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MarineFisheries
A Commonwealth of Massachusetts Agency

Paul Diodati Steps Down as Director

After 37 years at the Division of Marine Fisheries, I have retired. Few people have an opportunity to spend so many years of their life doing what they truly love to do. I can say that I had been blessed with a career greater than I could have ever imagined. What I'm most proud of is that I was able to lead the Division for the past 15 years as its Director.

The successes that we have had as a team for 15 years have been truly exceptional. We have built strong academic partnerships that will nurture growth of future leaders in marine fisheries science and management; we have emblazoned the iconic stature of commercial and recreational fisheries compared to other ocean activities; and we have attracted tens of millions of dollars for graduate education, improving our understanding of fisheries, restoring the marine environment, and relieving our commercial and recreational fisheries communities from harsh economic impacts caused by changing resource and regulatory conditions.

It's a fact that our collective accomplishments have propelled the Massachusetts Division of Marine Fisheries into being one of the most prominent marine fisheries agencies in the Nation. This positive progression is attributed first and foremost to the expertise, dedication, and hard work of the men and women employed by the Division. Our partners in the University of Massachusetts system have also contributed greatly to our success. The Commonwealth and the Northeast region as a whole will continue to benefit from the growth of the Massachusetts Marine Fisheries Institute. Likewise, there would not be a successful path forward without the cooperative efforts

of the federal fisheries agencies, our neighboring state fisheries agencies, and the many stakeholders and members of the public that this agency serves.

The many members of our state Legislature and our Executive Office who take time to learn and understand the complexities of managing industries that depend on healthy marine resources and the tedious effort it takes to judiciously balance benefits between commercial and recreational interests are very much a part of this agency's success story. Legislative and Executive Office support for improving crucial agency investments and vigilance to preserve the agency's statutory integrity and authority has paved the way for sustainable growth of the Division and responsible oversight of the marine environment.

The Division's most difficult task is also its principal charge, to manage the state's marine fisheries. My tenure as Director, to be sure, has not been a perfect one. I have sometimes moved too swiftly, sometimes not swift enough, and perhaps paid insufficient attention to the processes of a strong and complex marine environment and practices of a highly charged socio-political system. What has buoyed my decisions is the in-depth debate and cooperation given me by the Massachusetts Marine Fisheries Advisory Commission. With their input on most every difficult decision, I was confident that we had done our best to make correct choices given the circumstances at hand. The role of this Commission and committed involvement of its members are a major part of this agency's strengths.

The challenges facing the Division in the years to come will be much different than those that I dealt with the past 15 years. I was tested by what's routine for the head of a natural resource agency: dwindling budgets, a small overburdened workforce, balancing competing fisheries interests, mitigating for resource declines, and addressing the constant socio-political rhetoric of the time. The next 15 years will compound the routine tests confronting the agency with the collective issues caused by rising water temperature (and climate change). These will include large-scale shifts in fish distribution, and variable recruitment and spawning stock levels—all likely occurring regardless of the level of ongoing fishing activity.

Change is inevitable in life and it usually comes to the table with some kind of agenda and a sense of optimism. I, for one, am very optimistic about the future of the Massachusetts Division of Marine Fisheries and its ability to serve the best interests of the Commonwealth no matter what lies in its path.

I wish the new Director, and all who will labor with him or her, Godspeed.

By Paul Diodati, Former Director

A Look Inside the Growing Massachusetts Oyster Industry

In 2014, just over 34 million oysters were commercially harvested from the coastal waters of the Commonwealth's South Shore, Cape Cod, and the islands of Nantucket and Martha's Vineyard. Commanding a value of nearly $20 million—all paid directly to local Massachusetts harvesters—oysters have become one of Massachusetts' most valuable in-state species, and it didn't happen by accident. The more than 25-million-oyster increase in landings reported to *MarineFisheries* between 2005 and 2014 has, in large part, been driven by a group of Massachusetts residents who make a profit turning relatively unproductive coastal bottom into some of the state's most productive shellfish habitat, all while producing a healthy, sustainable, ecologically beneficial, and local food product.

Almost 95 percent of the state's 2014 commercial oyster harvest came from the 351 *MarineFisheries* permitted aquaculture operations. Most of these oysters can be traced back to locally operated small shellfish farms with an average size of just under three acres. While 85 percent of Massachusetts-grown oysters come from just six communities on the South Shore, Cape, and Islands (Duxbury, Barnstable, Wellfleet, Edgartown, Wareham, and Dennis), 28 coastal municipalities currently have active and growing shellfish aquaculture operations.

Growing oysters is no easy task and selling oysters to the lucrative, but selective, half-shell market means a lot of long days scraping jingle shells (*Anomia simplex)*, barnacles (*Semibalanus balanoides*), and at times other oysters off cultured oysters by hand in preparation for market. When oysters reach market size, aquaculturists sell them to a *MarineFisheries* permitted wholesale seafood dealer who ships the oysters, often within hours of harvest, to retail and wholesale buyers across the Commonwealth and around the world.

