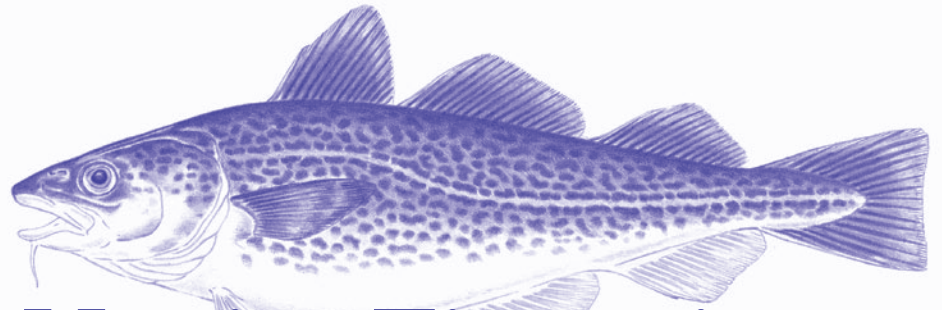


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Marine Fisheries

A Commonwealth of Massachusetts Agency

New Cooling Requirements for Oysters Harvested this Summer from Eastern Cape Cod Bay

In recent years there has been increased attention paid to the risk of gastrointestinal illness caused by the consumption of raw shellfish with elevated levels of the harmful bacterium known as *Vibrio parahaemolyticus* ("Vibrio"). *Vibrio* is naturally occurring and thrives in warm water and air conditions; the higher the temperature, the more rapidly the bacteria multiply, particularly in areas where daytime water temperature exceeds 81°F for prolonged periods. When shellfish with higher levels of *Vibrio* are consumed raw, they pose a risk to human health.

Department of Public Health (DPH) officials and *Marine Fisheries* biologists have been actively monitoring rising coastal water temperatures anticipating the need to require harvester and dealer handling techniques that minimize the growth of *Vibrio* in shellfish. Some other states already have *Vibrio* management plans, and with ongoing ocean warming, Massachusetts eventually needing a plan has been expected.

In 2011, Massachusetts saw its first-ever *Vibrio* related illnesses linked to local seafood, as two cases were traced



DMF Staff Photo

Intertidal culturing of oysters utilizing racks on a licensed shellfish aquaculture site in eastern Cape Cod Bay.

to the consumption of raw oysters commercially harvested in Eastern Cape Cod Bay. While this area does not exceed the 81°F water temperature threshold, the area is problematic during the summer months because tidal flow leaves oyster aquaculture grants and wild oyster harvest areas exposed to sun and air for several hours daily.

Due to these illnesses, mandates of the US Food and Drug Administration (FDA) require the state to implement a Vibrio Control Plan. The Control Plan was developed by *MarineFisheries*, working with DPH, after holding two public meetings in May. It was subsequently submitted to and approved by FDA. The most critical aspects of the plan are the “time-to-temperature” requirements. Oysters must be refrigerated or iced within five hours of harvest and cooled to 50°F within 10 hours of placement into refrigeration or ice.

The 2012 Control Plan applies only to oysters taken from the waters and flats of Eastern Cape Cod Bay within the towns of Barnstable, Yarmouth, Dennis, Brewster, Orleans, Eastham,

Wellfleet, Truro, and Provincetown from June 17 through September 8. Outside of this area and time, it is unlikely that concentrations of *Vibrio* in oysters will reach a level where it will affect human health. For 2012, plan requirements were implemented through conditions to commercial shellfish harvest permits and commercial seafood dealer permits. For 2013 and beyond, *MarineFisheries* will draft formal regulations to manage the risk posed by *Vibrio*, and public hearings will be held during the winter of 2012-2013.

MarineFisheries and DPH staff will be available this summer to provide information and guidance about the Control Plan. We are confident that these controls will be embraced by the industry, and the public will remain safe. If you have any questions, please contact Michael Hickey or Tom Shields by phone (508-990-2860) or email (michael.hickey@state.ma.us, thomas.shields@state.ma.us), or you can view the full Vibrio Control Plan on the DMF web site (www.mass.gov/marinefisheries).



DMF Staff Photo

Left to Right: Capt. Robert Bouley and Kristen Decas, New Bedford Harbor Development Commission, and Tom Beaulieu, Massachusetts Division of Marine Fisheries, on board the new Clean Vessel Act funded pumpout boat at the new Boating Infrastructure Grant funded Coast Guard Park courtesy float in New Bedford Harbor.

BIG and CVA Helping to Improve our Waterways

It may come as a surprise to read that *MarineFisheries* administers two federally funded recreational boating access programs. Although *boating* may not be the first thing that comes to mind when thinking of *MarineFisheries*, fishing and boating go hand-in-hand and together are among this country's most favorite pastimes. For many, these activities are more than recreational pursuits. They are both time-honored traditions we embrace and pass on to our children.

To enjoy boating and fishing opportunities, the most important factor is public access to the water. The two boating programs *MarineFisheries* administers, the Clean Vessel Act

(CVA) Grant Program and the Boating Infrastructure Grant (BIG) Program, help provide essential access with facilities and amenities that cater to boaters and help keep our beloved traditions thriving.

Funding for these programs comes from boaters and anglers. More specifically, the programs are paid for with money from the Sport Fish Restoration and Boating Trust Fund which in turn is funded by excise taxes and import duties on recreational fishing tackle and by a small percentage of the Federal Gasoline Tax—an amount which represents fuel purchased by boaters across the nation. This successful “user-pay, user-benefit” concept is the result of landmark legislation, the Sport Fish Restoration Act, also known as the Dingell-Johnson Act of 1950, and subsequent amendments and reauthorizations. The US Fish and Wildlife Service's Wildlife and Sport Fish Restoration Program (WSFR)

administers these Trust Fund monies and assists states through annual appropriations and competitive grants – like CVA and BIG.

Clean Vessel Act Program

This year the Clean Vessel Act is celebrating its 20th Anniversary. Passed by Congress in 1992 to help reduce pollution from recreational boat sewage discharges, CVA has provided funds to states for construction, replacement, renovation, and maintenance of both public and private facilities, assisting recreational boaters in the proper disposal of on-board septic waste.

The Massachusetts CVA Program, administered by *Marine Fisheries*, is built on two basic principles: make pumpouts both free and convenient. CVA has delivered over \$16 million to the Commonwealth's coastal communities for essential pumpout equipment, services, and maintenance – putting Massachusetts third in the nation, behind California and Florida, for the most award money over this competitive grant program's two decades of history. Massachusetts CVA consists of a network with over 90 operators including towns, private marinas, boat clubs, and NGOs, who maintain 65 program pumpout boats and 67 shore-side pump stations along the Massachusetts coast.

Due to our efforts, the States Organization for Boating Access awarded Massachusetts CVA with the State CVA Excellence Award in 1998. As one of the first states to provide free pumpout facilities for recreational boaters through the Act, we have put more pumpout boats in service than any other state. Last year we exceeded 4 million gallons pumped!

Boating Infrastructure Grant Program

Congress created the BIG Program in 1998 through passage of the Fishing and Boating Safety Act to enhance transient boating and local tourism economies, while meeting specific needs of recreational boaters traveling long distances in large boats. BIG is designed as a two-tiered grant program funded to improve access and amenities specific to boats 26 feet and longer over-nighting for up to 10 days at public and private boating facilities.

The importance of connections between water and land is a cornerstone of BIG. Therefore, access to communities, landmarks, recreational opportunities, and other significant destinations are considered in reviewing potential projects. Improvements may include construction and updating of transient slips, mooring fields, fueling stations, dingy docks, showers, and restrooms. Under Tier I, grants are available up to \$100,000 per year to states. Tier II proposals can be much larger in scope and funding than those in Tier I and are judged in a highly competitive national process.

