Changing Tides

noaa fisheries northeast region

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NOAA Fisheries to Implement Regulations

Monkfish Amendment 2

By the start of the monkfish 2005 fishing year on May 1, NOAA Fisheries Service Northeast Region intends to implement approved management measures contained in Amendment 2 to the Monkfish Fishery Management Plan (FMP).

The New England Fishery Management Council (NEFMC) and the Mid-Atlantic Fishery Management Council (MAFMC) developed Amendment 2 to the Monkfish FMP to address a number of issues that arose out of the implementation of the original FMP, as well as issues that were identified during public scoping. The management measures that would be implemented through this amendment, if approved, include: closure of Oceanographer and Lydonia Canyons to vessels fishing on a monkfish days-at-sea (DAS); a 6-inch roller gear restriction for trawl vessels fishing in the Southern Fishery Management Area (SFMA); a modified limited entry program for vessels fishing in the southern range of the fishery; establishment of an offshore trawl monkfish fishery in the SFMA; revisions to the monkfish incidental catch limits; a decrease in the minimum monkfish size in the SFMA; a research DAS set-aside program and a DAS exemption program; an exemption for vessels fishing in the NAFO Regulated Area; removal of the 20-day block requirement for limited access Category A and B vessels; and an opportunity to revise a limited access monkfish vessel's permit baseline characteristics.

One of Amendment 2's primary measures is the modification of the monkfish limited entry program in the southern range of the fishery. If approved, Amendment 2 would

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Barndoor Skates

Species No Longer Overfished

Only two years after implementing management measures to control mortality on overfished species of skates, Barndoor skates are no longer considered overfished. This leaves only thorny skate in the overfished category; however, overfishing is no longer occurring for this species.

Skates are managed under the Northeast Skate Complex Fishery Management Plan (FMP). Its management measures are intended to prevent overfishing, to rebuild overfished species of skates, and to allow for the collection of catch information on the status of seven skate species. Two of these species were overfished - barndoor skate and thorny skate. Among the management measures is a prohibition on possessing and purchasing barndoor skates caught in Federal waters.

A report is prepared annually to compile new information on skates and to determine whether measures in the Skate FMP need to be adjusted to remain consistent with its objectives. There are two aspects of this fishery that make these annual updates critical for skates.

First, the FMP is considered to be in a "data-poor situation." This means that historical fishery-dependent data (vessel-level catch information) that is traditionally used in conjunction with fishery independent data (NOAA Fisheries Service surveys) to specify biological reference points (e.g., Maximum Sustainable Yield (MSY) and Optimum Yield (OY)) are inadequate and/or misrepresentative of skate fishing activity where and when it actually occurs. Without fisheries-dependent data, it is not possible to directly relate biomass to exploitation rates.

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The History of

Fulton Fish Market

The Fulton Fish Market in New York City started over 150 years ago as a collection of stalls hawking food and merchandise. Today, the bustling market handles more than 150 million pounds of seafood annually from around the globe. Relocation of the market is underway which has 600 workers, many with long ties to the market, overflowing with opinions, memories, and stories.

Since 1822, the seafood business grew fast and by 1831, the fish merchants had moved into their own building. It became Fulton Fish Market in 1848. Once located in a large wooden shed, the market has grown into one of the largest open-air fish markets in the world, second only to Tokyo's Tsukiji market in Japan. Over the decades, it has burned down twice and been rebuilt.

Organized crime control has always been a concern. In the 1920s, a Genovese crime family capo organized market workers into the United Seafood Workers Local 359. Joseph "Socks" Lanza operated from a shoeshine stand and was said to demand a penny tax on each fish, a $10 union tax for unloading each ship, and up to $2500 from each market dealer to keep the peace. In 1994, Mayor Guliani, in an attempt to crack down on mob influence, required background checks and banned owners with criminal records.

Fulton Fish Market is an area that covers one city block. One side of the street is Fulton Fish Market and the other side is South Street. There are fish dealers on both sides of the street. Many of the dealers are secondary purchasers and do not have federal permits. There are over 60 dealers, with about 25 having federal permits. While seafood used to be delivered to the market by various means, including horse and buggy, it is now transported via refrigerated trucks. The last regular boat delivery to the East River pier occurred in 1979.