All the oysters grown in Massachusetts are the same species, the eastern oyster *(Crassostrea virginica),* also commonly known as the American oyster*;* however, this species has extreme variation in color, shape, size, and taste. You might notice these differences when visiting your local raw bar or restaurant. This variation speaks to the diversity of Massachusetts' oyster production areas and the wide variety of culture techniques employed across the Commonwealth.

Generally aquaculturists start by purchasing small juvenile oysters known as "seed" from shellfish hatcheries and "plant" them on licensed aquaculture sites for grow-out and eventually harvest. On average, Massachusetts farm raised oysters take between 18 and 24 months to go from seed to market size, but growth rates are highly variable and depend on a number of factors including site location, planting density, water temperature, food availability, pathogen loading and more. Advances in hatchery production—some of which were pioneered right here in Massachusetts—have resulted in the availability of fast growing, extremely hardy oyster seed that can be ready for market in under four months in some cases. This is often achieved by the selective breeding of the fastest growing, most desirable

Massachusetts 2014 American oyster aquaculture-reared landings, by town/region

Town or Region	Pieces	Reported Value
Marion	59,375	$32,852
Nantucket	112,785	$78,080
Brewster	240,150	$145,367
Kingston	246,435	$134,853
Yarmouth	309,689	$176,512
Plymouth	339,052	$190,195
Eastham	460,103	$251,722
Falmouth	657,816	$387,355
Outer and South Cape Cod*	665,581	$394,264
Orleans	695,244	$399,645
Buzzards Bay & Elizabeth Isl.*	695,340	$394,014
Dennis	1,510,381	$874,726
Wareham	1,669,800	$943,608
Martha's Vineyard	2,348,874	$1,410,243
Wellfleet	6,208,883	$3,413,351
Barnstable	7,343,692	$4,155,226
Duxbury	8,543,154	$4,882,239
Total	**32,106,354**	**$18,264,252**

DMF Staff Graphic

**** landings combined into region due to confidentiality constraints***

DMF Staff Photo

An oyster aquaculture licensed site in the intertidal zone, Wellfleet.

oysters as brood stock from which the seed will be spawned or the induction of triploidy in seed at early hatchery stages.

After growers purchase seed, they employ a variety of grow-out methods to raise the oysters to market size. The chosen methods are generally based on the size of the seed purchased and the location of the aquaculture site. Once oysters reach a size of about a quarter inch, they are usually placed in grow-out containers; normally these containers are rugged plastic mesh bags or cages with an aperture size large enough for adequate water flow, but small enough where the oysters won't be dislodged and predators can't get in. Small bags foul easily with algae and other organisms and need to be cleaned, sometimes on a daily basis, to ensure adequate water flow to the oysters inside. Aquaculturists must also constantly sort oysters by size, moving the fastest growing seed into larger bags at lower densities. Some growers choose to broadcast oysters directly on the bottom of aquaculture sites. This is a common practice in sub-tidal areas with hard bottom substrates. In intertidal areas or areas with organic soft bottom sediments, oysters are primarily grown in cages or racks.

MarineFisheries, in conjunction with local municipalities, is responsible for the regulation of shellfish aquaculture in the Commonwealth. Prior to the issuance of any aquaculture license, *MarineFisheries* staff survey the aquaculture sites to ensure the proposed operation will not conflict with, or impact, existing marine resources or activities. The aquaculture regulations are also intended to prevent the introduction of shellfish diseases, non-native species, and other pests or predators that could harm the Commonwealth's aquaculture industry, wild commercial fisheries, and other important coastal marine resources.

Additionally, *MarineFisheries* regulates the harvest and handling of oysters to ensure only the safest, highest quality product is delivered to market. During the warm summer months, when the risk of bacterial contamination is highest in Massachusetts, oyster growers and wild harvesters are required to adhere to strict icing requirements to limit exposure to temperatures that may increase the amount of bacteria in oysters and subsequently increase the risk to consumers. Of particular concern is *Vibrio Parahaemolyticus* (*Vp.*), a naturally occurring marine bacteria that can cause severe gastrointestinal distress when ingested. To curb this threat, considerable efforts to rapidly cool the oysters after harvest have been made on the part of the Massachusetts oyster industry, *MarineFisheries,* and the Massachusetts Department of Public Health that have resulted in a significant reduction in the number of *Vp.* cases reported to the state in 2014. Despite the high standards the commercial oyster industry is held to—and the success that has been made to reduce the risk to consumers—it is important to remember consuming raw oysters is not for everybody. There are certain people, such as those with weakened immune systems, who should avoid consuming raw or under-cooked seafood. These at-risk people need not avoid seafood completely; rather it is strongly recommended that they consume only thoroughly-cooked seafood. Anyone uncertain of their risk should consult their physician.

By Chris Schillaci, Shellfish Biologist

Groundfish Disaster Economic Assistance Program Updates

NOAA Fisheries approved the Commonwealth's $8.2 million state spending plan for Bin 2 groundfish disaster aid on February 5, 2015. In the five ensuing months, *MarineFisheries* has distributed 140 payments to 142 qualified commercial and for-hire permit holders. Under a separate program, 528 crew members have been qualified for disaster aid assistance and *MarineFisheries* implemented a third assistance program for eligible shoreside businesses. As the Division continues its efforts to issue the remainder of Bin 2 funds, we are gearing up for a third round of disaster aid spending totaling $6.7 million in Bin 3 disaster aid funds.

