Published quarterly by the Massachusetts Division of Marine Fisheries to inform and educate its constituents on matters relating to the conservation and sustainable use of the Commonwealth's marine resources.

DMF NEWS

Second Quarter 2006 • Volume 26

MarineFisheries

A Commonwealth of Massachusetts Agency

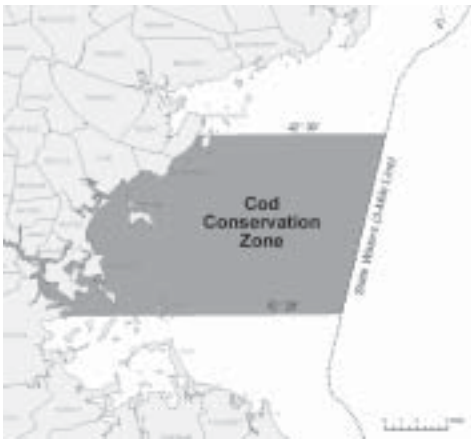
DMF Protects Gulf of Maine Cod

Unprecedented closure to recreational & commercial fishermen to protect spawning aggregations

In December, the Commonwealth of Massachusetts took steps to protect what state fishery managers consider to be a vital component of the Gulf of Maine (GOM) cod stock. Following a one-time fishing closure in 2003 and numerous discussions with fishermen, DMF implemented a two-year seasonal closure on all cod fishing in a portion of Massachusetts Bay now known as the Cod Conservation Zone (CCZ) and created a new groundfish permit endorsement – the State Waters Multispecies Groundfish Endorsement (GE).

The closure from December 1 through January 15 (extended in 2006 through February 28) cut across all fishing gears capable of catching cod in both the recreational and commercial sectors. DMF defined the boundaries of the CCZ using the knowledge of local fishermen and fishery enforcement activities conducted in the area over the past several years.

Massachusetts Bay appears to have the only remaining important coastal breeding ground within this part of the Gulf. Bigelow and Schroeder in their classic 1953 text, *Fishes of the Gulf of Maine*, noted state and federal waters of the Ipswich Bay region as the most important center of cod production for the inner part of the Gulf of Maine north of Cape Ann. Today, Ipswich Bay lacks spawning cod aggregations. More recently, the extent of historic cod fishing grounds throughout the range of coastal Maine has been documented, but these areas, similar to Ipswich Bay, are now mostly devoid of cod.



DMF file image

The objectives of the CCZ are to: (1) contribute to reductions in GOM cod fishing mortality; (2) improve management of GOM cod fishing effort and catch by state-waters-permitted fishermen not fishing on a federal day-at-sea; (3) discourage federal permit holders seeking refuge in state waters from federal rules; and (4) lessen the chance of the New England Fishery Management Council (NEFMC) adopting a year-round closure of inshore GOM waters.

CCZ planning and actions occurred during the parallel development of the NEFMC's Framework 42 to the Northeast Multispecies Fishery Management Plan now scheduled to be implemented sometime this summer. That framework in theory should afford more protection to cod in the southwest, inshore portion of the GOM; however, in our view, it will prove to fall far short of what is required to protect pre-spawning and spawning cod as well as

cod that seasonally move out of the region off Massachusetts and New Hampshire to coastal Maine and more offshore waters.

Actions to implement the GE are steps in a long-term effort to help managers identify the population of active "state-waters" groundfish fishermen and improve management of these fisheries. Future rule-making is expected to restrict catch limits for fishermen authorized to fish for groundfish and monkfish using the GE by reducing trip-limits for cod and establishing limits for other multispecies groundfish. These proposals and other public petitions, ranging from a prohibition of gillnetting in state waters to alternate management programs for gillnet fishing in state waters, will be aired at public hearings this summer.

The CCZ closure will be in place next winter subject to modifications based on monitoring and research recently completed by DMF working with fishermen and other researchers to help learn more about the area and effectiveness of the closure. Research involved hydroacoustic surveys to examine the spatial extent and amount of cod associated with aggregations. Echo-sounding provides a less invasive method of quantifying the magnitude of cod aggregations. This pilot study, including some gillnetting to groundtruth acoustic targets for species composition and size frequency, involved systematic surveys using transect lines spaced to cover entire aggregations.

Tows from DMF's federally-funded Industry-Based Survey for Gulf of Maine Cod (IBS) made in and around the CCZ also helped identify the distribution of cod aggregations and determine size and spawning condition of fish. Other research involved experimental cod potting and fish tagging. A gear experiment using Newfoundland cod pots to obtain catch and biological information was conducted to compare selectivity of pots to multi-panel gillnets.

The CCZ closure afforded an unique opportunity to track cod using standard as well as new innovative devices. Researchers tagged cod just prior to and during spawning with standard t-bar tags and archival tags, the latter recording environmental parameters such as temperature, depth, and salinity. Meanwhile, researchers at the University of Massachusetts Intercampus Graduate School for Marine Science & Technology (SMAST) and Massachusetts Institute of Technology (MIT) Sea Grant have been busy developing novel techniques to study cod biology and ecology. SMAST is developing an acoustic-optic system (AOS) to enumerate size and species-specific fish abundance on Georges Bank and in the Stellwagen Bank National Marine Sanctuary. A prototype system was used for observing cod aggregations and movement as a function of habitat. MIT set an Autonomous Underwater Listening Station (AULS) in the CCZ. This device is used to detect fish vocalizations used by the cod to stablish spawning territory.

DMF will continue to provide information on all CCZ research/monitoring programs and their results in future newsletters as well as at our website:

www.mass.gov/marinefisheries

We take this opportunity to thank all fishermen and researchers who were involved in DMF's efforts to plan and complete a complicated agenda for doing far more than just closing an area to fishing.

STATE WATERS MULTISPECIES GROUNDFISH ENDORSEMENT (GE)
Basic Criteria

- Anyone who held a state-issued commercial permit to take finfish on November 4, 2004 and renewed that permit for 2005, may apply for a GE.
- A federal mutispecies groundfish or monkfish permit holder, or an applicant whose vessel has a federal multispecies groundfish or monkfish permit, will not qualify for a GE. An applicant who **surrenders** their federal multispecies and monkfish permit may apply for a GE; a GE will not be issued to anyone who leases their allocated days-at-sea (DAS) or sells or transfers the federal permit.
- A GE will be issued as an endorsement on one of the Commonwealth's commercial boat permits. Commercial fishermen who hold an Individual or Rod & Reel permit and otherwise qualify for a GE will be given the opportunity to upgrade to a commercial boat permit.
- Applications for a GE will only be accepted during 2006, thereafter, GEs will be subject only to renewals.
- An annual catch report will be required for fishermen issued a GE.
- Commercial permit holders who do not have the GE may land and sell up to 75-pounds of cod per trip taken from state waters without annual reporting requirements.

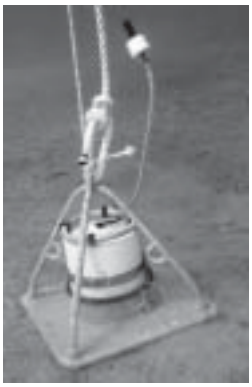


Photo courtesy of MIT

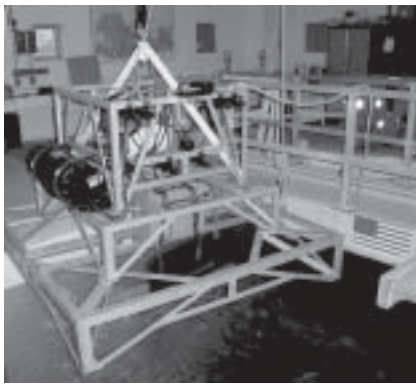


Photo courtesy of SMAST

Clockwise from top left: MIT's AULS on the ocean floor, SMAST's AOS set-up, fishermen readying cod pots for cooperative DMF study & SMAST archival tag.

Photo courtesy of SMAST

DMF file photo

River Herring Runs Crash Across Region

3-year moratorium enacted

For the past several months DMF has been working with recreational fishermen, local herring wardens and members of the Marine Fisheries Advisory Commission to address severe declines of the Commonwealth's river herring runs. DMF's three-year moratorium on all harvest, possession, and sale of river herring is a logical step to maximize the number of adults reaching spawning grounds in coastal rivers and lakes. What does not stand-out clearly is the cause(s) for this decline. DMF biologists therefore are not only monitoring abundance closely but will be tackling the question of what is causing these declines and it appears there are several factors that require closer inspection.

The number of spawning adults in most Massachusetts runs dropped by roughly one-half to three-quarters from 2004 to 2005, following several consecutive years of slower but steady declines. While river herring populations tend to be cyclical in nature, the present downturn is greater and more persistent than any previously observed.

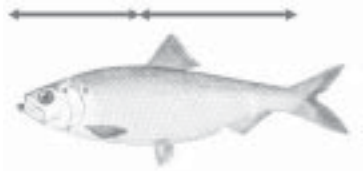
Massachusetts has about 100 individual river herring runs. The smaller runs, of which there are many, are particularly at peril. The declining number of river herring is not a local phenomenon, but is occurring along the entire East Coast. Several states have also enacted or are considering regulations to reduce or eliminate the harvest.

