limits Suspended

To help relieve some of the expected economic impacts of groundfish reductions, NOAA Fisheries Service has suspended existing monkfish possession limits for some vessels.

Eligible boats are those with a limited-access monkfish Category C or D permit that are fishing on a monkfish day-at-sea (DAS) in the Northern Fishery Management Area (NFMA).

These vessels now can land an unlimited amount of monkfish when fishing in the NFMA under a monkfish DAS. These measures are effective through Oct. 27, 2013 and may be renewed through the end of fishing year 2013 (April 30, 2014).

Taken in response to a request for emergency action by the New England Fishery Management Council at its November 2012 meeting, there are several reasons this emergency action makes sense.

First, most active groundfish vessels operating in the Gulf of Maine and on Georges Bank also have monkfish Category C or D permits. As a result, many of the vessels affected by reduced groundfish quotas could benefit from being able to land more monkfish on each

trip they take during the 2013 fishing year.

Second, the monkfish stock in the NFMA, an area that includes the Gulf of Maine and northern portions of Georges Bank, is currently believed to be healthy, meaning that it is not overfished or subject to overfishing.

Third, the monkfish fishery has not fully harvested available quotas in the NFMA for several years. Therefore, it is possible to increase monkfish landings in the NFMA to provide further fishing opportunities and revenue for groundfish vessels without increasing the risk of overfishing monkfish.

A proposed rule for this emergency action was published on Feb. 25, 2013, with public comments accepted through March 12, 2013.

Although we originally proposed to suspend monkfish possession limits for Category C or D permits fishing under either a monkfish or groundfish DAS in the NFMA, several members of the public and the Mid-Atlantic Fishery Management Council expressed concern that doing so could shift effort south and increase monkfish catch in the Southern

Fishery Management Area (SFMA) beyond existing quotas.

Based on these concerns, we modified the final action to minimize the potential for effort shifts into the SFMA during 2013. We will monitor monkfish landings throughout the year and may have to reinstate NFMA monkfish trip limits – 1,250 pounds tail weight per DAS for Category C vessels and 600 pounds tail weight per DAS for Category D vessels – if the yearly monkfish quota is projected to be exceeded before the end of the fishing year.

We believe this action will allow the fishery to take most, but not all, of the available 2013 NFMA monkfish quota based on recent fishing patterns.

Therefore, this action could result in additional monkfish landings and fishing revenue valued at between \$490,000 and \$1.9 million, depending on how much of the available monkfish quota is landed.

For more information on the proposed monkfish emergency action, contact Douglas Christel by phone at (978) 281-9141 or by e-mail at <douglas.christel@noaa.gov>.

Guidelines Offer Protection for Whales and Fishermen

Summer is upon us and whales, including young calves, are arriving in our waters. We all want to protect these amazing animals. And, of course, it's the law. Under the federal Marine Mammal Protection Act (MMPA) and the Endangered Species Act (ESA), harming, injuring, or harassing whales, or attempting to do any of these things, is prohibited. That includes any activity that interrupts or changes a whale's natural behavior.

NOAA Fisheries Service has developed "NOAA's Northeast Regional Whale Watching Guidelines" to help mariners learn both how to safeguard whales and avoid running afoul of the law. Among the guidelines are the following.

- Never approach a whale within 100' or, in the case of North Atlantic right whales, 1,500' (500 yards). To be on the safe side, if you cannot identify the species of whale, do not approach within 500 yards.
- If a whale approaches your vessel within a 100' buffer, place vessel engines in neutral and do not re-engage propulsion until the whale is clear of harm's way.
- Take into account obstacles and do not box whales in or cut off their paths.
- If you want to watch a whale, parallel its course and view the animal from behind.
- Do not separate mother-calf pairs or other animals traveling together.
- Do not transit through bubble clouds or groups of feeding whales.
- Do not cast line or troll gear over whales.
- Reduce speed to 7 knots or less when within a half-mile of a whale.
- Limit time within 100'-to-300' of whales to 15 minutes. And,

- Coordinate viewing time with other vessels in the vicinity.

A more detailed version

of NOAA's Northeast Regional Whale Watching Guidelines is available online at <www.nero.noaa.gov/whalewatch>.

Tracking whale calls

Vessel operators near the Boston Shipping Lane can find out whether or not right whales are in the area by visiting the Right Whale Listening Network website at <www.listenforwhales.org>.

Developed through a collaboration of experts, including NOAA Fisheries and Stellwagen Bank National Marine Sanctuary personnel, and maintained by Cornell University's Bioacoustics Research Program, the site displays information transmitted from smart buoys located within the shipping lane that listen for whale calls all day, every day.

Frequent alerts let ship captains know where and when to slow down – and save a whale. There is even an app available for some phones and tablets that provides recommended routes and areas to be avoided in order to ensure right whale safety.

You also can help reduce the effects of fishing gear on whales. Fishermen often are the first observers of whales entangled in fishing gear.

If you sight an entangled whale, report it immediately to the Coast Guard via VHF CH-16 or by calling the disentanglement hotline (weekdays) at 1-800-900-3622 or the disentanglement pager (after hours) at (508) 307-5300 or the NOAA Fisheries Stranding & Entanglement Hotline at (978) 281-9351.

We ask that you stand by and keep the whale in sight until help arrives, which may take 45 minutes or more. If you must leave the area, please arrange for another vessel to maintain contact with the whale.

For more information or to request printed materials, call the Northeast Region's Protected Resources Division at (978) 281-9328.

More Flexibility for Scallop IFQ Permit Holders

NOAA Fisheries Service recently increased flexibility in the limited-access general category individual fishing quota (IFQ) transfer program for vessels that do not also have limited-access scallop permits.

Beginning on May 20, 2013, IFQ permit holders will be able to transfer IFQ, permanently or temporarily, to another vessel after they have already landed part of their IFQ allocation in a given fishing year.

For example, if a vessel has a base allocation of 1,000 pounds and lands 600 pounds of scallops, it can permanently transfer or lease its remaining 400 pounds of scallops to another IFQ vessel.

Also beginning on May 20, 2013, IFQ vessels can permanently "transfer in" IFQ and then temporarily "transfer out" (i.e., lease) that same IFQ to another vessel or vessels within the same fishing year.

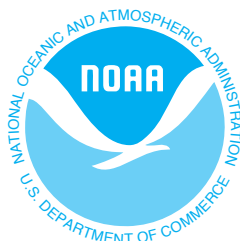
For example, if a vessel has a base allocation of 1,000 pounds and permanently transfers in 1,000 pounds, that vessel can lease out up to 2,000 pounds, including its recently transferred in IFQ, to another vessel or vessels.

Finally, beginning on March 1, 2014, IFQ permit holders who do not also have limited-access scallop permits will be able to re-transfer IFQ, both permanently and temporarily, that they obtained through a permanent or temporary transfer in the same fishing year.

There will be no limit on the number of times an IFQ may be re-transferred in a given fishing year. For example, if a vessel has a base allocation of 1,000 pounds and leases in an additional 1,000 pounds, it may lease out up to 2,000 pounds of its IFQ.

The delay in implementing this measure is necessary to ensure accurate accounting of the IFQ ownership cap restrictions.

For more information on these adjustments, call the NOAA Fisheries Industry Support Line at (978) 282-8483.



The NOAA FISHERIES NAVIGATOR