Since 2001, the Massachusetts BIG Program has granted Tier I awards for 14 projects in 11 different communities totaling \$831,816, with an average award of \$59,415. These projects have successfully improved amenities and access to destinations like Nantucket, Martha's Vineyard, and Boston and have enhanced tourism economies of communities like Provincetown, Chatham, Scituate, and Beverly.

Both CVA and BIG are reimbursement grants with matching components: states or the sub-grantees must match grants with a minimum 25 percent funding, and grant payments are made upon submission of invoices for work accomplished. For more information on the CVA and BIG programs, visit our website at: <http://www.mass.gov/marinefisheries> and WSFR at: <http://wsfrprograms.fws.gov>.

Happy Boating!

By Stephanie Cunningham, Federal Aid Coordinator



Photo courtesy of Western Venture crew

Marine Fisheries biologist sorting a subsample of Atlantic herring landed from Georges Bank by the fishing vessel Western Venture in Gloucester, MA.

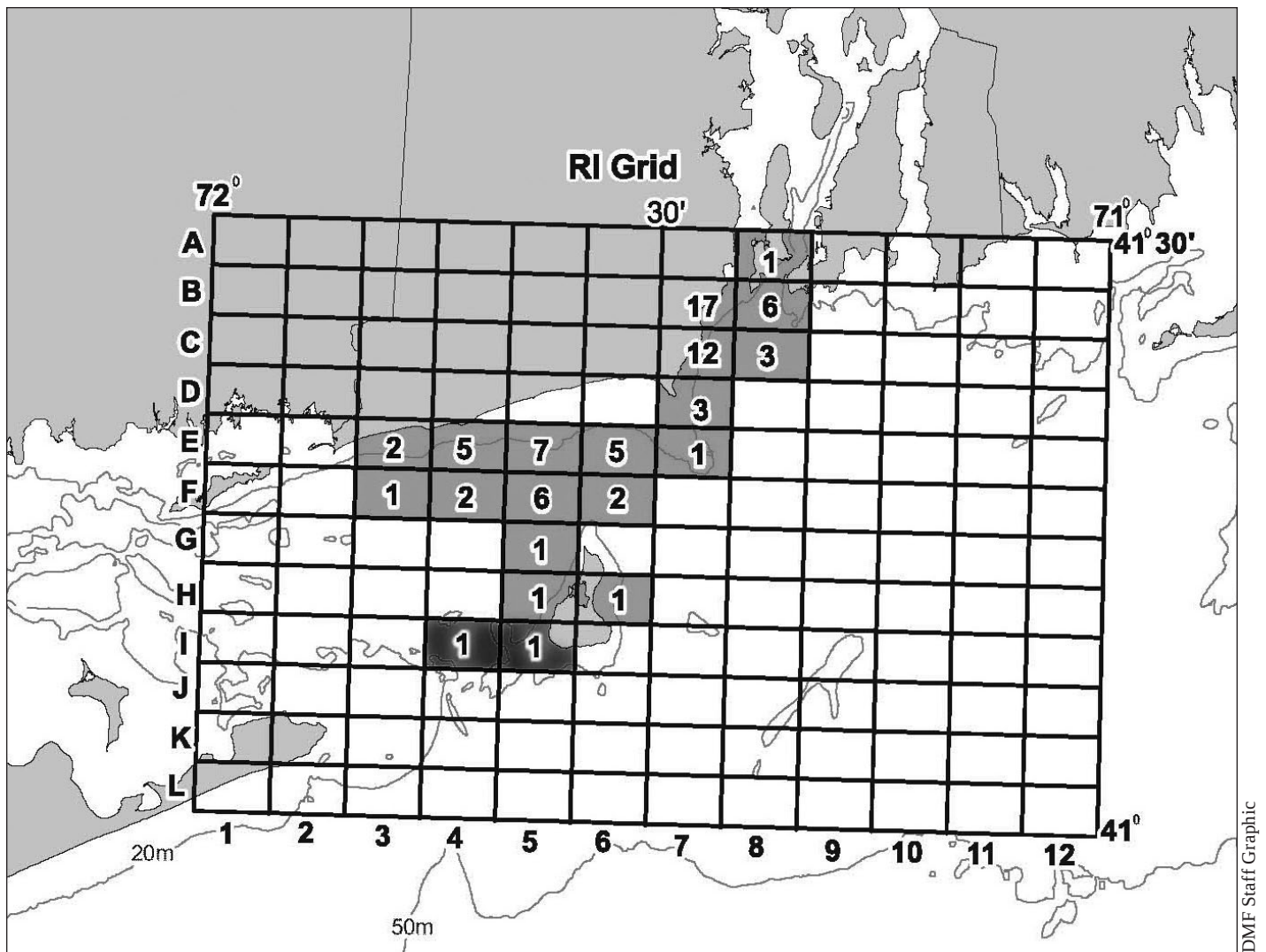
Avoiding River Herring Bycatch in Atlantic Herring Mid-water Trawls

In the summer of 2010 an idea was conceived that, if successful, would give alewife and blueback herring, collectively termed “river herring,” a better chance to return to their natal rivers to spawn. *Marine Fisheries*' small-pelagics portside sampling program (see Q3/4 2008 *Marine Fisheries* Newsletter) teamed up with the University of Massachusetts-Dartmouth's School for Marine Science and Technology (SMAST) to design a study to assist the Atlantic herring and mackerel mid-water trawl fleet avoid unwanted bycatch of river herring. Funding for this study was received from the National Fish and Wildlife Foundation and began in October 2010.

Early in the study, analysis of observer data revealed that although river herring were infrequent in mid-water trawl tows, 80% of the overall observed river herring bycatch was caught in the 10% of tows with the highest amounts of river herring. Reducing the frequency of these events would lead to a reduction in unwanted and untargeted catch of river herring.

To reduce river herring bycatch in the Atlantic herring and mackerel mid-water trawl fisheries, the fleets involved need to know when and where these sporadic high bycatch events happen. In response, *Marine Fisheries* increased its portside sampling to cover 50% of all mid-water trawl trips landed in Massachusetts ports. The National Marine Fisheries Service's Northeast Fisheries Observer Program also contributed data when possible to reduce the spatial scale and to pinpoint the source of detected bycatch events. Additionally, *Marine Fisheries* created a communication system that allows the industry to alert *Marine Fisheries* and SMAST of landing events and provide catch information such as tow times/locations and catch comments. Lastly, SMAST Ph.D. candidate Dave Bethoney, *Marine Fisheries*, and SMAST created a series of coded chart grids used for reporting catch results.

Starting with the winter 2011 Southern New England fishery, SMAST began broadcasting information back to the boats by advising them of river herring interactions among the fleet. The



DMF Staff Graphic

Density of river herring bycatch by location for Rhode Island waters based on grid design by Dave Bethoney, and SMAST and MarineFisheries scientists (light gray= low, less than 1.5% river herring and shad bycatch; gray = moderate, 1.5-5% bycatch [none shown]; dark gray = high (above 5% bycatch).

abundance of river herring, rate of landings, and remaining quota all determined how frequently advisories were made. Notification emails to the industry summarized recently sampled landings and identified grid cells with high, moderate, and low river herring bycatch. Advisories informed the vessels where high river herring bycatch was occurring and offered biologically-based information such as: “high river herring catch unlikely at tow depths >40fm”, providing captains with more options when deciding where to look for their target species.

After the second season of sampling and advisories in the fall 2011 Inshore Gulf of Maine fishery, *MarineFisheries* and SMAST were approached by a group of small-mesh bottom trawl herring fishermen from Rhode Island seeking inclusion in the program. The Nature Conservancy promptly provided funding and within a month, samplers awaited the first Massachusetts and Rhode Island herring landings of winter. The sampling and avoidance system used was modeled after that of the mid-water trawl fishery, but reduced in spatial scale, increased in frequency of notifications, and adjusted for river herring thresholds.