Bin 1

Direct aid totaling $6.3 million was made available to the Commonwealth by NOAA Fisheries on August 15, 2014. These funds went to federal limited access multispecies permit holders who were deemed eligible by NOAA Fisheries. Funds began to transfer to fishermen beginning on August 29 and have continued every week thereafter until all eligible permittees are paid. As of June 30, 200 of the 201 qualified federal groundfish permit holders have been paid by the Commonwealth as part of Phase 1 of the disaster relief program. Phase 1 permit holders were eligible for a payment of up to $32,500.

Bin 2

Permit Payments

After federal grant approval in February, the Division vetted commercial groundfish and for-hire permit holders against eligibility criteria aimed at directing aid to active fishermen impacted by severely reduced groundfish limits during the 2009-2013 disaster period. Following an appeals period, the Division issued the first payment on March 6, 2015 and has continued every week. As of June 30, 140 of 142 eligible permit holders have been paid. Payouts to permit holders range from $9,750 to $32,500, depending on eligibility.

Crew Pre-qualifications

MarineFisheries implemented a separate aid program for crew. Using a previous $1 million aid program (in 2008) as a model, the Division has been reviewing applications from commercial and for-hire vessel crew members, vessel owner/operators, and lumpers/longshoremen. On May 19, *MarineFisheries* mailed pre-qualification notices to all applicants and finalized payment rates after a 10-day appeal period. Eligible crew members will be paid a flat rate per year they are qualified, with owner/operators receiving a lower flat rate than non-owner crew and lumpers/longshoremen. Crew payments are being paid out this summer.

Shoreside Business Applications

Meanwhile, *MarineFisheries* began soliciting applications from eligible shoreside businesses to qualify for disaster aid. Working with representatives from both Gloucester and New Bedford—communities both heavily dependent on commercial groundfishing—the Division implemented this program recognizing that fishery disasters have economic and resiliency repercussions throughout fishing communities. A goal of the program is to support the continued viability and sustainability of the groundfish industry and communities in Massachusetts.

Shoreside businesses had until May 31, 2015 to submit a pre-qualification application that documents their relation to the Commonwealth's commercial groundfishery. The pre-qualification application also asked shoreside businesses to report whether at least 30 percent and at least $32,500 of their total business receipts/sales in any one year from 2009 to 2013 was generated from commercial vessels with limited access multispecies permits and/or state waters Groundfish Endorsements; at least one of those commercial groundfish vessels having been qualified for 2012 Groundfish Disaster Aid.

Bin 3

On May 6, 2015 NOAA Fisheries notified state fishery directors from Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, and New York that $10,090,000 of Greater Atlantic Region groundfish disaster funds (Bin 3) would be distributed to the states. Bin 3 funds initially had been set aside by consensus of NOAA Fisheries and the six states to be used in developing a federally-funded buyout or industry-funded buyback program. Ensuing discussions were unsuccessful because an agreement could not be reached, and the urgency of industry need intensified. This ultimately led to NOAA Fisheries and the states agreeing to reprogram state-by-state distribution of funds. Stay tuned for updates on how those funds will be distributed.

When all is said and done, *MarineFisheries* will have implemented a $21.3 million disaster aid program for members of the Massachusetts groundfishery and groundfishing communities. It is our sincere hope that those funds will not only have mitigated for past impacts, but will also provide for a more sustainable and resilient future for our groundfishery, its members, and communities.

By Melanie Griffin, Fishery Policy Analyst

New Loan Opportunities Available for Active Sector Groundfishermen

MarineFisheries and its Revolving Loan Fund administrative partners announce expanded Revolving Loan Fund opportunities for eligible commercial groundfishermen. Previously, funds were available only to single dayboat vessel owner/operators actively groundfishing in sectors. Use of loan funds was also restricted to leasing of groundfish quota, repairs, and restructuring of debt. Now, eligible applicants may utilize funds as they see fit; there are no use restrictions. To be eligible, applicants must still be actively groundfishing in a sector, but may own up to three vessels and have an average trip length of up to 3 days (72 hours). For further information, contact the RLF Administrator in your area. Residents or owners of vessels homeported in Essex County should contact the Cape Ann Commercial Fishermen's Loan Fund at (978) 546-2900. Residents or owners of vessels homeported in Bristol, Middlesex, and Suffolk Counties, as well as members of the Massachusetts Fishermen's Partnership, may contact the Tremont Credit Union at (781) 664-6547. Residents or owners of vessels homeported on Cape Cod and the islands of Nantucket and Martha's Vineyard may contact the Community Development Partnership at (508) 240-7873.

MarineFisheries gets federal approval to allow the single-trap fishery to continue

NOAA Fisheries has approved the agency's request to allow a limited single-trap fishery as part of the Atlantic Large Whale Take Reduction Plan. Effective July 1, federal regulations require that single traps will only be allowed in specified areas (see map) and all vertical buoy lines on single traps must bear region-specific colored marks. These rules pertain to all commercial permit holders including those who hold only a state permit, and apply to all lobster pot, fish pot, and whelk pot fisheries.