The tractor trailers loaded with fish start lining up as early as 8 p.m. The typical work day starts at about 11 p.m., but does not hit full speed operation until about 2 a.m. The unloading begins slowly, but increases as each truck is unloaded and replaced with another trailer full of fish. Pallets of fish and seafood are unloaded and placed in the street in front of each dealer's stall. By 8 a.m. the market business is done and all the remaining fish are packed in the coolers.

The market is now in its last days at this location, as it is going to be relocated to Hunts Point in the Bronx (http://www.huntspointedc.org/). This move will consolidate New York's wholesale food market in one powerhouse trading post next to the Bruckner and Sheridan Expressways. It gives long-awaited relief to the truckers who spent hours navigating the narrow, cobblestone streets to get to the old market.

The new facility also brings the market into compliance with U.S. Food and Drug Administration rules. At a cost of $85 million, the new 450,000 square-foot facility didn't come cheap. It is a gated facility with 12-foot high fences.

David Samuels, owner of Blue Ribbon Fish Company, has market ties going back to his grandfather's days in 1914. He used to take a horse and buggy over the Brooklyn Bridge to purchase fish. His father also used to work in the market. However, his nostalgia for the old market is tempered with enthusiasm for the new facility. "There is an absolutely magnificent view from Hunts Point. It's gorgeous; the sun comes right up there," Samuels said.

The Fulton Fish Market is one of the largest open-air fish markets in the world

The current location allows restaurant owners and fish buyers to "roll out of bed and be here in 12 minutes," said Andrew Silverman, owner of 14 Manhattan restaurants. The trip to the new facility could take hours for buyers who usually shop from 7 a.m. to 9 a.m. At the height of rush hour traffic, it seems like you could walk to your destination faster than if you travel by car. Some dealers and workers fear the new facility may not be financially viable. The cost of running the facility may be too high. It will be difficult to adjust in the beginning, but the market has survived for over 170 years.

State of Massachusetts

Industry-Based Survey

In September 2001, NOAA Fisheries Service Northeast Region awarded a contract to the Massachusetts Division of Marine Fisheries (MA DMF) to implement an Industry-Based Survey (IBS) for Gulf of Maine (GOM) Cod. The first survey tow was made on November 27, 2003. The purpose of the study was to document, on a temporal and spatial scale, the distribution of cod throughout the inshore waters of the Gulf of Maine. This fine-scale survey is a collaboration of agencies working with the commercial groundfish industry, utilizing industry and scientists' expertise and knowledge.

There are five legs (time periods) of the survey conducted from mid-November through the end of May. Four commercial otter trawlers have been contracted as the survey platforms: F/V Jocka (Cundy's Harbor, ME), F/V Titan (Portland, ME), F/V Lisa Ann II (Newburyport, MA) and the F/V Lady Jane (Gloucester, MA). On each leg of the survey, vessels are assigned approximately 55 stations (tows). Cumulatively, they complete 1,125 stations each year.

The trawl is a commercial style two seam high-rise design that is specifically designed to catch a full range of cod year classes, while targeting the larger spawning size fish. This design also allows fishing over all substrate types (e.g., soft mud to hard rocky ledge).

To disseminate the trawl survey information, Northern Geomantics Inc. (NGI) was contracted to develop a GIS-based website which will be available online in April. The website will allow managers, scientists, and industry to access survey results for GOM cod. In addition, users will be able to generate maps detailing survey data for cod and other species.

Data collected during the IBS for GOM cod will improve the information used for cod management.

If you have any questions regarding IBS contact Chris Moore, Acting Director of Cooperative Research, at 978-281-9337 or contact Bill Hoffman, MA DMF, at 978-282-0308 ext.106.

Sea Scallop Dredge Gear

Sea Turtle Interactions

In the Northeast region, five species of sea turtles, the leatherback, loggerhead, Kemp's ridley, green, and hawksbill inhabit state and federal waters. All of the species in the North Atlantic are listed as threatened or endangered under the Endangered Species Act (ESA).

The diversity of a sea turtle's life history leaves them susceptible to many natural and human impacts, both while they are on land and in the oceanic environment. Hurricanes are particularly destructive to sea turtle nests. Other sources of natural mortality include cold stunning and biotoxin exposure. Anthropogenic factors that impact sea turtles include beach erosion, beach armoring and nourishment, artificial lighting, coastal development, boat collisions, ingestion of marine debris, hopper dredging, and fisheries interactions. Gillnet, longline, trawl, seine, pot and trap, and dredge gear have been known to capture, injure, and/or kill sea turtles.