The winter 2012 Southern New England fishery was eventful due to unprecedented landing rates and great abundance of target species close to shore. In all, *MarineFisheries* sampled

113 of roughly 225 mid-water and small-mesh bottom trawl trips landed. Sixteen bycatch advisories were sent to the fleets and feedback from the captains of these vessels was encouraging.

As this study approaches its final six months, the degree to which river herring bycatch has been reduced is still to be determined, as is the overall effect of river herring bycatch on locally depressed river herring stocks. However, the New England Fisheries Management Council has seen enough potential in the program to choose it as its primary bycatch avoidance and reduction measure subject to continued review and scrutiny for the sea herring fishery. Whatever the outcome, there is a benefit to having a well designed and timely information system both for the fishermen and the fish they seek to avoid.

For more information about the small-pelagic portside sampling program or river herring bycatch avoidance study, please contact Bill Hoffman (project leader) at bill.hoffman@state.ma.us or (978) 282-0308 x106 or Brad Schondelmeier (study field coordinator) at brad.schondelmeier@state.ma.us or (978) 282-0308 x123.

By Brad Schondelmeier, Fisheries Biologist

White Shark Research Continues

Despite its well-established presence in the North Atlantic, the white shark is not considered an abundant species. Efforts to study its life history and ecology have been hampered by the inability of researchers to predictably encounter these sharks. Much of what is known of this species in the North Atlantic comes from the analysis of distribution records, rare behavioral observations, and opportunistic examination of dead specimens.

In the Pacific and Indian Oceans, the white shark is known to feed on seals and sea lions and its biology, as it relates to these animals, is well studied. The high seasonal abundance of white sharks near seal and sea lion colonies has also allowed researchers in these regions to study white shark movements over broad spatial and temporal scales. The only behavioral observations of white sharks in the North Atlantic come from a single acoustic tracking study published in 1982.

It can be argued that the elusive nature of the white shark in the North Atlantic may have been due to the lack of large seal colonies. However, with the protection of marine mammals over the last 40 years, the western North Atlantic gray seal population has rebounded. Concurrently, there is strong evidence that white sharks are expanding their foraging strategies to include active predation on these seals.

Over the last three years (2009-2011), *Marine Fisheries* has observed and tagged several white sharks in close proximity to gray seals colonies off Cape Cod, MA (see http://www.mass.gov/dfwele/dmf/spotlight/white_shark_2009.htm). For the first time, we have predictable access to white sharks in the North Atlantic.

Building upon our satellite tagging in 2009 and 2010, we expanded our efforts in 2011 to investigate the nearshore behavior of white sharks off Cape Cod using acoustic telemetry. Last summer, seven white sharks, ranging from 8-16 feet in length, were tagged off the coast of Monomoy with coded acoustic

transmitters. The sharks were tagged while free-swimming using a modified harpoon technique on board the F/V Ezydazit. Each transmitter emits an acoustic ping that is detected by receivers, which log the date and time of the detection; data are then periodically retrieved from the receivers. *Marine Fisheries* has been using this technology to track the fine-scale movements of striped bass, codfish, sand tiger sharks, and horseshoe crabs for several years. As such, there are several acoustic receiver arrays throughout state waters. For this study, ten additional receivers were placed from the southern tip of Monomoy to Nauset Beach.

In November 2011, we pulled the receivers and downloaded the data. With these data, we are now able to examine the fine-scale movements of white sharks as they relate to seal colonies, habitat use, site fidelity, residency, feeding behavior, and human activities such as swimming and fishing. Data analysis is ongoing, but preliminary findings indicate that the tagged white sharks remained in the Cape Cod area for 1-93 days. The receivers logged a total of 974 detections from the seven sharks during the period July 23 - October 25, 2011. By far, the bulk of the detections (88%) were in an area referred to as "Shark Cove", which is a relatively shallow area adjacent to a stretch of beach where gray seal colonies are on Monomoy.

This acoustic technology also allows us to examine large-scale movements because it is commonly used along the entire eastern seaboard of the United States. Two of the white sharks tagged off Chatham in 2011 were also detected off the coasts of Delaware and North Carolina during their southward and northward migrations, respectively.

The white sharks have already returned in early June this summer. Since the tags will ping for several years to come, we will be able to determine when these tagged sharks return each year.

By Dr. Gregory Skomal, Senior Biologist and Manager of the Recreational and Diadromous Fisheries Program



Photo by John Chisholm

A 12-foot white shark with an acoustic tag applied close to the dorsal fin.



DMF Staff Image

An assortment of lead weights and hardware found in the stomach of a large striped bass, resulting from the use of yo-yo rigs with unattached tackle.

Encouraging Responsible Angler Practices

Every year recreational anglers catch and release millions of fish off the Massachusetts coast. Some fish are released for regulatory reasons (e.g., too small, over the bag limit) or because they are not the intended target. Other fish are released because the angler has enough for consumption or is fishing for sport, practicing catch and release. Regardless of the reason for release, a portion of these fish will die as a result of the experience. It behooves all anglers to employ fishing techniques that improve survival of released fish, and doing so will help sustain healthy fish populations and provide for anglers' enjoyment in the future.

These Responsible Angler Practices range from habitat protection and proper trash disposal to limiting fight time, proper handling of released fish, and use of tackle that minimizes unintended harm to fish. To help reduce the use of harmful tackle, *MarineFishes* recently implemented a regulation on the use of so called "yo-yo" rigs.

Yo-yo fishing is a practice used to target predatory fish in which natural bait (often menhaden) is weighted and stiffened with artificial materials, dropped to the bottom, and jigged up and down ("yo-yo"-ed) to imitate live bait. The problem with some forms of yo-yo rigs is that the artificial materials, often lead or other metals, embedded into the natural bait are not themselves attached directly to the line. When such bait rigs are lost, they inevitably are consumed by fish, birds, or marine mammals, causing harm and even death.

MarineFishes became aware of the practice in late 2007, when numerous letters were received expressing concern about effects of the yo-yo rig on natural resources. This concern was triggered by substantial media coverage of a fishing derby in which a large striped bass was entered with nearly two pounds of metal, including lead weights and wire, in its belly. Evidence suggested that the metal in the stomach was not inserted by an unscrupulous contestant, but rather through repeated ingestion of metal-laden natural bait. At the time, yo-yo fishing appeared to be limited to areas of the south coast and islands, but enforcement officers subsequently reported observations

of its spread north to the Boston harbor area, indicating its growing popularity.

Based on this information, *MarineFishes* and its citizen advisory Board, the Marine Fisheries Advisory Commission, solicited public comment and held two hearings in October and November 2011 on a proposal for a regulation prohibiting use of natural bait embedded with materials that are not attached to the terminal tackle. With the majority of comment supporting the proposed prohibition, *MarineFishes* implemented the regulation to end this unnecessary and wasteful practice before it became more prevalent and the negative impacts to fish and other wildlife increased.

MarineFishes encourages all anglers to visit www.mass.gov/marinefisheries and check out our online publication on Responsible Angler Practices. Do your part to help sustain our fishery resources!

By Nichola Meserve, Policy Analyst

Dogfish Quota Increased

At its spring meeting, the Atlantic States Marine Fisheries Commission (ASMFC) re-evaluated the decision it made in November 2011 to adopt a spiny dogfish quota of 30 million pounds for the May 1, 2012 through April 30, 2013 fishing year, and voted to increase it to 35,694,000 pounds. The decision to reconsider was based on both the New England and Mid-Atlantic Fisheries Management Councils adoption of the larger quota and the National Marine Fisheries Service (NMFS) proposal to implement that joint-Council decision as the commercial quota. On May 22, NMFS implemented the 35.694 million-pound quota, stating that there was no compelling biological or legal justification to reject the commercial quota recommendation of both councils.