This past January, *MarineFisheries* succeeded in convincing the federally appointed Atlantic Large Whale Take Reduction Team to endorse our request to relax the prohibition on fishing of single pots in certain Massachusetts waters. The Team is comprised of conservationists, scientists, fishery managers, and fishermen from the entire east coast and advises NOAA Fisheries on strategies to reduce interactions between fishing gear and large whales. *MarineFisheries* biologists Bob Glenn and Erin Burke, joined by Deputy Director Dan McKiernan and supported by convincing testimony from commercial lobstermen, argued that buoy lines attached to single pots are less prone to injure a large whale because the gear is usually close to shore and lightweight—compared to heavier offshore gear. To support their argument, the *MarineFisheries* team analyzed past entanglement records and found that in nearly all cases, single trap buoy lines could be ruled out as a possible source of the rope.

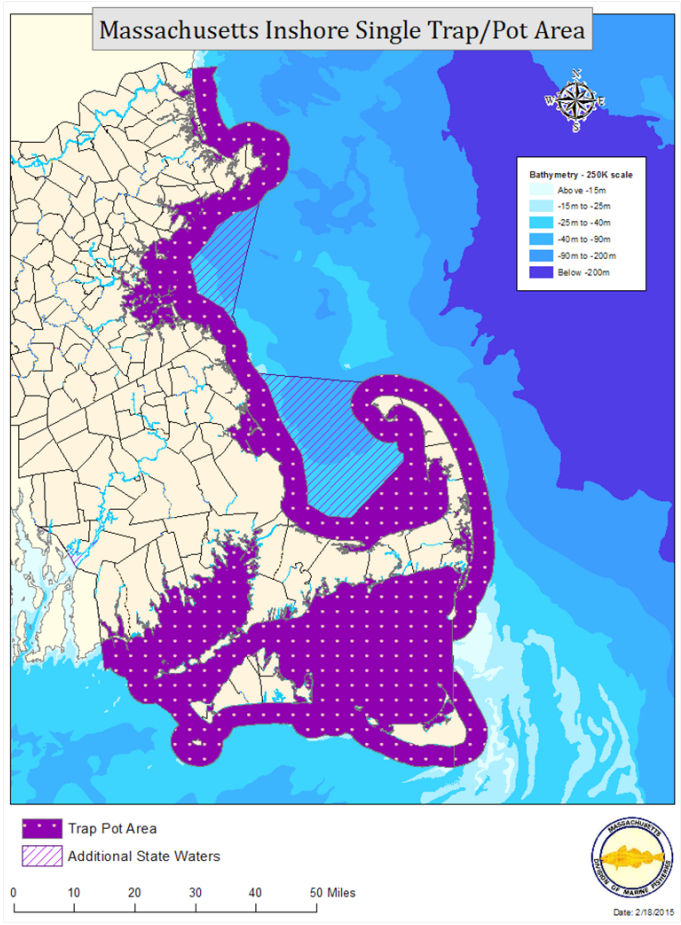
As a trade-off for allowing singles in the exempted area, the agency agreed to establish a unique buoy line marking scheme featuring a second color for single traps fished in each of three areas: north, east, and south of Cape Cod. These will be analogous to the exempted waters portions of Lobster Conservation Management Areas 1, Outer Cape Cod (OCC), and Area 2. Unique gear marking schemes were strongly supported by fishermen who attended public meetings held by the agency to gather input on the rules and their impacts. By adopting this very specific gear marking design, future analyses will be able to demonstrate whether single traps constitute a substantial risk to large whales and need more (or less) regulation.

Gear marking rules for *all* pot/trap fisheries (trawls and singles) in Massachusetts now require at least three 12-inch red markers on all buoy lines: one at the top of the buoy line, one midway along the buoy line, and one at the bottom of the buoy line. For the two color system, which applies only to single pots fished in the exemption area, each color should be 6 inches for a total of a 12-inch mark. Fishermen may mark the gear more than required by NOAA Fisheries, but not less. The method for marking the rope is largely at the discretion of the fisherman (e.g., tape, paint, twine), so long as the marks are clearly visible when the gear is hauled.

With input from the industry, we agreed on the following two-color markings for singles fished in each exemption area:

- Gulf of Maine (Area 1): red and white
- Outer Cape Cod: red and yellow
- Southern New England (Area 2) red and black

Though the task of attaching a second colored mark onto a buoy line in three places is tedious and time consuming, affected fishermen have been overwhelmingly supportive of the compromise. Among the commercial pot fishermen who resisted the mandate to fish multiple pot trawls were those who fish from very small vessels without sufficient hauling capacity and vessel deck space to accommodate multiple pot trawls. Also, many lobstermen who fish off the eastern shore of Cape Cod contend with storm surges and tides that make trawl fishing more dangerous when gear from multiple permit holders becomes entangled. Alternatively, some fishermen have opted to avoid the extra line marking requirements by switching to multiple pot trawls.



Fishermen were notified by the Division in early spring to anticipate this rule change and mark ropes in advance of the fishing season. Compliance with these measures is critical for the credibility of the fishery participants and the advocates who promoted these proposals.