There are a number of factors that may have caused the paucity of spawning fish last spring including: (1) cold temperatures and high flow blocking access to streams and fishways; (2) low numbers of adults resulting from poor recruitment associated with drought conditions four and five years ago; (3) degradation of and lack of access to spawning grounds; (4) depletion of the number of adults through legal and illegal harvest; (5) by-catch in offshore fisheries; and (6) predation. On-going and planned studies by DMF will help determine the cause(s) of this decline.

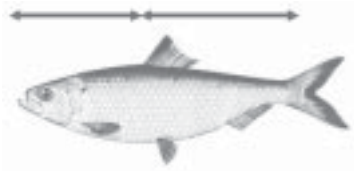
River herring are mainly harvested for use as striped bass bait. For the next three years, this practice is banned. Fishermen cannot possess them and bait stores are unable to sell them. A good substitute for river herring is sea (or Atlantic) herring, *Clupea harengus*. Sea herring are not anadromous and their stocks remain healthy. They are closely related to river herring and are very similar in appearance. DMF is distributing information sheets that explain how to tell the species apart (see above) to bait and tackle shops and on the DMF website (www.mass.gov/marinefisheries).

by Dr. Michael Armstrong

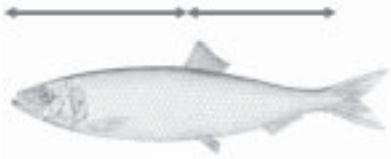
Herring Species of Massachusetts: Easy ways to Identify Them



Alewife (*Alosa pseudoharengus*)
Description: Gray to green-gray dorsal color, eye width greater than distance from front of eye to tip of snout, distinct round dark spot behind gill cover, lining of body cavity is light colored, belly sharp (saw-toothed).
Size: Up to 15 inches, generally larger than bluebacks.
Habitat: Found in marine and fresh waters (rivers, lakes, and coastal waters - mainly in ponds and deep pools).
Regulations: Illegal to take, possess or sell.



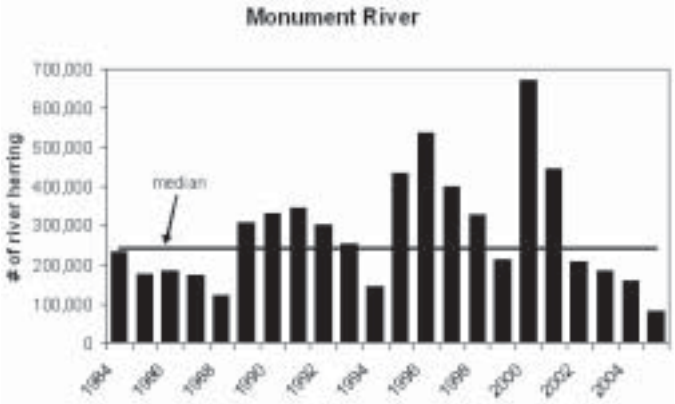
Blueback herring (*Alosa aestivalis*)
Description: Blue-back to blue-green dorsal color, eye width is equal to distance from front of eye to tip of snout, dark spot behind gill cover is less distinct, lining of body cavity is dark colored, belly sharp (saw-toothed).
Size: Up to 15 inches, generally smaller than alewives
Habitat: Found in marine and fresh waters (coastal waters and rivers with swift moving waters overhard substrate).
Regulations: Illegal to take, possess or sell.

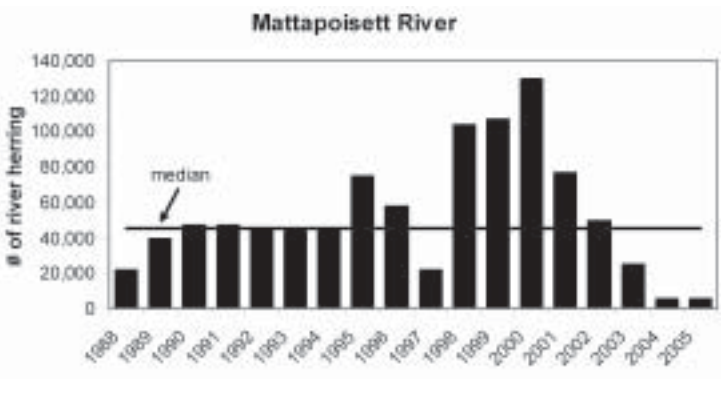


Atlantic herring (*Clupea harengus*)
Description: Body elongate, dorsal fin is located closer to tail fin in comparison to the other herrings, moderate-size eye, no distinctive spots on body or fins. lining of body cavity is dusky, belly not distinctly sharp.
Size: Up to 17 inches and 1 1/2 pounds.
Habitat: Found exclusively in marine (coastal and offshore) waters, with some populations entering brackish waters, not in fresh waters.
Regulations: No recreational fishing restrictions.

American shad (*Alosa sapdissima*)
Description: Body relatively deep, eye relatively small, 4-7 distinct dark spots behind gill cover, pale to silvery colored linging of body cavity.
Size: Up to 30 inches and 13 1/2 pounds.
Habitat: Found in marine and fresh waters (coastal waters and in rivers with shallow water with moderate current speed).
Regulations: Six fish possession limit, no minimum size restrictions.

Art work by H.L. Todd





DMF file images

DMF scientists have documented declining trends in river herring abundance for most MA river herring runs, including the Monument River in Bourne and Mattapoisett River.

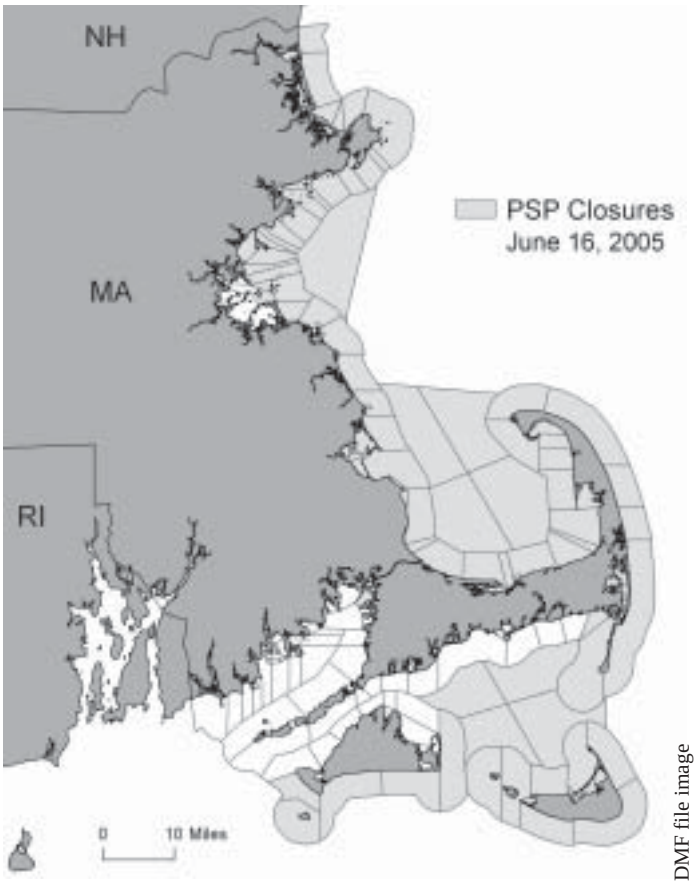
DMF Prepares for Red Tide Repeat

New Englanders may be rejoicing at the arrival of apring weather, but the Department of Fish & Game and DMF are gearing up for a possible spring red tide outbreak. Last spring witnessed a typical Maine coastal bloom that migrated inexorably southward through southern Maine and New Hampshire and into the Commonwealth setting an all-time record for *Alexandrium* distribution and subsequent shellfish closures. A total of 1,351,265 acres, or 77.4% of the Commonwealth's marine waters were eventually closed to shellfishing.

Due to the naturally recurring nature of red tide, DMF is faced with the likelihood of another bloom this spring. DMF biologists and managers are hard at work to ensure that the Commonwealth's previous success in managing this large public safety issue continues in the face of future blooms.

2005 Event – Impacts & Management

The enormity of the state-wide red tide event of 2005 overshadowed the almost annual biotoxin closures of the Massachusetts coastal system both in the sheer elevation of toxin levels and the triggering of extensive closures throughout the state. *In situ* blooms (cysts that germinate and reproduce within a given area with little or no extraneous influence) have occurred with an almost predictable regularity since 1992 in the Nauset estuarine area of Orleans and Eastham on Cape Cod. The 2005 bloom however produced spatial and toxin records in locations that had never experienced such radically elevated levels during the more than three decades since accurate records of such events have been



DMF file image

Geographic distribution of red tide-related shellfish closures peaked on June 16, 2005, encompassing over 3/4 of the Commonwealth's marine waters.

kept, including areas around lower Cape Cod Bay, Nantucket and Martha's Vineyard. Shellfish affected by red tide are primarily bivalve and gastropod (carnivorous snails) mollusks. Crustaceans such as lobster, crabs and shrimp are unaffected.