For many years, *MarineFishes* has fought to increase the spiny dogfish quota. When the spiny dogfish management plan was first proposed in the late 1990s, ending the commercial fishery was the preferred strategy — one *MarineFishes* thought to be misguided. Now, the quota has reached a level that is workable for commercial dogfish fishermen, many of whom struggle to deal with relatively low quotas for numerous groundfish stocks (including Gulf of Maine cod).

Whether the quota can be increased to higher levels in the future is still questionable. Projections suggest spawning stock biomass will dip somewhat between 2014 and 2020 due to past assumed low recruitment (pup production), causing some to take the precautionary stance in favor of maintaining the 30-million



DMF Staff Image

pound quota. *Marine Fisheries* finds this to be an unnecessarily risk-adverse approach because the projections do not indicate that spiny dogfish will approach an overfished condition as pup production has since improved and the biomass dip will only be temporary.

Thanks to a successful rebuilding program, spiny dogfish can once again be targeted by commercial fishermen in large amounts (3,000-pound trip limit), but — consistent with a strong conservation ethic — in sustainable amounts, benefiting many Massachusetts fishermen.

By Dr. David Pierce, Deputy Director

Channeled Whelk fishery: Life history studies and fishery trends show need for conservation

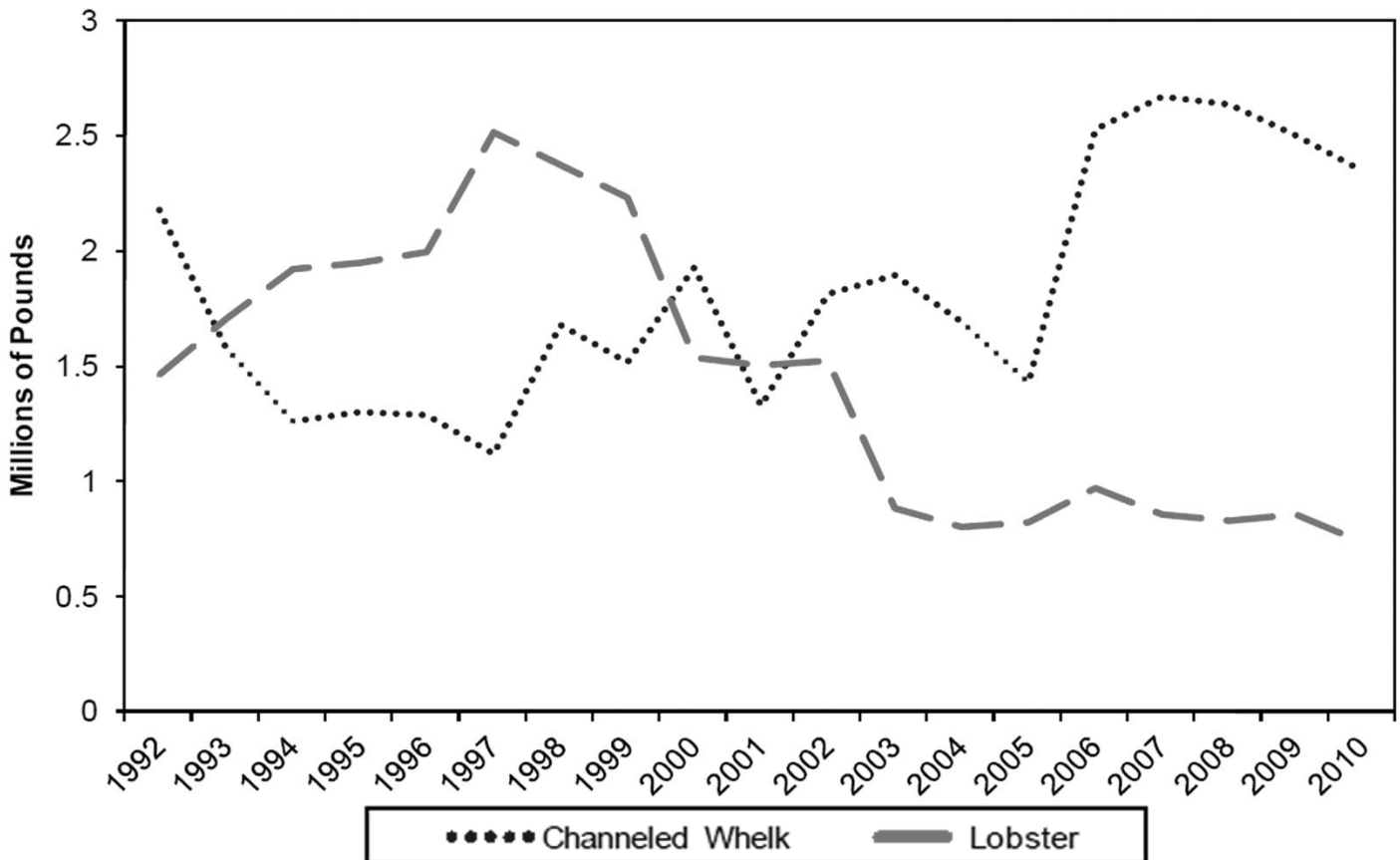
Common along the bottom of Mid-Atlantic and shallow southern New England waters, channeled whelk has become a valuable species for the inshore commercial fishery. This large snail can weigh up to 2 pounds and has filled a market niche caused by population declines of other conch species around the world, including the Caribbean Queen Conch. In addition, as lobster stocks and catch quotas on black sea bass and scup have declined, commercial lobstermen and other trap fishermen in southern Massachusetts have increasingly turned to whelk as a staple of their annual income.

However, landings have increased dramatically over the last six years, causing many in the industry to fear the harvest is unsustainable based on signs of local depletion. *Marine Fisheries* will be considering conservation measures beginning next year. Increases in minimum size to enhance spawning, eliminating tolerance of undersized whelk possession, and restrictions on

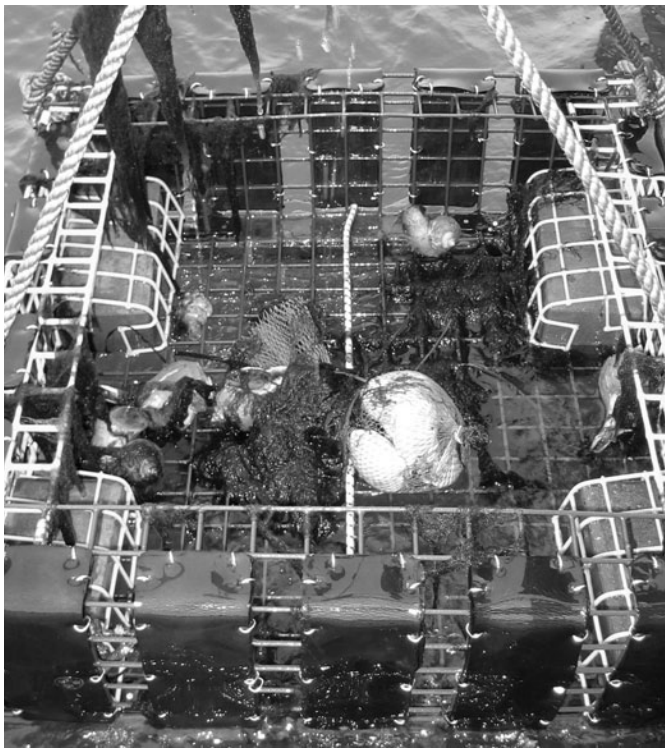


DMF Staff Photo

Lobster and channeled whelk (above) harvests are inversely related (below): when lobster harvest is high, channeled whelk harvest is low, and vice versa.



DMF Staff Graphic



DMF Staff Photo

A whelk trap hauled in to collect samples for maturity studies. The cage is made of vinyl coated mesh and contains a bait bag in the center.

preventing un-fished permits from entering the fishery will all be considered.