By Dan McKiernan, Deputy Director

Jonah Crab: Increasingly valuable and in dire need of a management plan

Commercial lobstermen have harvested Jonah crabs as bycatch in lobster traps for as long as lobster traps have been set. However, over the last five years this fishery has expanded greatly and has become increasingly important to many of the Commonwealth's trap fishermen. As a result, the Atlantic States Marine Fisheries Commission (ASMFC) will soon have an interstate management plan for this important commercial crustacean.

The calls for a management plan have been driven by rapid increases in landings and value along with the increased dependence by southern New England lobstermen on this species. While the lobster stock in southern New England has declined, due primarily to ocean warming, increased Jonah crab landings have kept some lobstermen economically viable. Over 80 percent of the coastwide landings originate from offshore southern New England waters. The increased landings are attributable to both an increase in stock size and an increase in targeted fishing effort.

Reported Jonah crab landings among all states have risen dramatically since the early 2000s, when landings fluctuated between 2.5 and 4.5 million pounds, to over 17 million pounds in 2014—more than a five-fold increase. Massachusetts lands the majority of Jonah crabs, leading all states with about 70 percent of the regional total. The ex-vessel value of Jonah crabs in 2014 was $9.4 million, ranking it 6th behind sea scallops, lobster, oysters, haddock, and monkfish among all species landed in the Commonwealth. Current price per pound paid to fishermen by wholesale dealers for Jonah crab averages around $0.80 per pound.

The rapid growth in landings has caught the attention of fishermen, dealers, and seafood distributors. Socially and ecologically conscious consumers and retailers have joined the chorus to implement a management plan to ensure the long term sustainability of the resource. Sustainability cannot be determined or ensured in the absence of stock assessment and a management plan. A growing number of supermarket chains refuse to purchase seafood products that aren't labeled as "sustainable" or "certified" due to pressure from consumers looking for ecologically friendly food options.

The vast majority of Jonah crab harvest (more than 95 percent) is taken in permitted lobster traps. This has had an indirect conservation benefit on the Jonah crab stock, due to lobster regulations designed to limit overall fishing effort. For example, the issuance of lobster permits to fish in most areas of federal and coastal states' waters is limited to current participants. Moreover, trap limits are in effect in all lobster management zones with trap reductions imminent in southern New England. The mixed nature of the catch (lobsters and crabs) makes it difficult to manage a Jonah crab fishery completely separate from the American lobster fishery. Additional directed fishing effort at Jonah crabs with gear capable of catching lobster could threaten the long term conservation goals for lobsters. Moreover, the concomitant addition of more buoy lines threatens the primary strategy of the Atlantic Large Whale Take Reduction Plan, which is to reduce the number of vertical fishing lines in the water, thereby reducing the incidence of large whale entanglement.

The ASMFC's Lobster Management Board has drafted an interstate management plan for Jonah crabs. Public comment was accepted through July 24. A public hearing was held in Massachusetts on July 8. The draft Jonah Crab Fishery Management Plan presents management objectives, proposes regulations for the commercial and recreational fisheries and monitoring requirements for states, and makes recommendations for federal waters fisheries.

The plan will address the following key issues:

- Permit requirements for taking Jonah crabs;
- Minimum size limits and possible restrictions on the harvest of females or egg-carrying females; and
- Resolution of whether a Jonah crab trap fishery—outside of the lobster fishery—will be allowed.

By Dan McKiernan, Deputy Director and Bob Glenn, Senior Invertebrate Biologist

DMF Staff Photo

Jonah crabs are an increasingly important species in Massachusetts trap fisheries.

Razor Clams: Coming to a Market Near You?

Razor clams (*Ensis directus*) are a familiar sight to Massachusetts beachgoers, yet until recently commercial production has only provided limited income for very few clam diggers. Over the past three years, both the total landings of razor clams and the average price per pound paid to diggers have risen sharply. Compared to the prior seven years' averages of roughly 212,000 pounds and $1.84/lb., the landings and price paid from 2012 to 2014 averaged roughly 540,000 pounds and $3.03/lb. As a result, the average value of Massachusetts' razor clam fishery between these periods has increased more than fourfold, from $363,000 to $1,664,000.

Variability in Massachusetts' razor clam landings is driven by an assortment of factors, some of which include: the density and distribution of razor clams as well as other shellfish resources; water quality and toxic algal blooms and their impact on harvest opportunities (i.e., sanitary and marine biotoxin closures); fishery participation levels; and market dynamics.

This last factor, market dynamics, seems to be playing a dominant role in the recent volume of razor clam landings. Traditionally, soft-shell clams (*Mya arenaria*) or "steamers" have been a New England staple whereas razor clams are more appreciated in the Pacific Northwest. These consumer preferences have led to soft-shell clams from the Northwest (where they are considered an invasive species) being shipped to New England, while Atlantic razor clams from the Northeast are shipped to the Northwest. However, new and expanded markets have opened up for razor clams locally in Boston, nationally in New York and California, and internationally in Asia, driving up prices. At the same time, a decrease in local soft-shell clam populations facilitated a shift in fishing effort to razor clams, allowing for the increase in landings. Prior to this new market demand, increases

Image courtesy of Gunnar Ries

Razor clams are becoming more popular in the Commonwealth's commercial fishery.