DMF with the cooperation of numerous other state and federal agencies effectively managed this outbreak with no reports of public health impacts. However, red tide closures dealt significant economic impacts to shellfish fisheries including state-managed fisheries, town-managed fisheries, and private-run aquaculture businesses. Preliminary estimates of economic impacts exceed $46-million. The full impact of last year's red tide and subsequent shellfish closures is still being calculated as shellfishermen submit their landings reports for each local area.

Despite numerous efforts by a concerted group of Commonwealth agencies and legislators, direct financial relief was not made available to industry. However, the Small Business Administration did provide low-interest loans and conducted several workshops along the coast to assist shellfishermen in their applications.

Currently large areas of Massachusetts Bay, Cape Cod Bay and waters south of Martha's Vineyard remain closed to the harvest of conch, ocean quahogs, surf clams, and the landing of whole sea scallops and/or roe on sea scallops. This is an on-going loss and may continue for several more months due to residual toxin levels, slow detoxification rates and difficulty obtaining samples. Closures for other shellfish (quahogs, oysters, soft shell clams, blue mussels & razor

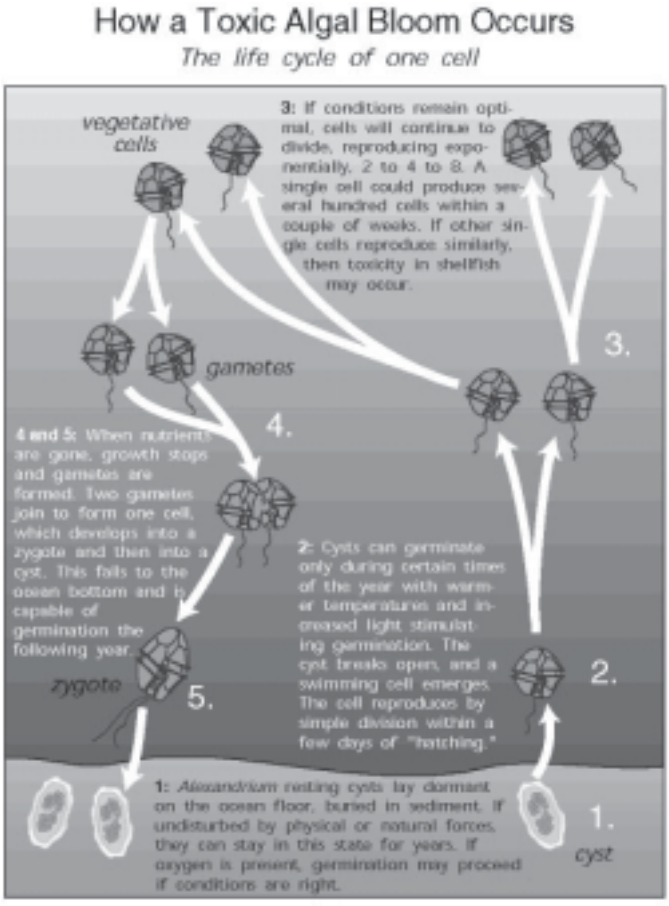


Image by Woods Hole Oceanographic Institute (WHOI).

clams) during this event have ranged from a minimum of four weeks in Chatham to a maximum of 12-weeks in the Nauset system of Eastham and Orleans. The average inshore closure was about six weeks.

What to Expect in 2006

Although it is impossible to predict from one year to the next if a red tide event is going to occur, last year's episode is giving DMF personnel several reasons for concern. Even though the natural conditions that caused last year's bloom to burgeon into a record breaker are not typical, they could indeed re-occur. Additionally, because of the immense density of the bloom in given areas of the state, cyst deposition may result in discrete locally initiated blooms without the traditional introduction and migration of cells from the north.

DMF file photos

DMF bacteriologist Shannon Davis and shellfish biologist Terry O'Neil analyze red tide toxicity and abundance in the lab and field, respectively.

DMF was able to cope with this year's bloom by shifting all available staff to the red tide response, at the expense of other important tasks, projects and programs. Through the well-orchestrated sampling and analysis practices and vigilant responses of DMF, the Massachusetts Department of Public Health, and Office of Environmental Law Enforcement no confirmed cases of Paralytic Shellfish Poisoning were reported from shellfish harvested in Massachusetts waters. However, due to the enormity of the task, this event extracted a significant toll in both manpower and funding and has pointed out the need to augment both laboratory and field services in preparation for future occurrences.

by J. Michael Hickey

Some Lobstering Areas Opt for Tighter Lobster Trap Limits

Individual transferable trap limits created to ratchet down effort

In 2004, Outer Cape lobstermen from ports of Chatham, Nauset Inlet and Provincetown broke new ground in regional lobster management: permit-specific trap limits that replaced the universal 800-trap limit. Now fishermen fishing alongside one another have different trap limits affixed to their permits.

Prior to 2004 all the state's inshore lobstermen lived with an 800-trap limit on the regulation books for over a decade. But that rule probably has had little impact on the aggregate number of traps fished by industry. DMF statistics show almost 1/3 of issued permits remain un-fished, and the average number of traps fished by active fishermen was around 400 – half of the allowed maximum.

Outer Cape Cod lobstermen have embraced these fisherman-specific trap limits to control trap numbers and further reduce trap levels over time. Back in 2000, fishermen throughout the Northeast were confronted with the challenge of increasing lobster conservation by reducing fishing mortality. The Outer Cape Cod lobstermen opted to increase minimum size but concluded they didn't want any ensuing conservation benefits to be dissipated by an increase in traps by their fellow fishermen or new fishermen to the area.

Working with DMF's Bruce Estrella and former Deputy Director Jim Fair, the Outer Cape Lobster Conservation Management Team studied Florida's spiny lobster fishery and liked what it saw: a conservative cap on overall traps in the fishery, variable trap limits based on the scale of each fisherman's business, and a transfer program that required fishermen to get trap allocations from each other to increase the scale of an individual's business. Working with stock assessment scientists, the fleet was advised that a 20% decrease in traps (from the 1998 level) was warranted, and they were given until 2008 to meet the goal.

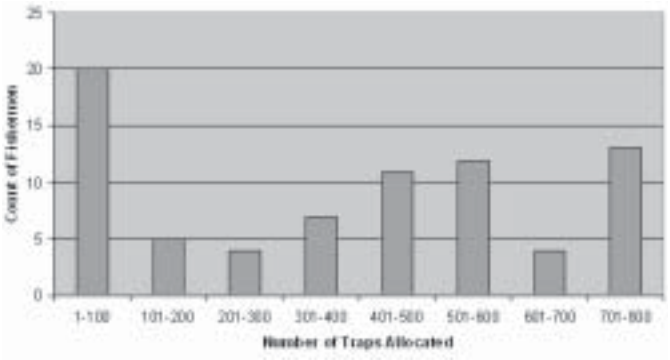
DMF file photo

Outer Cape commercial lobsterman hauling back a trap.

The subsequent effort control program implemented by DMF in 2004 identified which fishermen were actively fishing in the Outer Cape Cod Lobster Conservation Management Area based on fishermen-supplied catch reports and assigned initial trap allocations based on an individual's fishing history during 2000-2002. DMF restricted eligible fishermen's trap allocations from exceeding their highest reported number of traps fished, and to be eligible to receive that allocation fishermen must have had landings (in pounds reported) commensurate with that amount of traps. If any permit holder's landings were below average for a given level of traps, their allocation was reduced accordingly. This caveat ensured no fisherman was rewarded for over-reporting traps fished, a practice that many industry members have decried for years. Moreover, DMF routinely audits reported pounds landed, so this statistic is considered more reliable.

Results showing effectiveness of the program to reduce traps are evident. Among the 74 currently eligible permit holders, total traps reported fished have declined to 26,801 – down 19% from the estimated number fished in 1998. Furthermore the number likely will continue to fall further due to a 10% "transfer tax" levied on any fisherman who transfers his permit or a portion of his trap allocation. DMF

projects an annual decline of a few hundred traps per year. If more immediate reductions in traps are warranted, then a flat reduction in trap allocations could be levied on all permit holders across the board.

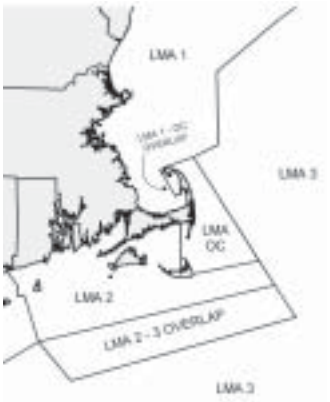


DMF file image

Distribution of trap allocations among Outer Cape lobstermen in 2005.

Enforcement to ensure compliance with trap allocations poses some challenges. At-sea enforcement is critical to check traps for a valid annually-issued trap tag. It's too much to expect law enforcement officers to count a fisherman's traps to ensure he's fishing within the limits. Instead, enforcement uses an approach that checks for any untagged traps. To aid enforcement, DMF recently enacted a two-month closure for Outer Cape lobstermen, during which time lobstermen are required to "haul-out" their trap gear, providing an ideal opportunity for enforcement to examine traps for their current tags.