For many decades, the channeled whelk fishery has been on a small scale; a small number of full-time fishermen and a moderate number of part-time fishermen harvesting seasonally in boats ranging from 25 to 40 feet. The majority of channeled whelks are harvested through directed effort with conch pots and a small portion harvested as bycatch from draggers and clam dredgers operating in Nantucket Sound. From 1950 to the late 1970s, whelk (channeled and knobbed) landings in Massachusetts were less than 250,000 pounds annually. In the 1980s, whelk landings increased substantially, exceeding one million pounds, presumably from an increase in market demand.

Channeled whelk landings varied annually between roughly one and a half million to two million pounds from the 1990s through the early 2000s. Many lobstermen fished for channeled whelk seasonally to supplement their income. When lobster abundance and landings were high, there was a drop in channeled whelk landings. Conversely, when lobster abundance and landings declined, channeled whelk landings and effort increased. This is especially apparent after 2002 when lobster population in Southern New England began to collapse.

More recently (2006-2010), channeled whelk landings elevated to roughly two and a half million pounds and have recently spiked to over three million pounds. This increase appears to be fueled by increased pot fishing by existing participants. *Marine Fisheries* statistics show no noticeable increase in number of participants, but a significant increase - about 75% - in fishing effort (trap-hauls). There are approximately 90 active pot fishermen in the fishery and roughly 60 permits are unused each year. A moratorium on issuance of new permits has been in effect since 1989. The Division placed a moratorium on permit transfers in 2010 when the demand for horseshoe crab (the favored trap bait) appeared to be placing new pressure on the horseshoe crab fishery.

Life history study begun by *Marine Fisheries*

Scientific studies by the Division and others suggest the existing minimum size is too small if the permit transfer moratorium is intended to be the primary conservation tool. The results show female channeled whelk mature at nine years but the minimum size allows harvest as young as age six. At the current minimum size of 2.75 inches shell width, none of the females in Massachusetts waters are sexually mature. And with fishing intensity increasing, we fear there will be inadequate survival of whelk to reach spawning age. An increase to 3.5 inches is proposed - either in a single step or phased in over a span of a few years.

Local population vulnerable to local depletion

Female channeled whelks deposit their offspring in an egg case string, a familiar finding to beach combers. When ready, miniscule snails emerge from the egg case and crawl along the ocean floor. There is no drifting larval stage, therefore no method of dispersing these young snails to a wider area and into depleted zones. The life history characteristics of channeled whelk, specifically slow maturation, slow growth rate, and lack of a dispersal mode for larvae make them especially prone to depletion. This type of life history strategy is common in many marine snails, and the pattern of fishery booms followed by stock depletion has been seen globally among fisheries for whelk and conch. There is no evidence to suggest that the fate of channeled whelk in Massachusetts will be any different if the high harvest rates of sexually immature whelk continue.

By Dan McKiernan, Deputy Director

Recreational Permit Fees Fund New Pier on Bass River, Yarmouth

Regular readers of this newsletter will know that the state law creating the Massachusetts Recreational Saltwater Fishing Permit also requires that all collected permit fees be used to improve recreational saltwater fishing in the Commonwealth. Money from the sale of recreational permits is placed in a new dedicated fund, with at least one-third going to infrastructure projects for better access to coastal fishing, and the remainder going to science and conservation programs supporting the enhancement of our recreational fishery. The amount from the fund to be spent each year is determined by the Massachusetts legislature.

As we approach the end of the fiscal year, signs of last year's (FY2012) spending are becoming visible, the most noticeable being the development of a new fishing pier in Yarmouth on the Bass River. Close to \$170,000 of the nearly \$500,000 allocated from the Fund for FY2012 is supporting construction of this handicap-accessible pier. The Commonwealth's Office of Fishing and Boating Access is also making major improvements to parking and boat launching at the site, including paving the access road and parking areas, upgrading storm water drainage, and installing a concrete boat ramp with boarding floats, bringing the project's total cost to \$577,000. Construction was completed at the end of July. A dedication event is expected for later this summer; the pier will be open in advance of the event.

Other FY2012 funding from this "user-pays, user-benefits" program began supporting improvements to the Division's information and education arm, diadromous fish monitoring and restoration activities, and public access improvement efforts. We hope that the state's thousands of anglers are also benefiting



The new Bass River fishing pier and boat launch ramp in Yarmouth. Funded by recreational permit fees, the fishing pier is handicap-accessible and open to the general public.

from the Fund money that allowed the Division to add additional permitting staff and self-serve kiosks and implement online permit purchases. About one-third of the money appropriated for FY12 has gone unused due to logistical constraints, but will be returned to the Fund for spending in future years.

Each of these Recreational Fund-supported projects was initiated with the support of the Marine Recreational Fisheries Development Panel, a five-member citizen board with specific knowledge of the Commonwealth's recreational fishery. The state saltwater permit law also established this Panel. The Division is required to seek the Panel's input on its annual proposed spending plan. The Panel was also integral in developing and implementing the permit requirement, and continues to advise the Division on other permit issues, such as increasing compliance and selecting the state's free (i.e., no permit required) fishing days. (In case you missed this year's free fishing days,

they are currently the first Saturday and Sunday of June, so mark your calendars for next season!)

The Panel held a meeting in June to review the Division's proposed spending plan for the FY2013 Fund appropriation. Although the FY2013 budget had yet to be finalized, the Division used the Senate and House budgets to plan for this coming fiscal year; these suggested that the Division would have somewhere between \$750,000 and \$800,000 to allot for improvements in the Commonwealth's recreational fishery, with at least \$250,000 needing to be spent on public access infrastructure project(s). The Panel supported the Division's proposal to build a new fishing pier in Oak Bluffs, Martha's Vineyard; however, the total cost of the project necessitates securing additional funding. DMF News will continue to update its readers on the recreational fishing improvements supported by permit sales.

By Nichola Meserve, Policy Analyst



Seagrass restoration and monitoring in Salem Sound

April 17 marked the *MarineFisheries* seagrass team's first day in the field for the 2012 season. We didn't know what we would find at the eelgrass plots we planted last year – did the newly transplanted shoots survive the winter? If so, how many? Diving into the cold water of Salem Sound, we were pleased to find eelgrass growing and expanding at most sites.

MarineFisheries is in the second year of a restoration project funded to mitigate the impacts of the Algonquin Gas Transmission, LLC., Hubline Pipeline Project (Hubline) on eelgrass. Eelgrass is a sub-tidal flowering plant that forms meadows along bays, coasts, and estuaries. These meadows provide habitat for fish and invertebrates, buffer the shoreline from erosion, and filter the water column.

The Hubline project involved the installation of a 30-inch diameter liquefied natural gas (LNG) pipe in 2003, impacting approximately 1.8 acres of eelgrass in Salem Sound. Woodbury Point in Beverly, was the focus of restoration in 2011, in addition to several smaller test-plot sites in Boston Outer Harbor and in Salem Sound. This year, our focus shifts to additional sites along the coastlines of Beverly and Salem, including sites at Fort Pickering, Juniper Cove, and Middle Ground.

Woodbury Point

In the spring of 2011 the *MarineFisheries* seagrass team planted a half-acre site in Beverly at the Hubline. The plots were planted using the horizontal rhizome method; anchoring two plant shoots together into the sediment using a bamboo staple.

The planted plots showed new growth and expansion by mid-August. However, Hurricane Irene hit Beverly on August 28, depositing large waves of sand across the plot. Storm damage like this is one of the many challenges of eelgrass restoration. Transplanted shoots are more vulnerable than plants naturally established within a meadow. For this reason, proper site selection and timing of transplantation is critical.

As we checked our sites from last year, we noticed that overall, the eelgrass is doing well in the shallow portions of the site. We estimate that one-eighth of an acre has rebounded with evidence of new shoot growth, despite last year's hurricane damage.