Massachusetts landings and values of razor clams from 2005 through 2014

Year	Landings (lb.)	Reported Value	Avg. price (USD/lb.)
2005	190,609	$290,508	$1.52
2006	434,558	$543,435	$1.25
2007	210,481	$543,435	$1.58
2008	136,938	$303,300	$2.21
2009	146,050	$324,570	$2.22
2010	176,126	4360,176	$2.04
2011	189,499	$389,360	$2.05
2012	356,363	$825,647	$2.32
2013	779,835	$2,346,524	$3.01
2014	484,063	$1,820,469	$3.76

in supply (i.e., razor clam landings) generally caused a decline in the average price per pound, such as observed in 2006.

Despite the recent growth in this fishery, the relative contribution of razor clams to statewide landings of intertidal commercial species remains minor. Compare the 2014 landings of 484,000 pounds of razor clams to over 6 million pounds of oysters, over 5 million pounds of quahogs, nearly 2 million pounds of soft-shell clams, and approaching 1 million pounds of bay scallops. However, landings of soft-shell clams, quahogs, and bay scallops are declining or static. Currently, only oyster landings and landed value are rising significantly for inshore and intertidal species, due to the growth of the aquaculture industry in Massachusetts.

Preliminary data from early 2015 show the price for razor clams continuing to rise to over $5.00 per pound. Given historical landings, razor clam preferred habitat in the lower intertidal, and the relative high harvesting effort required, a sharp increase in production (similar to 2013) would not seem likely to become the new norm. However, to better understand current razor clam management challenges, further analysis by region and shellfish growing area is needed to help identify long term trends.

By Jeff Kennedy, Shellfish Regional Supervisor

Boating Grant Update: Massachusetts Receives Over $2 Million in 2015 Funding

The Division of Marine Fisheries administers two grant programs to help provide infrastructure to Massachusetts recreational boaters. The Clean Vessel Act (CVA) Program provides grant funds for the purchase, construction, renovation, and maintenance of pumpout stations and pumpout boats, and their associated infrastructure. The Boating Infrastructure Grant (BIG) Program provides funds for construction, renovation, and maintenance of tie-up infrastructure for transient boats 26 feet or longer. Both grants are funded through the United States Fish and Wildlife Service's Sport Fish Restoration and Boating Trust Fund. The funds are derived from federal excise tax on fishing equipment, trolling motors, import duties on boats, and motorboat fuels. This "user pay / user benefit" model helps provide clean waters and convenient tie-ups for Massachusetts.

MarineFisheries' Cecil French and Stephanie Cunningham work cooperatively with Massachusetts public and private entities to apply for both BIG and CVA grants. The Division is happy to announce the numerous funded projects for 2015. The Clean Vessel Act Program will fund three replacement pumpout boats for the towns of Rowley, Cohasset, and Winthrop; the installation of a new pumpout station in Gloucester; and the replacement of an existing pumpout station in Westport. Like all CVA-funded improvements, these will be open for public use. Under the 2015 Boating Infrastructure Grant, over one million dollars in federal funds will be put to improving recreational boater access in Newburyport, Gloucester, and Manchester-by-the-Sea.

These 2015 BIG monies are notable because they were awarded as Tier II projects. The BIG Program consists of two funding tiers: Tier I and Tier II. Under Tier I, each state may annually apply for up to $200,000 in funding for eligible projects. Tier II funds, on the other hand, are made available through a nationally competitive process. Massachusetts is one of just ten states to be awarded Tier II funds in 2015, thanks to the collaborations between *MarineFisheries* and the three municipalities on successful project proposals. Prior to 2015, Massachusetts has been the recipient of only one Tier II grant.

• Congratulations to the City of Newburyport, the City of Gloucester, the Town of Manchester-by-the-Sea and all project partners. *MarineFisheries* is looking forward to working with these municipalities as they complete the following BIG-funded recreational boating access projects.

• The City of Newburyport was awarded $448,059 to help construct a transient boater visitor's center that includes dedicated showers, toilets, laundry facilities, reception area, and dinghy dock space for recreational boaters with vessels that are 26 feet or longer. The project also includes six dedicated transient moorings. The grant award and matching funds from the City of Newburyport and its local project partners—the Newburyport Waterfront Trust and the Newburyport Redevelopment Authority— total $737,892.

• The City of Gloucester was awarded $263,930 for Solomon Jacob's Park Harbormaster's Boater Initiative. The Gloucester Waterways Board, in partnership with National Grid and the Seaport Advisory Council, has promised to contribute $263,975 in matching funds. The money is slated to create transient boater access as part of a new float system off of Solomon Jacob's Park, providing 144 feet of dockage for transient dinghies and 205 feet of dockage for drop off / pick up and short term tie-up. The infrastructure will include an 80-foot ADA compliant gangway, rock socketed steel piles, and an arched aluminum bridge.