Lobstermen in southern New England (mostly RI and MA south coast), recognizing the success of this program, have crafted a nearly identical plan for the Area 2 fishery. This plan was approved as an amendment (#7) to the interstate plan by the Atlantic States Marine Fisheries Commission and goes into effect for 2007 and beyond. All Massachusetts Area 2 lobstermen will receive a letter this spring informing them of the recently enacted plan, their eligibility, and their projected trap allocation for 2007.



DMF file image

Lobster Conservation Management Areas adjacent to the Massachusetts coast.

Programs like these are coined "ITT's" – Individual Transferable Trap programs, and are one of many programs around the world where fishermen are granted fishing rights that are specific and can be transferred or sold. Known in federal and academic arenas as "Dedicated Access Privileges", the most recognizable are "ITQ's" – Individual Transferable Quotas where fishermen are granted a share of the overall total allowed catch. Renowned ITQ's include the Alaska halibut fishery and the Mid-Atlantic surf clam fishery. The lobster industry and managers do not (yet) have the appetite for "hard" lobster quotas – where the fishery would close after landings reached a pre-determined level. So for now the authorization to fish traps becomes a limiting factor in the conduct of the fishery and in business planning for individual fishermen.

by Dan McKiernan, Deputy Director

DMF and Offshore Lobstermen Pursuing Better Sink Rope

New whale-safe rules warrant more durable line

How do we ensure that whales and fishermen can co-exist? The solution may be in development of durable rope that can lie on the ocean floor. Many scientists and management agencies have advocated the use of non-buoyant groundline (line connecting traps) to reduce a line's profile in the water column and thus reduce risk of entanglement to large whales, particularly the North Atlantic right whale. But non-buoyant groundline has its drawbacks. Fishermen have pointed out that this type of line is more expensive, causes more "hang-downs," and breaks down faster due to abrasion.

Most Massachusetts fishermen have already replaced their floating groundline through a buy-back program conducted in 2004 by the International Fund for Animal Welfare, the Massachusetts Lobstermen's Association, and DMF. The use of sinking groundline is currently a year-round requirement in Cape Cod Bay and beginning on January 1, 2007, floating groundline will be prohibited in all Massachusetts state waters by regulation.

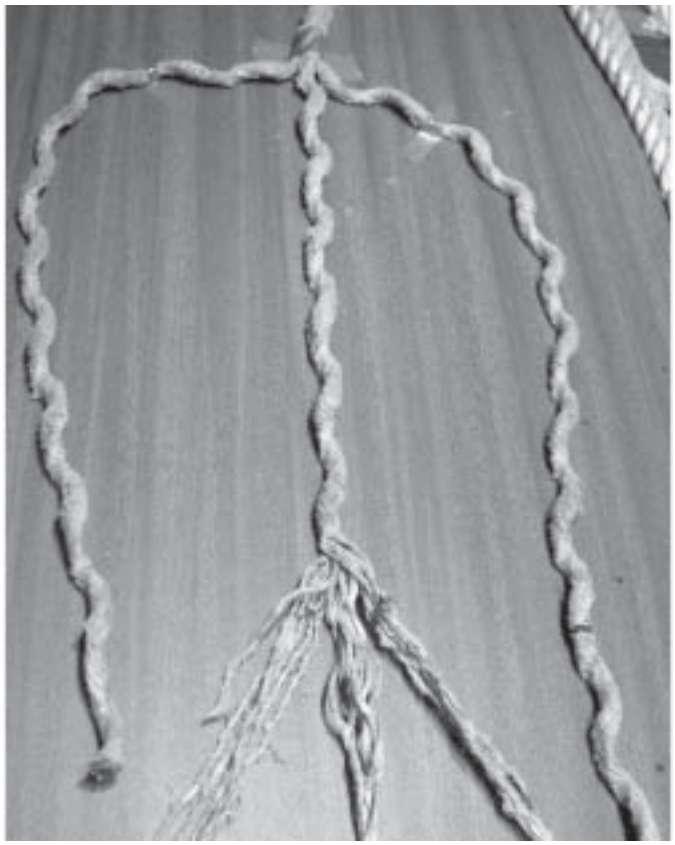
In a few years, most fishermen on the eastern seaboard may be required to fish sinking lines under soon-to-be announced federal regulations. NOAA's proposed amendment to the federal Large Whale Take Reduction Plan recommends the wide-scale use of non-buoyant groundline as a means to reduce risk of large whale entanglements.

While this modification is beneficial to endangered and threatened whales, it does create a burden for the fishing industry. Many lobstermen have reported accelerated line fatigue caused by contact with the sediment. The problem is especially acute for offshore lobstermen who fish deeper water, longer trap trawls, and heavier loads – all causing extreme strain on the line as the trap trawl is brought to the surface. This strain twists and tightens the rope around the sediment, possibly cutting the fibers from the inside out.

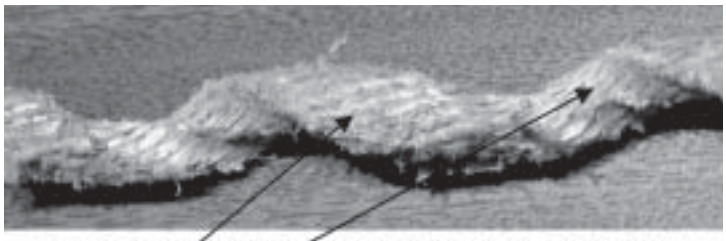
In response to this problem, DMF and the Atlantic Offshore Lobstermens Association (AOLA) began a study in 2003 to evaluate the durability of various brands of non-buoyant groundline. We built a line-testing machine to simulate the wear groundline experiences in the field in a shorter period of time. Machine-testing of lines was completed in 2005 and brands which performed best were those with the most residual breaking strength. Samples of those rope brands were recently distributed to the offshore lobster

DMF file image

The line-testing machine that simulates years of wear within hours.



Photos courtesy of TTI, Ltd.



Clockwise from left: general view of a dissected section of machine-tested rope and a close-up view of strand showing abrasion damage.

fleet for field-testing. This field-testing will continue for the next year or so. A report on the machine-testing phase of this project can be viewed at the following web address: http://www.mass.gov/dfwele/dmf/programsandprojects/nfwf_report_on_aola_study.pdf.

While field-testing is taking place, DMF and AOLA sought to understand the specific causes of rope degradation. They enlisted the help of rope consultant Hank McKenna of Weston, MA, and his team at Tension Technology International (TTI), a rope engineering and testing firm. McKenna has a long career in the area of textile chemistry and has advised many industries on rope design, including the offshore oil industry, which has similar problems with rope abrasion caused by contact with the sea bottom. Through a grant from the National Marine Fisheries Service, McKenna and TTI performed a visual and microscopic analysis of both the machine-tested lines and used lines turned in by fishermen. We hoped to learn how well the line hauling simulator replicated wear seen in the field and wanted to pinpoint exactly what was causing the accelerated line fatigue reported by fishermen. With this phase of the project, DMF and AOLA hope to produce guidance for fishermen and cordage companies about what ropes and rope characteristics would stand up to the rigors of fishing in contact with the ocean floor.

The lab employed a scanning electron microscope to reveal damage and found mechanical damage to the fibers on both the machine-tested and used ropes was strongly evident. McKenna concluded that the machine simulated field conditions well. He also pointed out that there are two kinds of mechanical wear: internal and external, and both these sources of mechanical wear can be exacerbated by the presence of sediment. More work is warranted to determine the degree of sediment infusion into rope fibers and the resulting damage. Overall, he concluded that much of the observed damage was from mechanical sources: internally from strand-on-strand abrasion and externally from abrasion from the hauling equipment.

Based on this analysis and his general knowledge of rope design, McKenna recommended a candidate rope design for long-life and abrasion-resistance. A three-strand rope with the polyester yarns coated in a marine finish. Key questions remain about the affordability of such a rope product and that will be a key focus of the ongoing project

McKenna also concluded that both quality and bulk matter. Non-buoyant groundline is typically a mix of polypropylene and polyester fibers, and the polyester makes the line sink. But not all polyester is alike – some are more resistant to abrasion than others, and use of high-quality polyester fiber will increase the life-span of the rope. The diameter of the rope is another key issue. Some fishermen who use smaller diameter lines (e.g. 5/16") have found wear particularly to be accelerated. McKenna pointed out that thinner rope is more prone to sediment infiltration, so fishermen should opt for thicker lines when replacing buoyant line with sinking line.

DMF and AOLA are pursuing funding to continue with this project. Our next step is to work with McKenna to develop specifications for a candidate line and solicit the cordage industry for test samples. In addition, we plan to identify potential sources of wear on the ropes. We hope to isolate and mitigate all sources of line wear from the abrasion caused by contact with the ocean floor to the friction caused by each of the components of the hydraulic hauling system

DMF and AOLA believe the partnership with McKenna and TTI has tremendous potential. An engineering solution to the problem of rope durability may pave the way for the co-existence between whales and fishermen resulting in a safe and profitable lobster fishery.