Volunteers working together with *MarineFisheries* biologists to prepare eelgrass shoots for transplanting at Fort Pickering, Winter Island in Salem.



Newly planted plot of eelgrass, *Zostera marina*, using the burlap disk method.

Test-plots

In addition to the large area planted at Woodbury Point, we also planted six smaller 3m x 3m test-plots during the summer of 2011. Three sites were planted in both Salem Sound (Ft. Pickering, Middle Ground, and Juniper Cove) and outer Boston Harbor (Long Island East, Peddocks Island East, and Lovells Island). Fort Pickering was also used to compare planting success between shallow and deep water plots, using two different planting methods at each plot.

The horizontal rhizome method, developed at the University of New Hampshire, has been widely used in New England eelgrass restoration projects for two decades. The burlap disk method, developed recently by Cornell Cooperative Extension researchers, involves weaving eelgrass plants into circular cuts of burlap which are then planted by divers. These burlap disks retain the roots and rhizomes in the sediment, allowing the roots to anchor before the disk biodegrades. Use of the burlap disk method requires shore-side participation and is a great opportunity to involve volunteers.

Early spring monitoring indicated that both methods have been successful at the Fort Pickering site. However, the shallow plots have outperformed the deep plots, and the burlap disk method has so far surpassed the horizontal rhizome method at both the shallow and deep plots (35% higher density at the shallow plot and 15% higher density at the deep plot).

So far this spring, we have hosted two volunteer field days at Fort Pickering and Lynch Park, having successfully planted a quarter acre in each location. Volunteers represented Salem Sound Coastwatch and New England Aquarium Live Blue Initiative. With the help of these shore side volunteers, we expect to complete planting approximately one acre of eelgrass in Salem Sound this summer at the successful test plot sites and at the Woodbury Point impact site.

Long-term SeagrassNet Monitoring Station

In addition to restoration, *MarineFisheries* is in our fifth year of monitoring a long-term seagrass monitoring station off of West Beach in Beverly. We monitor the location four times a year to establish baseline conditions and to quickly detect changes that may occur here, one of Massachusetts' largest eelgrass beds.

By Tay Evans, Aquatic Biologist

Young scientists in training

On June 7 and 8 *Marine Fisheries* partnered with the National Oceanic and Atmospheric Administration (NOAA) Fisheries Northeast Regional Office to present and assist in the Rockport Middle School 8th grade lab practical in Rockport's Millbrook Meadow Park, Mill Pond Park, and King's Beach. Encompassing the required Massachusetts Curriculum Standards in physical, life, and earth sciences for middle schools, students worked together to understand the importance of watersheds to various species, particularly the American eel.

During the two-day program, students literally got their feet wet as they interacted with scientists to gather data on water quality, climate, and invasive species. Not afraid to jump right in, some students ventured into the water for samples and to take measurements, while others hunted for eels, as well as crabs, seaweed, and plankton.



Students pulling seine nets to collect species samples.

As the 8th grade students learned the practicality of the sciences they have been exposed to throughout middle school, they also documented the appearance of the Millbrook watershed through photography and descriptive notes. Understanding how science and history come together prove useful as the students, along with the scientists, traced the path of American eels upstream.

Why pay particular attention to the American eel?

As an anadromous species, American eels lay eggs which hatch in the Sargasso Sea (some 2,000 miles away in the middle of the Atlantic Ocean). The new hatchlings then migrate to shore where they travel up rivers and streams. Heading further inland, these fish find large bodies of freshwater to live out their adult lives — up to 40 years! When ready, the eels will travel back downstream to the Sargasso Sea where they will spawn a new generation — in millions of eggs per eel — and then perish.

The eel is an important link in food web dynamics. However, populations are dwindling in Massachusetts due to habitat destruction and poaching of juveniles. The more we learn about the American eel, the better equipped we will be to improve conservation measures for the species.

As the program continues in future years, the descriptions will continue to be compiled to create a record of the physical changes in the area. This event has occurred for four years now and will continue for many to come.

*By Elaine Brewer,
Information and Education Coordinator*



Left to right: Melissa Campbell, Devon Winkler, and Jeanne Shaw talking about the local marine environment with a group from Girls Inc.

Promoting women in science

Despite warnings of thunderstorms, youth from Girls Incorporated (Girls Inc.) of Lynn ventured to Red Rock Park for their annual Science Scavenger Hunt during Families by the Seaside on June 8. Along with New England Aquarium, Northeastern University, and other local groups, *Marine Fisheries* was present to teach the young girls about their local marine environment and more so, to inspire them to become the next generation of leading women in the sciences.

Girls Inc. is a national non-profit organization dedicated to inspiring girls to be active members in society. Since its founding in 1864, the organization's focus has included helping girls find part time jobs, providing a safe place to go after school, and training in household management. More recently, Girls Inc. has ventured to encouraging young girls to be future leaders, empowering them to work hard in school, stay off the streets, and strive to accomplish their goals.

*By Elaine Brewer,
Information and Education Coordinator*



Learning about the anatomy of a northern sea star.

Accolades



DMF Staff Photo

John Hughes (far left) displays the sign for the newly named research facility with members of his family.

On March 23, the Massachusetts Marine Fisheries Advisory Commission bestowed former *MarineFisheries* biologist and lobster hatchery manager, **John T. Hughes**, with the Dr. David L. Belding Award for his work in marine resource conservation. *MarineFisheries* and Department of Fish and Game officials also surprised Hughes, as he celebrated his 90th birthday surrounded by friends and family, by renaming and dedicating the former state lobster hatchery, where he worked for 36 years, in his honor.

A Martha's Vineyard native, John Hughes began his career with *MarineFisheries* in 1948. He was assigned to work with lobsters at a state lobster hatchery which was planned for construction in Oak Bluffs in 1949. By 1951, the hatchery became operational with Hughes as its first manager.

John began lobster rearing experiments, gradually improving on techniques previously tried by others, and he studied the life cycle of this species. His annual production and release of lobster larvae along with associated life history studies contributed greatly to the knowledge of this species. Research specimens generated by this facility were sought after by the scientific community, and the facility served as a base for many visiting researchers. John became an advocate for lobster resource conservation and a source of knowledge and advice for those interested in developing lobster-rearing operations for research or commercial production. He retired from the Division in 1984.

The hatchery — now known as the John T. Hughes Hatchery and Research Facility — has recently been reprogrammed to support shellfish rearing activities rather than lobster propagation, as originally designed, due to warming waters in the facility's Lagoon Pond. Through this initiative, *MarineFisheries* has invested in new infrastructure and other building updates to support the Martha's Vineyard Shellfish Group's aquaculture activities, specifically the growing of seed shellfish for transplant to flats around Martha's Vineyard. *MarineFisheries* will consider using the facility to propagate other species through additional partnerships in the future.

Dr. Greg Skomal, *MarineFisheries* Senior Biologist and Recreational and Diadromous Fisheries Program manager, was recognized by the New England Outdoor Writers Association in March. For his contributions to our understanding of sharks, particularly white sharks, Greg was presented with the Yerka Sportsman of the Year Award, named after fishing lure designer Joe Yerka, at the Association's 70th Annual Meeting. The Association recognized Greg's research efforts, in particular the tagging of white sharks off the coast of Cape Cod.



Photo by Mary Julius (NEOWA)

NEOWA board members Captain Bill Brown and Ellie Horwitz recognize Greg Skomal (center) for his efforts in shark conservation research.

Comings and Goings



Ben Gahagan joined the *MarineFisheries* staff in Gloucester as an Aquatic Biologist for Diadromous Fish Biology and Management. His work focuses on monitoring and restoring diadromous fish runs in the greater Boston and North Shore areas. Ben has a BA in history from Kenyon College and an MSc in natural resources management (fisheries) from the University of Connecticut. He has experience with diadromous fish as a seasonal biologist for the Connecticut Department of Environmental Protection. He was also a research assistant at the University of Maryland Chesapeake Biological Laboratory.