• The Town of Manchester-by-the-Sea was awarded $360,222 to create transient boater access as part of a new float system at Reed Park, providing a new ADA compliant ramp and tie-ups for up to ten recreational vessels that are 26 feet or longer and their dinghies. Matching funds from Manchester-by-the-Sea, through its Waterway Fund and local project partners—the Beach Street Café, Captain Dusty's Ice Cream, The Landing at 7 Central by the Sea, and Manchester Essex Regional High School—bring the total funds for this project to $499,735. The project also includes a series of targeted outreach and promotional actions to ensure that recreational boaters are made aware of the new accommodations.

In other news, this coming September, the 2015 National Boating Access Conference offered by the States Organization for Boating Access will be co-hosted in Vermont by the New England states, including Massachusetts. The close proximity of this annual conference provides a unique opportunity for the Division's CVA and BIG programs to participate in an organization devoted to the acquisition, development, and administration of public recreational boating facilities nationwide. This annual event provides a forum to encourage, promote, and support federal and state programs that provide safe, high-quality, and environmentally sound public recreational boat access to the waterways of the United States and its territories. This year's theme—***Green Access, Clean Boating, Blue Waters***—will have a focus on climate change adaptation. The conference will be held at the historic, family-owned Basin Harbor Club, twenty-five miles south of Burlington, Vermont. Those interested are encouraged to contact Bernice McArdle, Executive Director of the States Organization for Boating Access at (312) 946-6283 or info@sobaus.org

The Division's CVA and BIG programs look forward to a successful boating season with a focus on clean waters and plentiful access to Massachusetts harbors and municipalities. Communities, marinas, and boatyards interested in the Division's CVA and BIG Boating Grants can contact Cecil French, CVA/BIG Grants Program Coordinator, in our Gloucester office at (978) 282-0308 ext 119 or cecil.french@state.ma.us.

By Cecil French, CVA/BIG Coordinator and Stephanie Cunningham, Federal Aid Coordinator

DMF Staff Photo

This is the 21st year that Massachusetts has participated in the CVA Program. Our goal is to make pumpouts both free and convenient across all of Massachusetts' fifteen hundred miles of navigable rivers and coastline. We are also in the second full year that all Massachusetts state waters are designated 100 percent No Discharge Zone (NDZ). Full NDZ designation is only possible with coordinated federal, state, and local collaboration and would have been impossible without our successful partnerships with Massachusetts Coastal Zone Management and the United States Environmental Protection Agency. Enhancing the reliability and convenience of pumpout coverage coast-wide has resulted in the increased use of pumpouts by boaters, as well as a growing awareness among boaters and the general public of the role of the CVA Program in the Commonwealth's mission to keep marine waters clean.

Spring Sea-Run Fish Update

The 2015 spring runs of diadromous fish have come and gone providing more evidence that much depends on the weather and that each year will bring changes. The historically harsh winter of 2015 produced some of the more prominent delays in diadromous fish migrations seen in recent years.

The onset of most river herring spawning runs occurred at least two weeks later than usual. The migration of young-of-year American eel (glass eel) was delayed in rivers monitored by *MarineFisheries*— up to three weeks in some cases—followed by sharp peaks in early May. Even rainbow smelt, which show resiliency in their spawning run timing when facing varied winters, exhibited delays in the peak spawning run timing by roughly two weeks.

There was concern over how the freshet from the record setting snow fall might disrupt runs or spawning habitat. The snow melt contributed to lower than normal water pH (higher acidity), but did not produce the predicted gullywashers as steady warming in April, combined with timely rain events, dissipated the snow pack without a prolonged period of extreme high flows and turbidity that could have impacted fish moving upstream or deposited eggs.

The *MarineFisheries* Diadromous Fish Project is active each spring, managing monitoring stations for river herring, smelt, and eel, and assisting local groups who maintain visual or electronic counting stations for river herring. A large effort has been underway since 2011 to increase the number of herring run sampling stations where counts are made with automated technologies and biological samples are collected. The goal is to have one to two long-term monitoring stations maintained in each of the major coastal drainage areas. Two new stations were added in 2015: electronic counting stations at Herring Brook in Pembroke and the Back River in Weymouth. In both cases, we worked closely with the town's herring wardens to design, deploy, and monitor the herring runs. Additionally, electronic or video counting stations were maintained by project crew in 2015 at the Parker River, Newbury; Essex River, Essex; Monument River, Bourne; Acushnet River, Acushnet; and Nemasket River, Middleborough. At each of these stations, river herring are now collected to obtain biological data on size, sex and age, as part of annual population assessments. Herring are also sampled at Town Brook in Plymouth and Herring River in Harwich to improve our coastal coverage of biological samples.

This spring's diadromous fish runs are over, and as the results are not fully reported we can only offer a general summary of observations. The recent trend of declining smelt spawning runs continued this spring, with catches well below average at three of four fyke net sampling stations. The Fore River in Braintree was the only station to maintain average catch numbers.