Contact Erin Burke (erin.burke@state.ma.us) with any questions.

by Erin Burke (right), Protected Species Specialist

Responsible Management Strategies Reduce Horseshoe Crab Take in Massachusetts.

The horseshoe crab (*Limulus polyphemus*) has been a part of our history for hundreds of years. Early references cite how the Indians used the shell of the crab to bail water out of their canoes and made fishing spears from the tails. Farmers from colonial days until the 1950s used horseshoe crabs to feed hogs and to grind them for use as fertilizer. Because the horseshoe crab feeds on commercially important shellfish such as the soft shelled clam, shellfishermen destroyed thousands of crabs each year. In fact, several Massachusetts towns offered a bounty of three cents on the tail of a horseshoe crab. In the early 1960s, the Town of Chatham paid $1,500 in total bounty on crab tails which at three cents each equals 50,000 horseshoe crabs. A review of towns' annual reports suggests that half-a-million crabs or more were killed annually as part of local shellfish predator control programs.

Photo courtesy of Carl Shuster

From colonial times to the middle of the 20th century, farmers harvested horseshoe crabs to grind for use as fertilizer.

Starting in the 1970s, horseshoe crabs were used as bait for the channeled or smooth whelk (a.k.a. conch) and eel pot fisheries. Fishermen found that the crabs were the most effective bait for these fisheries. They were easy to collect, gathered from spawning beaches and stored in live cars or freezers for later use, and there was minimal expense other than their time and effort. Conch pot fishermen would stake a whole, half or a third of a crab, depending on the size of the crab, in a pot often with a dogfish head or skate wing. Towns as well as the State originally encouraged fishermen to use horseshoe crabs as bait as it removed two shellfish predators: conchs and horseshoe crabs, from shellfish beds. While there are no numbers available for horseshoe crab landings in the Commonwealth prior to 1999, it is estimated that as many as 400,000 crabs per year were needed to sustain the conch and eel pot fisheries.

Horseshoe crabs are also one of the most studied invertebrate animals in the world. Three Noble Prizes have been given to scientists conducting research on some aspect of horseshoe crab physiology. Horseshoe crabs also have been used for research in neurobiology, immunology, biochemistry and drug development. In the 1950s, Dr Frederick Bang at the Marine Biological Laboratories in Woods Hole discovered that the blue blood of horseshoe crabs clotted when exposed to bacteria.

The reagent in the blood, Limulus Amoebocyte Lysate or LAL, is able to detect minute levels of bacterial toxins in patients, drugs and intravenous devices. Presently, no other procedure has the same accuracy in predicting pharmaceutical purity as the LAL test. The commercial development of LAL started in 1974 when James Sullivan and Stanley Watson began producing a high quality reagent at Associates of Cape Cod (ACC) in Falmouth, Massachusetts.

The harvest of horseshoe crabs for biomedical use originally required a regulated biomedical harvest permit with a provision that all crabs be returned to the water following bleeding. Massachusetts regulations now allow the biomedical company to purchase bait crabs for bleeding. Once bled, the crabs are returned to the bait dealers for sale as bait. As approximately 50% of the crabs used by the biomedical company came from the bait dealers, the number of crabs harvested solely by biomedical permit holders is much reduced. The use of a single crab for two competing industries has reduced significantly the total number of crabs harvested in the Commonwealth.

Interstate Management

In 1997, the Atlantic States Marine Fisheries Commission (ASMFC) voted to develop a fishery management plan for the horseshoe crab. The decision to develop this plan was based upon the perceived over-exploitation of the crabs and concerns about the harvest of crabs by the conch and eel fisheries, the biomedical and pharmaceutical industries and the impact on shorebirds. Based upon several Delaware Bay surveys, horseshoe crab populations in some states appeared to have declined. Horseshoe crabs mature slowly making stocks sensitive to over-harvest.

Coincidentally, with the decline of the horseshoe crabs, a decline in the number of migratory shorebirds in Delaware Bay was noted. Delaware Bay is the largest staging area for shorebirds in the Atlantic Flyway. As many as one million birds stop at the bay on their northward migration to feed. The 2-3 week stopover in the bay generally coincides with the horseshoe crabs spawning when the birds gorge themselves on horseshoe crab eggs. Estimates place the consumption of horseshoe crabs eggs as high as 10,000 eggs per day per bird.

The Horseshoe Crab Fishery Management Plan was approved and adopted by the ASMFC on October 22, 1998.

Photo courtesy of Carl Shuster

Recently, the importance of horseshoe crab eggs to feeding flocks of migratory birds has come to light.

The plan required the Commonwealth and other Atlantic Coast states to develop regulations to conserve and protect the horseshoe crab resource to ensure its continued role in the ecology of coastal ecosystems, while providing for its continued use over time.

In response to the mandatory compliance element of the Horseshoe Crab Fishery Management Plan, DMF established a regulated fishery permit for the management of horseshoe crabs (322 CMR 6.34). Permit holders are required to report monthly the number of crabs harvested. In 1999, 151 fishermen reported harvesting 545,715 horseshoe crabs for bait and for biomedical use. However, as this figure was going to be used by the ASMFC as "reference period landings" (RPL) to establish a quota, DMF felt that there may have been some over-reporting of harvest to inflate the state's quota. As a result, DMF submitted a number approximately 20% lower (440,503) to the ASMFC. In February 2000, the ASMFC Management Board approved Addendum I of the Fishery Management Plan. Addendum I established a state-by-state cap at 25% below the RPL. States were required to close their bait fishery once the quota was reached. The Massachusetts annual quota was set at 330,377 crabs. In 2000, 175 fishermen reported harvesting 272,930 horseshoe crabs, approximately 82.6% of the quota.

Development of Bait Methods

As a result of increasing cost for horseshoe crabs for bait, a number of Cape and Island conch fishermen began to use fine mesh lobster bait bags in their conch pots. The bait bags allowed the fishermen to use smaller pieces of crab as well as to mix other baits such as mussels, scallops and fish in the bags as sweeteners. A ten month study by Bob Fisher at the Virginia Institute of Marine Science concluded that bait bags significantly reduced the amount of crab required in a pot without reducing the catch.

In an effort to further reduce the numbers of horseshoe crabs needed for bait use, the American Bird Conservancy, Massachusetts bait dealers and DMF began distributing hundreds of bait bags free to conch fishermen in 2001. The bags were supplied by Ecological Research and Development Group Inc. in Delaware. A 2002 survey of Massachusetts conch fishermen indicated that 82% used some form of bait bags. The progression from unregulated harvest to a regulated fishery with a management plan, reduced quota, daily catch limits, and closed harvest days along with the use of bait bags by most fishermen has reduced the annual harvest of horseshoe crabs in the Commonwealth from over 545,000 crabs in 1999 to about 138,600 crabs in 2002.

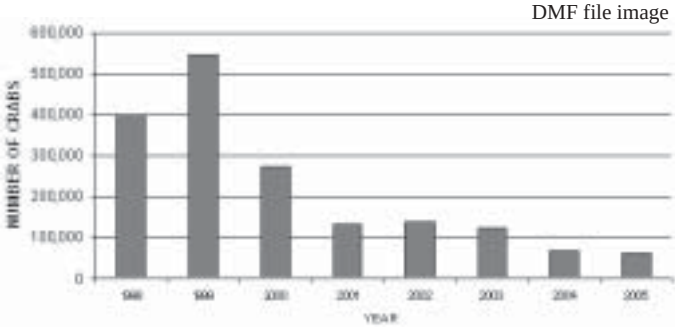
In 2003, Buzzards Bay fishermen began using bait cups and modified containers instead of bait bags in their pots. Many Buzzard Bay conch pot fishermen were originally opposed to bait bags because they believed the bags fouled quickly and the bait spoiled. Unlike bait bags, the cups allowed fishermen to raise bait off the bottom of the pot. Fishermen found that the small size of the cup allowed them to use less crab for bait and because the crab didn't wash out, the smaller pieces of bait lasted longer then the staked baits.

A 2005 survey of conch pot fishermen now shows that nearly all (97%) use some form of bait bag or cup. Fishermen reported that bait cups allowed them to bait as many as six to ten pots with a single horseshoe crab instead of the two to three pots when crabs were staked in the pot and - most importantly - with no decrease in the conch catch. The use of these bags in 2001and cups in 2004 have resulted in a substantial reduction in the number of horseshoe crabs harvested for bait in Massachusetts to approximately 70,000 crabs in 2004 and 2005. This represents a decrease of 87% from the estimated 1999 harvest of 545,000 crabs and 79% below the ASMFC Massachusetts quota of 330,377 horseshoe crabs.

Current Management Considerations

Despite similar conservation efforts in other states, which have reduced coast-wide horseshoe crab landings four-fold since 1998, concerns still remain for the red knot's survival. Experts have indicated that the red knot population remains at low population levels and the shorebird may be within five years of extinction. In February 2006, the U.S. Fish and Wildlife Service Shorebird Technical Committee concluded that a moratorium on horseshoe crab harvest could provide more eggs for the shorebirds. ASMFC's Horseshoe Crab Management Board has initiated the addendum process to evaluate need for further restrictions on crab harvest in the Delaware Bay region. A draft Addendum IV to the Interstate Fishery Management Plan for Horseshoe Crabs, which proposes a number of options to further reduce or eliminate the harvest of crabs of Delaware Bay origin, has been released for public comment.