Until the 2001 fishing year, Atlantic sea scallop dredge gear was not believed to pose a threat to sea turtles. Single takes of sea turtles observed in scallop dredges in 1996, 1997, and 1999 were considered anomalies. In 2001, observer coverage was increased in the mid-Atlantic Controlled Access Areas (CAAs) and, in 2003, this coverage was expanded outside the CAAs. An increase in sea turtle takes was noted with the increase in observer coverage. During 1996 through October 31, 2004, a total of 62 takes was attributed to the scallop dredge fishery based on observer coverage. Of these, 43 were

identified as loggerheads. The remaining animals were hard-shelled sea turtles that could not be positively identified. On August 31, 2004, the Northeast Fisheries Science Center estimated a total of 749 loggerhead sea turtles to have been captured between June 1 through November 30, 2003 by vessels operating in the mid-Atlantic sea scallop dredge fishery.

In response to these takes, NOAA Fisheries Service worked with the scallop fishing industry, Coonamessett Farms, and the Virginia Institute of Marine Science on the development and testing of a

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State of Maryland

Federal Funding to Protect Natural Stocks of Farm-Raised Salmon

During 2004, the State of Maryland received nine awards administered through the NOAA Fisheries Service Northeast Region. These awards were split among four different recipients and were funded under three separate programs. The awards funded a wide range of projects that included improving biosecurity for farm-raised salmon, identifying stocks of Atlantic tuna, and implementing programs designed to improve interjurisdictional fisheries management.

Four of the awards were funded through the competitive Saltonstall-Kennedy program. Two separate awards to the University of Maryland Biotechnology Institute are working to increase the biosecurity of farm-raised salmon in the northeast. The first study develops a Gamma-Aminobutryic Acid treatment that will make cultured salmon sterile without negatively impacting their growth or survival. If successful, cultured salmon that escape into the wild will be unable to breed with the endangered native Atlantic salmon. The second study evaluates the feasibility of using ultrasound waves to administer Infectious Salmon Anemia vaccines to cultured salmon. This methodology has the potential to mass vaccinate cultured salmon, reducing both the economic loss associated with infection and the risk of passing the virus to endangered wild stocks. Another Saltonstall-Kennedy award was granted to Advanced BioNutrition Corp. to address biosecurity of cultured salmon. In this case, the project goal is to develop a single vaccine that will protect against both Infectious Salmon Anemia Virus and Infectious Pancreatic Necrosis. The fourth Saltonstall-Kennedy study, awarded to the University of Maryland, determined that separate stocks of known age Atlantic bluefin tuna can be identified by analyzing their otoliths. Together, these four grants to Maryland improve management of both wild stocks and cultured stocks.

The Maryland Department of Natural Resources (MD DNR) received five separate awards from two non-discretionary funding programs: the Interjurisdictional Fisheries Act (IJ) and the Atlantic Coastal Fisheries Cooperative Management Act (ACA). For the past several years, Maryland has received an IJ grant to support the collection and analysis of landings data from their interjurisdictional fisheries: blue crabs, striped bass, weakfish, croaker, spot, sea bass and summer flounder. In 2003, landings of these species were worth over $35 million dollars and the management of these resources is dependent on accurate landings data.

Maryland also received four ACA awards during 2004. The first award was funded under the Atlantic Coastal Cooperative Statistics Program (ACCSP) to expand electronic dealer reporting in Maryland for summer flounder and bluefish. Electronic dealer reporting has improved the timeliness and accuracy of data collected while reducing the reporting burden of dealers. A second ACA award was granted to support the management of Maryland's striped bass quota, which is shared with the Potomac River Fisheries Commission and the Virginia Marine Resources Commission. In order to equitably manage this shared resource, landings data must be collected and analyzed

daily. A third ACA grant was funded to support expansion of trip-level reporting (a cornerstone of ACCSP's data standards) to state commercial license holders. During 2004, the trip level reporting system was expanded from eight counties to nineteen and now covers 73 percent of Maryland's commercial finfish license holders, all commercial blue crab harvesters, and all non-resident commercial license holders.

The fourth ACA award to Maryland in 2004 supported both fishery dependent and independent research on the American eel along with modeling of the eel stock. As a requirement under the Interstate Fishery Management Plan for the American Eel, each state must conduct an annual young of the year study. In addition, the MD DNR collects adult eels from the commercial fishery to characterize the resident eel population and compliment the recruitment information gathered by the young of the year study.