Mike Bednarski is also a new Aquatic Biologist for Diadromous Fish Biology and Management. Based in New Bedford, he is assessing and implementing fish passage in river systems of the South Shore. Through the development and application of novel population assessment techniques, Mike will also assist in the development of management plans for future sustainable harvesting of river herring. Mike has a BS in environmental and forest biology from the State University of New York College of Environmental Science and Forestry and a PhD in fisheries science from the University of Georgia. He has several years of experience in statistical analysis and ecological modeling of fish populations.



Based out of the Gloucester office, **Elaine Brewer** is the first Information and Education Coordinator for the Division. Her role is to increase the visibility of *Marine Fisheries* to the general public through online media, visual displays, and outreach events. Elaine earned her BA in biology from Boston University and her MSc in marine biology from Nova Southeastern University Oceanographic Center. Some of her past experiences include work as an aquarist, IT specialist, artist, and hiking guide. She brings with her a background in public outreach and marine education which she developed while with Mystic Aquarium and the International Game Fish Association. Elaine is excited to bring the science of the Division to recreational anglers and the general public.



Ross Kessler filled the Division's newly created position for a Public Access Coordinator. Based in the New Bedford office, he has previously worked with the Division as a contractor on the Coastal Lobster Project and an Aquatic Biologist with both the Hubline Eelgrass Project and Shellfish Sanitation and Management Program. Ross has a BA in English literature from the University of Montana and a BS in marine biology from University of Massachusetts Dartmouth. Ross also has experience as a shore fishing guide in Nantucket and has designed, created, and sold fly lures. As Public Access Coordinator, one of Ross' goals is to help make it possible for a larger portion of the next generation to grow up fishing from public access points. He is ready to listen to the voice of the anglers and help protect what they cherish: their access to the water.

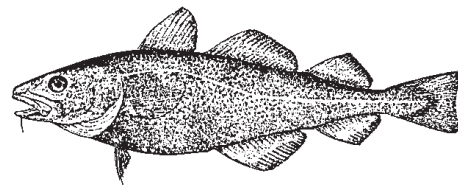


After over six years of being the Dive Safety Officer/Biologist for *Marine Fisheries*, **Holly Martel Bourbon** has decided to part with the Division. She came to *Marine Fisheries* from the New England Aquarium where she worked for over 20 years as their first Dive Safety Officer, managing numerous exhibit collections, including the Giant Ocean Tank, and was one of the aquarium's shark spokespersons. At *Marine Fisheries*, Holly oversaw all SCUBA operations, and under her oversight, the Division's scientific diving capabilities grew substantially. Holly will begin a new career as the Curator of Fishes and Dive Safety Officer for the National Aquarium in Baltimore. **We wish her Good Luck — she will be missed!**

Recent Publications

Micah Dean, William Hoffman and Mike Armstrong recently published a paper in *North American Journal of Fisheries Management* on spawning Atlantic cod. The purpose of the study was to identify any behavioral changes in spawning cod in areas of suddenly increased fishing pressure (i.e. opening of a previously-closed area to fishing). The group tagged 10 Atlantic cod with acoustic tags and tracked them during the weeks before the opening until two weeks after the opening. The findings showed that the fish that fled the area did not return, indicating that concentrated fishing pressure in spawning areas may affect the reproductive ability of Atlantic cod.

Read the full article at: <http://www.mass.gov/dfwele/dmf/publications/technical.htm#n>. The citation for the article is: Dean, M.J., W.S. Hoffman, and M.P. Armstrong. 2012. Disruption of an Atlantic cod spawning aggregation resulting from the opening of a directed gill-net fishery. *North American Journal of Fisheries Management* 32: 124-134.



Also recently published in *Fisheries Research* was a paper by David Chosid, Michael Pol, and Mark Szymanski and fishing industry partners Frank and Andrew Mirarchi, on excluding spiny dogfish bycatch in trawls directed on silver hake. The purpose of the study was to develop and test trawl excluder grates to reduce spiny dogfish bycatch. Underwater video footage and acoustic sensors were used to determine that spiny dogfish catch numbers were greatly reduced for each grate design, increasing the catch quality of the catch species. The authors concluded that non-target species mortality and catch handling times would likely be reduced with the addition of an excluder grate.

Read this article abstract at: <http://www.sciencedirect.com/science/article/pii/S0165783611001160>. The citation for the report is: Chosid, D.M., M. Pol, M. Szymanski, F. Mirarchi, and A. Mirarchi. 2012. Development and observations of a spiny dogfish *Squalus acanthias* reduction device in a raised footrope silver hake *Merluccius bilinearis* trawl. *Fisheries Research*, 114: 66-75.



Fishermen Frank and Andrew Mirarchi (F/V Barbara L. Peters) adjust the floatation for the dogfish excluder grate. An underwater camera was attached to observe fish reactions.

DMF Staff Photo

DMF Rules UPDATE

Public Hearings • Regulations • Legislation

During the period of January 2012 through June 2012 the following laws and regulations were enacted affecting marine fisheries in Massachusetts. This list includes regulations and declarations approved by the Marine Fisheries Advisory Commission, as well as statutory changes approved by the legislature and the Governor's office.

Buoy Branding

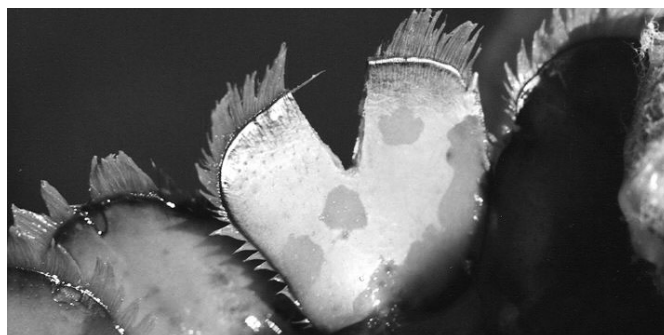
In December 2011, Governor Deval Patrick signed into law an Act Relative to Lobster Buoys. The legislation became effective on March 7, 2012. Representative Jim Cantwell (D-Marshfield) and Representative William Straus (D-Mattapoisett) sponsored this legislation to amend M.G.L. c. 130 s. 38 and allow recreational and commercial lobster permit holders to simply mark, rather than brand, their cars, traps, and buoys. The original language was written at a time when traps and buoys were wooden and branding was a simple method of identification. With the proliferation of PVC buoys and wire trap gear, branding became an inadequate and burdensome means of marking gear.

Atlantic Sea Herring

On May 15, 2012 the Director declared the days out specifications for the directed Management Area 1A Atlantic sea herring fishery. During the period of June 1, 2012 – June 30, 2012 vessels in the Management Area 1A directed fishery are authorized to land Atlantic sea herring only on Mondays and Tuesdays and will have days out Wednesdays through Sundays. During the period of July 1, 2012 – July 15, 2012 vessels in the Management Area 1A directed fishery are authorized to land Atlantic sea herring on Mondays through Thursdays and will have days out on Fridays through Sundays. During the period of July 16, 2012 until noticed otherwise by *Marine Fisheries*, vessels in the Management Area 1A directed fishery are authorized to land Atlantic sea herring seven days per week. During any above described period, vessels may only land Atlantic sea herring once per day on an authorized landing day and may not land in excess of 2,000 lbs of Atlantic sea herring bycatch on any day out. Days out are determined to ensure the seasonal availability of bait for the commercial American lobster fishery.