DMF file image

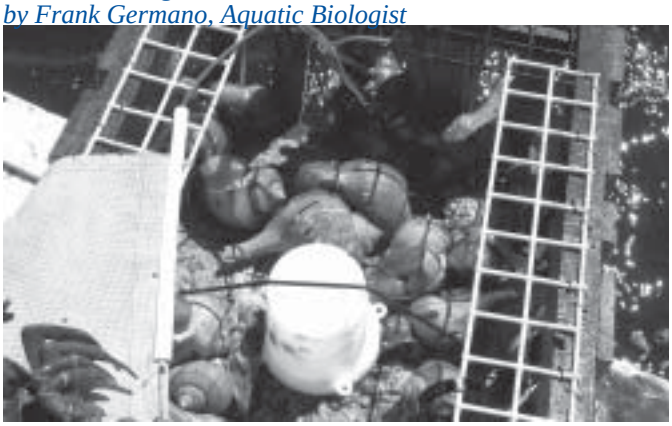


More efficient bait methods have allowed MA fishermen to harvest less horseshoe crabs for their bait needs.

Should the ASMFC approve Addendum IV placing a moratorium on the harvest of horseshoe crabs in Delaware Bay, the effects will be felt in Massachusetts. Currently, due to a short May and June hand-harvest season in Massachusetts, approximately 70,000 crabs are annually imported from mostly Delaware Bay states. Dealers will be forced to find other out-of-state sources. Another concern is that there will be a shift of harvest effort. Additionally, several Massachusetts dealers have indicated that they will be shipping horseshoe crabs to Delaware Bay markets. ASMFC is accepting public comment on Addendum IV until April 17th. For further details please visit the ASMFC website: www.asmfc.org.

by Frank Germano, Aquatic Biologist

DMF file photo



A full conch-pot using a horseshoe crab bait cup.

DMF Eelgrass Restoration Program Enhanced by Volunteer Activity

Outreach expanded to keep up with growing public support

DMF has been conducting an eelgrass restoration effort in Boston Harbor since late in 2004. Public support for restoration of this important habitat has been so broad that DMF organized an outreach segment of the Eelgrass Restoration Project that has been expanded accordingly. DMF has relished the services provided by a significant number of volunteers from various organizations participating in both land-based and at-sea tasks. To date, these include numerous divers from local dive clubs, staff and interns of the National Park Service, students and teachers from Boston-area high schools, Single Volunteers of Boston, Aimco Capital, Save the Bay, and the New England Aquarium.

The restoration of submerged aquatic vegetation (SAV) is subject to many environmental factors, some of which are often beyond our control. However, successful SAV restoration efforts have a long history of being enhanced by well-planned education, outreach, and volunteer assistance programs; providing excellent opportunities to interest and involve local citizens.

Other SAV restoration efforts involving volunteers have been conducted successfully in a number of areas around the country. In the Northeast and Mid-Atlantic region, eelgrass restoration projects have been undertaken in New Hampshire (Great Bay Estuary), Massachusetts (New Bedford and Boston), Narragansett Bay, and Chesapeake Bay to name a few. Volunteers have worked with state and federal agencies including National Estuarine Research Reserves and U.S. Army. Recruits have come from school classrooms, colleges and universities, watershed organizations, boy- and girl-scout groups, dive clubs, local businesses, environmental organizations, citizens groups and the general public. Not only do volunteers provide needed manpower during intensive harvesting and planting periods and monitoring and grow-out tasks, but their involvement in these undertakings represents an investment in the long-term success of the project and health of the water-body.

DMF's Eelgrass Restoration Project offers many and various opportunities for every interested volunteer. The restoration of eelgrass in Boston Harbor is a complex and multi-staged process involving harvesting, planting, and monitoring. SCUBA divers, kayakers, and shoreline assistants are needed to conduct a myriad of tasks in the process, from harvesting existing eelgrass beds by SCUBA, to transporting plants by kayak, to shoreside sorting and bundling to facilitate planting.

Plants are transported to planting location via boat by DMF personnel. At the planting site, tasks are determined by the planting technique deployed. Volunteers on the beach may tie plants to TERFs™ (wire-mesh cages) and other types of planting frames which are then loaded onto boats for deployment. Workers on the boats will lower these frames into the water for strategic placement on the bottom by divers. Alternatively, hand-planting of shoots by divers is also conducted and the harvest of flowering shoots to yield seeds provides an additional planting option during late summer/fall.

DMF welcomes the participation of local citizens. Volunteer participation in restoration creates a sense of stewardship among participants that helps ensure the long-term restoration, maintenance, and protection of this important resource. DMF biologists have made numerous presentations on eelgrass at local schools and for other interested groups, but DMF's Eelgrass Restoration Project provides a "hands-on" educational experience for members of the community.

Interested volunteers should log onto *DMF's* website at: http://www.mass.gov/marinefisheries and click on the **Eelgrass Restoration Project link** under **Programs and Projects**. Volunteer forms can be downloaded from this site and submitted to DMF. Volunteers can also track updates of project activities online. All volunteers are presented with T-shirts displaying the eelgrass restoration logo designed by Odyssey High School students - Be the first on your block to display your support for eelgrass restoration!

by Bruce Estrella, Hubline Program Coordinator

DMF Eelgrass Project volunteers tie eelgrass shoots to string frames for planting off Weymouth.

DMF file photo

Merrimack River Re-opens to Shellfishing

First Harvest in 20 Years

Tuesday, March 21, 2006 clam diggers returned to the Merrimack River flats for the first time since 1986. Once considered among the top-five clam producing flats in Massachusetts, bacterial contamination shut down the highly productive beds in Newbury, Newburyport and Salisbury.

On Tuesday, a total of 13 diggers harvested 52 bushels of soft shell clams from Newburyport and Salisbury. This opening was long anticipated and involved extensive planning by DMF, the Town of Salisbury, City of Newburyport and Office of Environmental Law Enforcement.

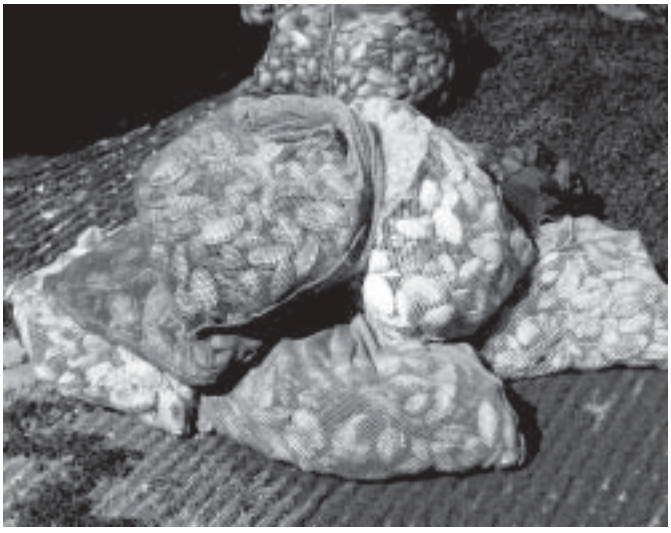
In Massachusetts, DMF is responsible for the monitoring and classification of coastal waters for shellfishing. Water quality testing confirmed the river has met criteria for a Conditionally Restricted classification. Results showed that rainfall continues to cause periodic but predictable periods of pollution. As a result, rainfall of 1/4-inch to 1-inch will close the area to shellfishing for five to seven days. Rainfall greater than 1-inch will prohibit shellfishing for extended periods. DMF re-opens falts only after a follow-up water quality assessment.

Due to this limited classification, only specially licensed, commercial Master and Subordinate diggers may harvest soft-shell clams for depuration (purification) at DMF's Shellfish Purification Plant at Plum Island Point, Newburyport. At the Shellfish Plant, clams are purged of bacteria in clean seawater in a controlled, strictly monitored process for two to three days.

The Shellfish Plant was originally constructed by the City of Newburyport to purify clams from the Merrimack River which was closed to all clamming in 1925. In 1960, the City turned over operation of the plant to DMF. Today the plant processes an average of 15,000 bushels of soft-shell clams annually.

The opening of more than 250-acres in Salisbury and 70- acres in Newburyport was the result of concerted clean-up efforts begun over twenty years ago by state and federal agencies together with local communities and environmental organizations. Twenty years is a long time to wait but for North Shore clam diggers the re-opening of the Merrimack River clam flats is welcome progress.

by Jeff Kennedy, Shellfish Biologist



Clockwise from top right: A shellfisherman loads up his racks of soft shell clams harvested from Salisbury; bags of Merrimack River soft shell clams harvested on March 21st from Salisbury Flat; Salisbury diggers return to Black Rock Creek boat ramp.