For more information regarding state grants, contact Harry Mears, Assistant Regional Administrator, at 978-281-9243.

NOAA Fisheries Service Rescue Team Partners

Right Whale Successfully Disentangled

NOAA Fisheries Service and its rescue team partners in the East Coast Disentanglement Network celebrated New Year's Eve 2004 by working to free a young, endangered right whale off the coast of South Carolina from ropes and buoys. The two-year old was first reported entangled in early December off the coast of North Carolina with fishing gear wrapped around its head and other parts of its body. The entanglement was considered severe and potentially life-threatening because the rope could become tighter as the animal grew.

On December 21, an aerial survey team relocated the entangled whale. An on-water team soon responded and was able to attach a telemetry buoy to the gear trailing behind the whale. The telemetry buoy allowed NOAA Fisheries Service and the rescue team to track the movements of the whale as they prepared to stage a disentanglement attempt.

Good weather materialized near the end of December while the whale was off the coast of South Carolina. On the afternoon of December 30, the rescue team departed from Charleston aboard the U.S. Coast Guard (USCG) Cutter Yellowfin to intercept the whale. Once the team located the whale, it made another assessment of the entanglement, shortened the trailing line, adjusted the telemetry buoy, and attached a strobe-light to aid in overnight tracking.

The crew members of the Yellowfin worked diligently throughout the night to stay with the whale. In the pre-dawn hours of December 31, disentanglement team members from the Center for Coastal Studies began work that would last for over 6 hours as attempts were made to approach the slow-moving whale. After applying several buoys, sea anchors, and a small vessel to the trailing line to slow the whale, the team successfully removed the lines and other gear from the whale and the whale swam off, apparently gear-free. The successful disentanglement exceeded the expectations of the rescue team. When the procedure was completed, the disentanglement team returned to port with more than 550 feet of rope and several buoys recovered from the animal.

The whale was named "Yellowfin" in honor of the USCG crew and vessel that assisted in the disentanglement. On January 3, 2005 a subsequent sighting of "Yellowfin" by an aerial survey team confirmed that the whale appeared to be behaving normally and was apparently free of all gear. NOAA Fisheries Service researchers intend to track the progress of "Yellowfin" over the coming weeks and well into the future.

For more information regarding the East Coast Disentanglement Network, contact Jamison Smith, Fishery Biologist, at 978-281-9300.

Skates

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Second, the biology of the species indicates a tendency toward slow growth, long life spans, and lower fecundity rates. Recent studies have shown that these innate characteristics, when combined with the selective removal of large individuals, make skates more vulnerable to over-exploitation. These two factors emphasize the importance of collecting species-level information on this fishery in order to better monitor fluctuations in stock size on an annual basis.

The Skate FMP is also unique in that it contains a baseline of management measures from those fisheries that impact skates (e.g., multispecies, scallop, monkfish, and lobster). When a change is made to one of these fisheries, a skate baseline review is conducted to determine whether the proposed measure(s) would adversely impact the recovery of skate species under a formal rebuilding plan.

For further information regarding barndoor skates, contact Bonnie VanPelt, Fishery Policy Analyst, at 978-281-9244.

MAILING LIST

If you have questions or would like to be added to our mailing list, contact Marla Trollan, Editor and Regional Outreach Coordinator, at 978-281-9388 or email: marla.trollan@noaa.gov. You may also visit our website at: http://www.nero.noaa.gov/nero/

North Cape Lobster Restoration Program

Lobster Restoration in New England

In an effort to restore the lobster population, the NOAA Fisheries Service, through the North Cape Lobster Restoration Program, v-notched and released over 240,000 adult female lobsters in southern New England. As part of the program, areas in Narragansett Bay, Rhode Island Sound, Block Island Sound, Buzzards Bay, and waters surrounding Martha's Vineyard were restocked with lobster.

In recent years, the lobster fishery in the area has declined dramatically. Many in the Rhode Island lobster industry say 1999, with a total catch of 4.5 million pounds, was their best year ever. Since that time, annual lobster landings have dropped off dramatically, to as low as 1.0 million pounds, resulting in a number of management measures to reduce harvest. Fishery managers have been working hard to research and develop a cooperative management plan that will help ease the pressure on the lobster population.