Commercial V-Notch Requirements for Lobster Management Area 2

Addendum XVII to the Interstate Management Plan for American Lobster requires the exploitation of the Southern New England lobster stock to be reduced by 10% beginning in 2013. To meet this goal the Lobster Conservation Management Team (LCMT) for Lobster Management Area 2 (LMA2) (which includes Vineyard Sound, Nantucket Sound and Buzzards Bay) proposed requiring all commercial lobster permit holders fishing LMA2 to v-notch all legal sized female egg bearing lobsters to improve the reproductive capacity of the stock and thereby decrease exploitation. This proposal was approved by the Atlantic States Marine Fisheries Commission's (ASMFC) Lobster Management Board. *Marine Fisheries* filed emergency regulations, effective May 1, to implement the aforementioned v-notching program for commercial lobster permit holders fishing LMA 2. *Marine Fisheries* took this emergency



DMF Staff Photo

A v-notched lobster.

action to public hearing in June so that it can be codified on a permanent basis.

Recreational Gulf of Maine Cod

Marine Fisheries filed an emergency regulation, effective May 1, 2012, to reduce the recreational minimum size and bag limit for cod caught in the Gulf of Maine management area. The minimum size was reduced from 24 inches to 19 inches and the recreational bag limit from 10 fish to 9 fish. This action was taken by *Marine Fisheries* to conform state regulations to the federal interim regulation promulgated by the National Marine Fisheries Service (NMFS) aimed at reducing Gulf of Maine cod recreational catch and discard. By doing so, *Marine Fisheries* allows Massachusetts recreational fishermen to legally possess and land smaller cod. *Marine Fisheries* took this emergency action to public hearing in June so that it can be codified on a permanent basis.

Recreational Black Sea Bass, Scup and Fluke

Marine Fisheries filed emergency regulations effective May 1, 2012 that established the recreational black sea bass, scup and fluke recreational fishing limits for 2012. The limits are described in the charts below. *Marine Fisheries* took these emergency actions to public hearing in June so that they can be codified on a permanent basis.

Recreational Scup

Mode	Season
Private	May 1 - Dec. 31
For Hire	May 1 - May 10 and June 25 - Dec. 31
For Hire Bonus	May 11 - June 24

Mode	Bag Limit	Size
Private	20-fish/angler	10.5"
For Hire	20-fish/angler	11"
For Hire Bonus	45-fish/angler	11"

Recreational Black Sea Bass

Season	Bag Limit	Size
May 11 - June 24	10-fish/angler	14"
June 25 - October 31	20-fish/angler	14"

Recreational Fluke

Season	Bag Limit	Size
May 22 - September 30	5-fish/angler	16.5"

River Herring

Marine Fisheries extended in perpetuity the moratorium on the harvest, possession, and sale of river herring in Massachusetts; the moratorium has been in effect since 2006. The decision to continue the moratorium was two-fold. First, river herring have been in a coast-wide state of decline since the early 2000s and have not recovered; Massachusetts run counts remain well below their twenty year mean. Second, the ASMFC management plan requires all member states, including Massachusetts, implement a moratorium for all state-waters harvest unless run-specific sustainability management plans are approved by ASMFC's River Herring Management Board. At this time, Massachusetts runs do not meet the sustainability criteria. However, when and if biologically appropriate, *Marine Fisheries* will work to develop sustainability management plans for specific Massachusetts runs. Note that as the harvest of river herring is not prohibited in federal waters, commercial bait fish vessels fishing in federal waters may possess and land a 5% bycatch tolerance of river herring per batch of bait fish. This tolerance ensures the offshore pelagic bait fishery can continue to land bait fish in Massachusetts and is not unduly burdened by at-sea sorting requirements.

Spiny Dogfish

The Director, with the approval of the Marine Fisheries Advisory Commission, declared the annual trip specifications for spiny dogfish on April 25, 2012. The fishery opened May 1, 2012 with a 3,000-pound daily trip limit and will remain open with that trip limit until 58% of the 2012 quota is harvested.

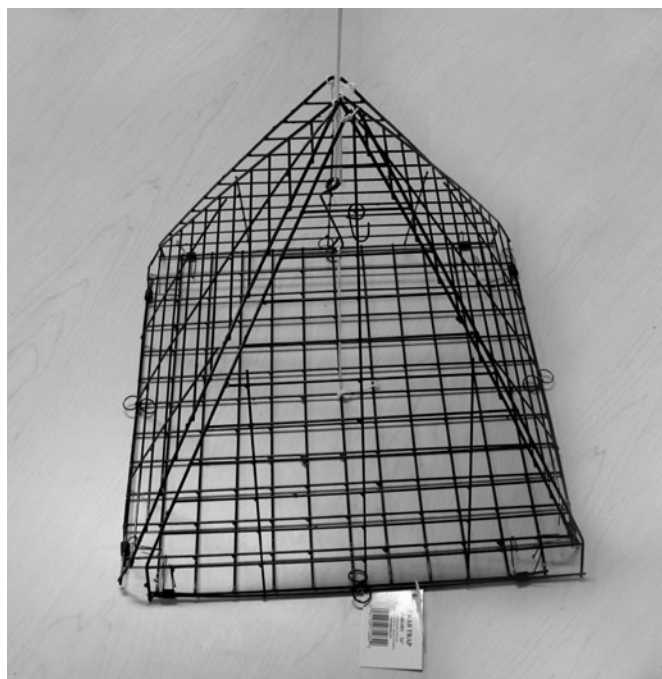
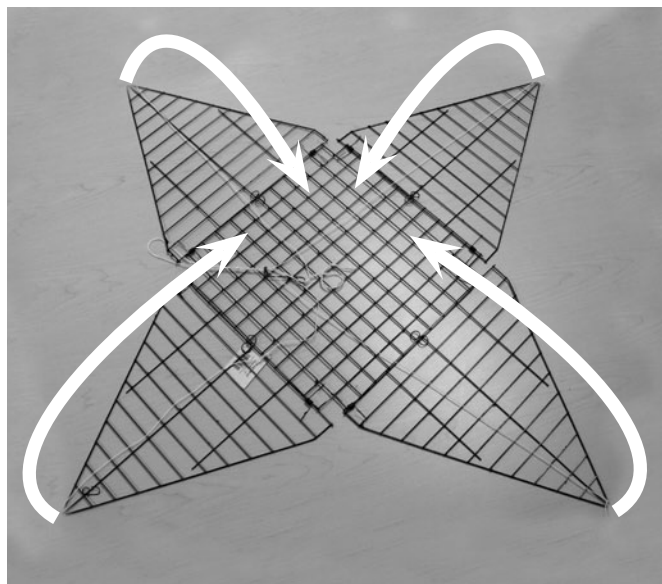
Trip Limits for Quota Managed Fisheries

Marine Fisheries adopted a regulation that commercial trip limits for all quota managed species apply per calendar day and apply to the vessel regardless of how many commercial permit holders are aboard. This action was taken in response to past quota and seasonal allocation overages and is aimed to improve compliance with and monitoring of quota managed species trip limits.



Open and Collapsible Traps

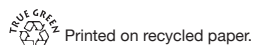
Marine Fisheries has prohibited the take of lobsters by actively tended collapsible traps fished in an open configuration (i.e., star trap). This activity is the equivalent of “dip netting”, which is expressly prohibited by Massachusetts state law for the take of lobsters.



DMF Staff Photos

Star traps are actively fished open, giving the appearance of a star. The crabber watches until a crab crawls onto the center square, where the bait is laid, before pulling the cord to bring in the corners and fold the trap into a pyramid shape. The trap is then hauled up, emptied, and deployed again for its next crab.

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This Newsletter & Other Information
is available on our Web Site!

<http://www.mass.gov/marinefisheries>

DMF NEWS

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Marine Fisheries 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.

Deval L. Patrick, Governor
Timothy P. Murray, Lt. Governor
Richard K. Sullivan, Jr., Secretary, EEA
Mary B. Griffin, Commissioner, DFG
Paul J. Diodati, Director, *Marine Fisheries*

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