MarineFisheries

A Commonwealth of Massachusetts Agency

DMF Comings & Goings

Comings

Dr. Kathryn Ford came to DMF in July as the Division's new Fisheries Habitat Specialist. Kathryn's expertise with respect to sonar equipment, marine ecology and bottom mapping techniques has enabled DMF to study marine habitats for purposes of fisheries management, protection, and enhancement.

Erin Burke, also began work with DMF in July as the new Protected Species Biologist. Erin, after serving as a NMFS observer, recently completed a Masters at Duke University focusing on marine mammal interactions with fisheries. Erin has jumped right into her current role overseeing and coordinating the Commonwealth's right whale conservation program and other matters pertaining to threatened and endangered marine species.

Since August, DMF has been able to call upon Rhode Island's previous Assistant Director of Natural Resources, **David Borden**, as a Fishery Management Policy Specialist. Since retirement from Rhode Island state service, David has utilized his institutional knowledge of state, interstate and federal fisheries management to assist the Commonwealth on key issues like groundfish and mackerel at the New England and Mid-Atlantic Fishery Management Councils.

In September **Paul Somerville** filled the vacant Aquatic Biologist II position in the shellfish project at the Annisquam facility in Gloucester. As a shellfish biologist he will work on growing area classification and shellfish management issues for Boston Harbor and the North Shore. Paul is the former Shellfish Constable for the town of Wellfleet and more recently the CZM Shellfish Clean Waters project coordinator.

DMF's Dive Program has had a new Assistant Dive Safety Officer, **Holly Martel Bourbon**, since November. Holly previously worked as a diving safety office and senior aquarist at the New England Aquarium in Boston. Holly's extensive esperience as a diver, instructor and scientist is contributing greatly to her current management of the Marine Fisheries Institute's (MFI) Diving Program; the MFI is a joint entity of DMF and University of Massachusetts' Intercampus Graduate School for Marine Science and Technology.

Another November addition, was **N. Tay Evans**, DMF's new biologist in the Environmental Review Program where she is busy reviewing and commenting on numerous coastal projects with respect to marine fisheries resources. Tay received a Masters degree from the University of New Hampshire conducting an analysis of a New Hampshire Port Authority mitigation project.

Vivian Kooken started in February as a new Laboratory Technician at the Shellfish Purification Plant in Newburyport. She primarily will be responsible for running the Shellfish Plant laboratory on weekends. Vivian worked for DMF in 1998 as a Seasonal Laborer and Phytoplankton Monitor with the Shellfish Project. She then spent three years working for Salem Sound 2000 as Project Scientist on several resident programs.

Greg Bettencourt also started last month at the Shellfish Purification Plant as a Shellfish Biologist . Greg will be assisting in the operation of the Purification Plant laboratory as well as conducting field investigations with shellfish biologists in Gloucester. Greg previously worked for the Shellfish Program in 2000 and 2001 as a Seasonal Laborer in the Pocasset office. He comes to DMF after having been employed as an Environmental Chemist and a Biotechnology Manufacturing Associate in Rhode Island.

Most recently, **David Chosid**, has taken on a new role with DMF as a biologist in the Conservation Engineering Program. David previously worked in the Hubline program on enhancement of Amercian lobster habitat. His new duties have him focusing on the testing of an innovative haddock trawl net, along with other commercial fishing gear projects. DMF's Conservation Engineering Program works coopertatively with industry, university faculty and others to scientifically test new ideas to improve selectivity of commercial fishing gear.

Goings

Changes continued in February with the departure of **Denis Marc Nault**. Denis left the Shellfish Hubline Project to become Supervisor of the Municipal Shellfish Management Program for Maine's Depatment of Marine Resources.

DMF *Rules UPDATE*

Public Hearings • Regulations • Legislation

Notice of Public Hearings
Scheduled for March 28, 2006

Under the provisions of M.G.L. Ch 30A and pursuant to the authority found in M.G.L. Ch. 130 ss. 17, 17A, 80 and 104, Division of Marine Fisheries (DMF) and the Marine Fisheries Advisory Commission (MFAC) held hearings on the following proposed regulations:

1. **Public petition to allow commercial fishermen using pots or hook and line to fish for scup on Sundays (322 CMR 6.28) during the summer-time directed fishery season that begins August 1;**
2. **Public petition to allow commercial scup pot fishermen to retain up to 100-lbs. of black sea bass per 24-hour day during the summer-time black sea bass fishery open season that begins August 1 (322 CMR 6.28);**
3. **DMF proposal to comply with annual catch targets of the interstate management plan for scup and summer flounder (fluke) by:**
   - **liberalizing the recreational fishing season for scup by opening the fishing season during the month of September at a 25-fish daily possession limit (322 CMR 8.06); and**
   - **increasing the recreational minimum size limit for fluke from 17" to 17 .5" (322 CMR 6.09).**
4. **Public petition to allow commercial fishermen to fish for squid using otter trawls during May 1 through May 15 within 3 miles of shore from Succonesset Pt. in Mashpee to Pt. Gamon in Yarmouth (322 CMR 3.04, 6.22, 6.28, 6.39); and**
5. **DMF proposal to complement the 2,500-lb. federal squid trip limit enacted when 80% of the quarterly Loligo squid quotas have been reached (322 CMR 6.39).**

A public hearing was scheduled for Tuesday, March 28, 2006 (6PM) at the Plymouth Harbor Radisson Hotel (180 Water St., Plymouth)

Contact DMF for regulations and further details or visit our website at www.mass.gov/marinefisheries.

Atlantic States Marine Fisheries Commission (ASMFC) Hearings in Massachusetts

DMF is hosting ASMFC hearings on proposed amendments and addendums to the American Lobster and Summer Flounder (Fluke), Scup, & Black Sea Bass Interstate Fishery Management Plans (FMPs). For further details on draft addenda and amendments and hearing dates in other Atlantic coastal states please visit the ASMFC website: www.asmfc.org.

Draft Addendum VIII to Amendment 3 to the American Lobster FMP: The draft addendum explores establishing new biological reference points based on recommendations from the 2006 stock assessment. It also investigates setting up a much needed consistent coast-wide monitoring and reporting criteria for the lobster fishery. Insufficient data is the primary limitation on the ability to manage the fishery. DMF will host a hearing on Wednesday, April 19th (6PM) at the Holiday Inn in Taunton (55 Ariadne Rd. Dedham, MA 02026).

Public Information Document (PID) for proposed Amendments 14 & 15 to the Summer Flounder, Scup, and Black Sea Bass FMP: The PID is part of the development of two amendments under the ASMFC process: Amendment 14 addresses the development of a rebuilding schedule for scup, while Amendment 15 addresses a broad range of issues concerning summer flounder, scup, and black sea bass fisheries. Following this first round of public scoping meetings and input, development of draft amendments will continue. DMF will host a hearing on Thursday, April 20th (6PM) at the Radisson - Plymouth Harbor (180 Water St., Plymouth, MA 02360).

Regulations Update

During the period April 2005 through April 2006, the following regulatory changes were enacted by DMF after public hearings and Marine Fisheries Advisory Commission (MFAC) approval. Emergency regulations that have subsequently expired or regulations replaced by subsequent filings are not included:

❖ **ANADROMOUS FISHERIES:**

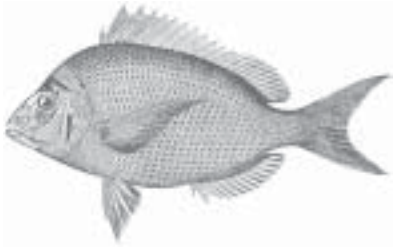
DMF created a permit to authorize activity involving anadromous fishway construction and repair (322 CMR 7.01). The permit enables better coordination and oversight of proposed projects.

DMF enacted a three-year moratorium on the possession, harvest, and sale of river herring to address documented declines of many river herring spawning runs (322 CMR 6.17). This moratorium will remain in place through December 31, 2008.

❖ **BILLFISH:**

DMF repealed state billfish regulations because the fishery takes place in federal waters and is managed adequately under federal regulations. State regulations were out-of-date and redundant (322 CMR 6.11).

❖ **BLACK SEA BASS, SCUP & SUMMER FLOUNDER (FLUKE):**



DMF amended fluke recreational fishing rules in 2005. (322 CMR 6.22, 6.28, & 8.06). Minimum size for fluke was increased from to 17.5" for the 2006 fishery.

DMF eliminated recreational black sea bass closed seasons (formerly Dec. 1 – May 9 & Sept. 8 – 21).

DMF amended recreational scup rules in compliance with the interstate plan (322 CMR 8.06) Scup minimum size increased from 10 to 10.5"in 2005, no changes are proposed for 2006. Scup recreational open fishing season was shortened in 2005 to four months (May - August), but DMF has since re-opened the month of September at a 25-fish possession limit in compliance with the interstate plan. In 2005, scup bag limits were reduced to 25-fish per angler, and 50 per vessel for private vessels with 2 or more anglers aboard. Anglers on for-hire vessels are allowed 60-fish per angler during May and June only; otherwise 25-fish per angler applies.