The Lobster Restoration Program is an element of a consent decree between state and federal natural resource trustees (NOAA Fisheries Service, U.S. Fish & Wildlife Service, and Rhode Island Division of

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Technical Workshop on Coastal Fishery Habitat

Impacts from Non-Fishing Activities

In January 2005, the Northeast Region, in collaboration the New England Fisheries Management Council, and the Atlantic States Marine Fisheries Commission, conducted a technical workshop to support the assessment of impacts on Essential Fish Habitat (EFH) from non-fishing activities. The results of the workshop will be used to update the non-fishing impacts section of all fishery management plan amendments as part of the EFH 5-year review process.

The results of the workshop will also be developed into a reference document for use by professionals engaged in marine habitat assessment, including permitting agencies, and state and federal marine resource managers. This document will briefly describe the life history and habitat requirements of the species, the activities that may impact the habitat, and will include general conservation recommendations on how to avoid, minimize, or compensate for such impacts.

The overall goal of the workshop was to ensure that the best scientific information is available for use in decision making for fisheries management, habitat conservation, and the various environmental review and permitting processes.

Participants in the workshop included state and federal biologists and resource managers from Maine to South Carolina, as well as Florida and Alaska. A series of 10 breakout sessions allowed participants to review and discuss major non-fishing activities associated with impacts to coastal and marine habitats. For each breakout session topic, participants assessed a list of known and potential adverse impacts to fisheries resources, and provided any additional impact types that may apply. In addition, participants identified apparent gaps in information on non-fishing impacts, and suggested areas for future research. The group also discussed the importance of cumulative impacts to fishery habitat from non-fishing impacts.

For more information regarding the workshop or impacts from non-fishing activities, contact Mike Johnson, Marine Habitat Resource Specialist, at 978-281-9130.

Ship Strike Strategy/Draft Environment Impact Statement

Large Whale Ship Strikes & Entanglement

Ship Strikes

An Advance Notice of Proposed Rulemaking (ANPR) was published June 1, 2004, which announced that NOAA Fisheries Service was developing a strategy to reduce mortalities to North Atlantic right whales as a result of vessel collisions. The strategy, a multi-faceted plan, includes potential routing changes, speed reductions, and the use of dynamic management areas. In association with the comment period on the ANPR, six public meetings were held along the Atlantic coast to present the strategy and to solicit information on the development and implementation of the proposed strategy. In addition, a series of smaller focal group meetings were convened through regional Right Whale Recovery Implementation Teams to discuss specific stakeholder questions and concerns. Comments received during the ANPR comment period and in associated meetings will assist NOAA Fisheries Service in subsequent rulemaking decisions to reduce the threat of ship collisions to right whales. For more information regarding the strategy, contact Kristen Koyama, Regional Ship Strike Coordinator, at 978-281-9531.

Entanglement

In March, a Draft Environmental Impact Statement (DEIS) and Proposed Rule were published that discuss modifications to the Atlantic Large Whale Take Reduction Plan (ALWTRP) to reduce the serious injury and mortality of right, humpback and fin whales due to incidental entanglement in U.S. commercial fishing gear. Twelve public hearings were conducted along the East Coast during the comment period on the draft DEIS. The Atlantic Large Whale Take Reduction Team (ALWTRT) will also be convened during the comment period. For more information regarding the DEIS, contact Diane Borggard, Regional ALWTRP Coordinator, at 978-281-9503.

Lobsters

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Environmental Management (RI DEM)) that address the restoration of the marine resources impacted by the 1996 North Cape oil spill. The spill released 828,000 gallons of home heating oil into Rhode Island Sound and led to the loss of many living resources, including over 9 million lobsters.

Under NOAA and RI DEM oversight, 1.248 million legal-size female lobsters will be restored by having a v-shaped notch cut into their tails. Once v-notched, these lobsters are illegal to possess until they molt and the v-notch disappears. By this method, the reproductive lives of the lobsters are extended. These protected lobsters will produce an estimated 23 billion eggs which will yield 9 million lobsters to replace those lost by the spill.

To date, more than 750,000 adult female lobsters have been captured, v-notched and set free. Cooperative efforts between the NOAA Restoration Center, RI DEM, Massachusetts Division of Marine Fisheries, Ocean Technology Foundation (OTF), and the commercial fishing industry have helped to make this possible. In 2004, a total of 54 boats in Rhode Island and Massachusetts participated in the program, allowing OTF observers onboard to collect data, v-notch and release the qualified female lobsters.