DMF amended commercial scup rules by increasing possession limits for certain gears during various fishery periods and opening Sundays during the summer directed fishery (322 CMR 6.28). DMF increased commercial scup possession limits from 300 to 400 lbs. for trawlers during the May through October period and from 100 to 200 lbs. for all other gear types during the black sea bass open fishing days from May 1 through July 31. This rule was intended to allow retention of scup by-catch by potters and hook-and-line fishermen while fishing for black sea bass. On days the black sea bass fishery is closed, no directed scup fishing or retention is allowed by fishermen deploying these gears. Massachusetts' commercial scup fishery during May – October is managed through state-by-state quotas allocated by the Atlantic States Marine Fisheries Commission. For 2006, DMF opened Sundays during the directed fishery that begins on August 1 for scup pot and hook-and-line fishermen.

DMF established a declaratory process for adoption of annual Winter I & Winter II period scup regulations in compliance with the interstate plan (322 CMR 6.28). This process allows DMF to implement compliant rules by holding comment periods on ASMFC approved annual specifications and posting notices of final specifications on the DMF website: www.mass.gov/marinefisheries.

DMF sub-divided the fluke winter period quota into two winter periods to better manage the 70/30 summer period/winter period quota split (322 CMR 6.22).

❖ **DEALERS:**

DMF relaxed reporting requirements by allowing dealers who receive fish from commercial fishermen to weigh upon landing or label each container and transport fish to their place of business for weighing (322 CMR 6.20 & 7.07). These actions address limited access to weighing instruments at some unloading sites and public piers.

❖ **LOBSTERS:**

A. Outer Cape Cod LCMA

Lobster minimum size increased on July 1, 2005 to 3 13/32" (322 CMR 6.01) and a two-month (Jan. 15 – March 15) seasonal trap haul-out period (322 CMR 6.02) enacted. Fishermen are required to remove all lobster traps from waters of the Outer Cape LCMA during this closed period. This measure is a part of the effort control plan for the Outer Cape lobster fishery.

B. Area 3 (Offshore) LCMA 3

Four consecutive minimum size increases were adopted (322 CMR 6.01):

1. 3 3/8" until June 30, 2005;
2. 3 13/32" from July 1, 2005 through June 30, 2006;
3. 3 7/16" from July 1, 2006 through June 30, 2007;
4. 3 15/32" from July 1, 2007 through June 30, 2008;
5. 3 1/2" from July 1, 2008 and beyond.

❖ **MULTISPECIES GROUNDFISH:**

DMF, complementing federal regulations, prohibited commercial fishing for groundfish while engaged in for-hire fishing (322 CMR 7.01). This regulation complements similar federal rules. It only applies to the ten multispecies groundfish (e.g. cod, haddock, and flounders) it does not affect for-hire vessels from fishing commercially on other species.

DMF amended recreational winter flounder catch limit and open season regulations and clarified boundaries of the Gulf of Maine Winter Flounder Recreational Stock Area (322 CMR 6.23). The rules for recreational winter flounder fishing in the Gulf of Maine Stock Area (GOM) were relaxed by enacting an eight fish daily possession limit year-round. The Cape Cod Canal is considered part of the Gulf of Maine stock.

The rules are more restrictive in southern New England Stock Area (SNE). The daily possession limit was decreased to four winter flounder per day and only two 30-day periods

are open for recreational fishing: the first begins on the 4th Saturday in April and remains open for 30 consecutive days. The fall open fishing season begins the 4th Saturday in September and will remain open for 30 consecutive days. Please note that the SNE area includes Pleasant Bay and Nauset Harbor, including all connecting embayments. These rules complement those in Rhode Island.

DMF closed to harvest a portion of Massachusetts Bay to protect cod (322 CMR 8.15). This Cod Conservation Zone (CCZ) within state waters of Massachusetts Bay is closed from December 1st to January 15th to all fisheries capable of catching cod and will remain in place a second year through January 15, 2007.

New Groundfish permit created: State Waters Groundfish Endorsement (GE) that authorizes eligible state permit holders to harvest for commercial purposes cod, haddock, Pollock, redfish, white hake, yellowtail flounder, winter flounder, windowpane flounder, American plaice, witch flounder, and monkfish (322 CMR 7.01). Fishermen applying for a GE with a federal multispecies permit are not eligible. Final rules dropped the requirement that the permit holder prove groundfish landings during the period 1992 through 2004. Now, anyone who held a Massachusetts commercial fishing permit, excluding shellfish, seaworms and seasonal lobster, on November 4, 2004 and renewed that permit in 2005 is eligible to obtain the GE; provided that permit holder and/or his vessel does not have a federal multispecies permit. Since the GE will only be issued as an endorsement on a commercial boat or lobster permit, any fisherman who held an individual or rod and reel permit during the eligibility period will be given the option to upgrade to a boat permit in 2006 so that they may obtain the GE. Applications for a GE will only be accepted during the 2006 permit renewal year, thereafter GEs will be subject to renewals only; no new GEs will be issued.

❖ **SEA HERRING:**

DMF adopted area-specific commercial sea herring limits to comply with the interstate plan, and an annual specification process was established to enable adjustment of area-specific fishery limits as established by the Atlantic States Marine Fisheries Commission (322 CMR 9.00). While DMF previously had adopted regulations governing Management Area 1A, other area-specific regulations such as for Management Area 1B had not been adopted. The approved adjustment process will enable DMF to file notices with interested parties when NOAA Fisheries and ASMFC have approved changes to the sea herring fishery.

❖ **SHELLFISH:**

DMF enacted measures necessary for the Director to restrict shellfish harvest and landings in the event of a marine biotoxin outbreak (322 CMR 6.38). The Spring of 2005 saw the largest red tide event ever documented along the coast of the Commonwealth necessitating unprecedented shellfish harvest closures in state and federal waters.

❖ **SPINY DOGFISH & COASTAL SHARKS:**

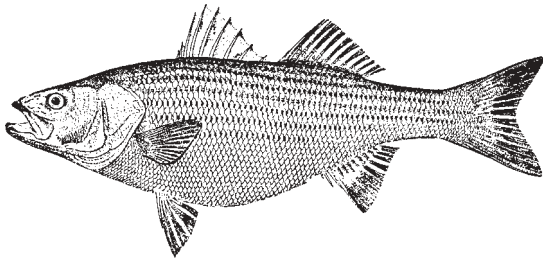
DMF prohibitied spiny dogfish finning , consistent with the interstate plan. Additionally, a **declaratory process was adopted for enacting annual specifications** governing spiny dogfish as approved by the Atlantic States Marine Fisheries Commission (322 CMR 6.35). "Finning" refers to the removal of fins and subsequent discarding of the remainder of the spiny dogfish to the sea. It does not affect normal processing of dogfish.

DMF enacted new prohibitions on the retention of certain coastal shark species (322 CMR 6.37): Basking sharks (*Cetorhinus maximus)*, dusky sharks (*Carcharhinus obscurus)*, sand tiger sharks (*Carcharias taurus)*, and white sharks (*Carcharodon carcharias).* Any of these shark species caught incidental to fisheries directed toward other species must be released to ensure maximum probability of survival. This action was taken to complement similar federal conservation measures.

❖ **SQUID:**

DMF established a 2,500-lb. squid trip limit for moible gear fishermen that is triggered when 80% of a quarterly quota has been reached (322 CMR 6.39). This action complements current federal rules.

❖ **STRIPED BASS:**



DMF amended commercial striped bass fishery rules (322 CMR 6.07) regarding daily catch limits, season start date, and dealer requirements for imported fish for the 2005 commercial fishery. No changes will be enacted for 2006. The commercial fishing week, formerly Sunday through Wednesday), was shifted to Sunday, Tuesday, Wednesday and Thursday. The daily catch limit on Sunday was reduced to five fish but remained at 30 fish during Tuesday through Thursday. Mondays, Fridays, & Saturdays were established as no-fishing days. Dealers allowed to import documented (tagged) non-conforming (legally caught in the state of origin but < 34") whole striped bass prior to the July 12 season opening and again beginning five days after the close of the season. During the commercial season (and five days following the closure) all bass in the possession of dealers must meet the Commonwealth's 34" minimum size. These actions were taken to reduce the rate the overall quota will be consumed and to improve availability of fresh bass for weekend markets, retail outlets (retail dealers, restaurants), and consumers on a year-round basis.

❖ **TAUTOG:**

DMF clarified tautog commercial trip limits apply to a 24-hour day (322 CMR 8.06).

❖ **TRAWLING:**

Trawling rules amended for waters south of Cape Cod (322 CMR 6.22, 8.07, & 8.08). The commercial squid season when small-mesh trawling is allowed, formerly ending on May 31, was extended through June 9th. The summer-time allowance for the use of 4 1/2" mesh during the June through October period in waters south of Cape Cod and the islands was eliminated. For 2006, DMF is proposing to adopt trip limits that complement federal limits. Also a public petition

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DMF NEWS

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MarineFisheries receives state and federal funds to conduct research, management and development of the Commonwealth's marine fishery resources. Information in this publication is available in alternative formats.

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Publication #17020-12-7000-01/2006-$4,200

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