Proper evaluation and monitoring are key components to the success of the program. Current efforts include industry outreach, sea-sampling onboard commercial vessels, tagging lobsters to monitor migration and egg production, and lobster experiments to determine how long a v-notch will prevent a female lobster from being brought to market.

Continued support by state and federal agencies, OTF, and the local industry will ensure the success of restoration efforts. The Program is expected to continue for the next two years.

Monkfish

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allow new vessels that meet the qualification criteria to obtain a limited access monkfish permit.

Another one of Amendment 2's primary management measures is the establishment of an Offshore Fishery Program in the SFMA. If approved, the amendment would allow vessels to elect to fish under a monkfish possession limit of 1,600 pounds (lbs) (tail weight) per monkfish DAS when fishing in the Offshore Southern Monkfish Area, under specific conditions.

Finally, the other primary management measure contained in the amendment is the closure of Lydonia and Oceanographer Canyons. Under this proposed management measure, vessels fishing on a monkfish DAS would be prohibited from fishing in the Oceanographer and Lydonia Canyons. The purpose of this measure is to minimize the adverse impact of monkfish fishing on essential fish habitat.

Annual Adjustment for Fishing Year 2005

On December 17, 2004, the NEFMC informed NOAA Fisheries Service of the monkfish target total allowable catch levels (TACs) for the 2005 fishing year (FY 2005). The target TACs were calculated by the Monkfish Monitoring Committee to be 13,160 metric tons (mt) for the Northern Fishery Management Area (NFMA), and 9,673 mt for the Southern Fishery Management Area (SFMA). The increase in the target TAC for the SFMA would enable limited access monkfish vessels fishing in the SFMA to use all 40 monkfish DAS allocated annually (currently restricted to 28 DAS). A trip limit analysis conducted by NOAA Fisheries Service recommended the following trip limits for the SFMA in FY 2005: 700 lb tail weight per DAS for Category A and C vessels, and 600 lb tail weight per DAS for Category B and D vessels. The reduced target TAC for the NFMA does not require any adjustments to the current management measures in that area since there is currently no trip limit for limited access vessels. A proposed rule to implement the target TACs and trip limits for FY 2005 was published on March 18, 2005. If approved, the adjusted target TACs and trip limits would be made effective for FY 2005.

For further information regarding Amendment 2 or the annual adjustment for fishing year 2005, contact Allison Ferreira, Fishery Policy Analyst, at 978-281-9103.

Sea Turtles

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chain mat to keep sea turtles from being captured in the scallop dredges. The chain mat consists of evenly spaced horizontal and vertical chains hung between the cutting bar and the sweep. This is a modified rock chain arrangement constructed of lighter, but stronger chain.

During the 2003–2004 field evaluations of the chain mats, twelve different vessels participated. In each tow, the vessels fished one unmodified dredge on one side of the vessel and one dredge modified with the chain mat on the other side of the vessel.

In total, side-by-side testing was conducted on 22 trips encompassing 277 fishing days and 3,248 tows (of which 2,823 were observed). A total of eight turtle interactions occurred, all with the unmodified scallop dredge. With respect to the catch of sea scallops, the modified chain mat dredge caught 6.71% less scallops on average than the unmodified dredge. The study concluded that the chain mats can be effective in reducing the incidence of sea turtle bycatch without substantial reductions in the capture of the target species. Preventing the capture of sea turtles in the bag of the scallop dredge would reduce serious injuries that occur as a result of this capture.

Chain mat configuration
Photo credit: Bill DuPaul, VIMS Sea Grant

A Biological Opinion on the Atlantic Sea Scallop Fishery Management Plan (FMP), issued on December 15, 2004, concluded that the scallop dredge fishery may adversely affect but is not likely to jeopardize the continued existence of loggerhead sea turtles. One of the reasonable and prudent measures included in this Opinion is that NOAA Fisheries Service must reduce the capture of sea turtles in the scallop dredge fishery by requiring modification of sea scallop dredge gear at times and in areas where sea turtle interactions are likely to occur. The chain mat research will help NOAA Fisheries Service meet this requirement.

For more information regarding sea turtle interactions, contact Ellen Keane, Fishery Biologist, at 978-281-9526.

photo credit NMFS, MA DMF, VIMS