Glass eel are monitored at six eel passageways on the coast. In addition to the migration being delayed, eel catch numbers were down this spring at most sites. The exception was the Wareham eel ramp, where catches exceeded the data series high for the second straight year. The illegal harvest of glass eels continued this spring as the delayed migration raised the out-of-state market value to over $2,000 per pound. The ongoing black market for glass eels rose to unprecedented levels in 2014 and continues to challenge the Commonwealth's environmental law enforcement, and is a threat to future eel recruitment in our coastal rivers. Due to this increase in poaching, the legislature increased the criminal penalty for elver poaching last year to $10,000.

The Commonwealth's herring runs were clearly delayed, with dramatic peaks and shorter run durations than previous years. The early results of river herring counts suggest that the encouraging increases in run sizes seen at many rivers during 2011-2014 may have leveled off, with some runs declining from last year. However, areas like Boston Harbor continued to have large, improving runs at major rivers including the Charles, Mystic, and Back. Additionally, several small runs in the Cape Cod region had the highest number of returning adult herring in recent memory.

By Brad Chase, Senior Marine Fisheries Biologist

DMF Staff Photo

Rainbow smelt sampled from the Jones River in April 2015

The 2015 Saltwater Fishing Derby is On!

DMF Staff Photos

Anglers of all ages take part in the annual saltwater fishing derby!

We would like to take this opportunity to remind our saltwater anglers about the Massachusetts Saltwater Fishing Derby. The derby, formally known as the Governor's Cup hosted by the Division of Tourism, was moved to *MarineFisheries* in 1983. Any and all anglers are encouraged to enter their catches!

All entries will receive a derby pin and at the end of the derby year, trophies will be awarded to anglers who land the heaviest fish in each species category. Winners will be chosen in three divisions: men, women, and juniors (age fifteen and younger). There is also a "Skillful Skipper" award, which is presented to the charter or head boat captain who has three derby-winning fish caught on his or her boat during the year.

Fish entered must be caught with hook and line, and measured and weighed at a Division-certified official weigh station. The angler must also fill out an official affidavit. A list of weigh stations can be found on our website. The derby runs from January 1 through November 30 and updated results can be found on our web site: *www.mass.gov/marinefisheries*. Entries must be received within 30 days of catch and be postmarked no later than December 10.

If you catch a fish you would like to enter, but still want to see that fish swim for another day, the Derby also has a catch and release category. There are six eligible species: bluefish, Atlantic cod, false albacore, fluke (summer flounder), striped bass, and winter flounder. Anglers must catch a fish that meets or exceeds the minimum qualifying length in order to be considered for a species-specific catch and release certificate. Anglers will receive one certificate per species per year for their largest qualifying catches.

Special awards will be given out to the angler submitting the longest fish for any of the six eligible catch and release species. Anglers lucky enough to catch four different species meeting the minimum length requirement will also be in the running for the "Grand Slam". Only one Grand Slam award will be given out per year for the maximum total cumulative length of any four species entered. In the event of a tie for any award, the earliest entry will be chosen as the winner.

Fish should be measured on a measuring device to the nearest half inch, and a clearly discernible picture must be taken of both the measuring device and the fish, indicating total length. Derby affidavits and pictures should be sent to our South Shore Office at 1213 Purchase Street, 3rd Floor, New Bedford, MA 02740. Pictures may be sent via email as well to *john.boardman@state.ma.us*.

Further details and affidavits can be found at most bait and tackle shops, on our web page *www.mass.gov/marinefisheries,* or at one of our field offices. The catch and release derby, like the traditional weigh-in derby, will run from January 1 to November 30. Good luck to all our participants!

By John Boardman, Aquatic Biologist

MarineFisheries supports 2015 Seafood Buyers Mission: a focus on lesser-known and available species

On March 12, *MarineFisheries* participated in an orientation program during Food Export-Northeast's 2015 Seafood Buyers Mission. Also participating were representatives from the Massachusetts Department of Agricultural Resources, Maine International Trade Center, and SeafoodSource.com. The goal of the Seafood Buyers Mission was to bring international seafood buyers to Boston to educate them about seafood harvested from our region and to meet one-on-one with local and regional seafood dealers to foster business relationships. Nearly 20 foreign buyers from Europe, Asia, and South America participated. The Seafood Buyers Mission took place in the three days leading up to Seafood Expo North America, held in Boston.

The first full day of the mission was an orientation program that took place at the Exchange Conference Center on the Boston Fish Pier. It was at this picturesque and historic location on Boston Harbor that the participating buyers heard presentations

Northeast dogfish landings and value table presented to seafood buyers

Year	Dogfish Landings	Dogfish Landings Value	Ex-Vessel Price per lb.
2011	12,521,168 lbs	$2,749,285	$0.22
2012	16,611,369 lbs	$3,630,511	$0.22
2013	7,854,180 lbs	$1,256,111	$0.16

Photo courtesy of Food Export USA - Northeast

Paul Rego, from Northern Wind, Inc., speaks to an international audience about Massachusetts scallops.

on the services Food Export-Northeast provides for foreign buyers, an overview of the Northeast seafood industry, and a presentation on lesser-known species of the Northeast.

MarineFisheries gave the presentation on lesser-known species, focusing on the fully rebuilt stocks of spiny dogfish, redfish, and scup. For each species, the stock status, abundant available quota, seasonal availability, fishery characteristics, products and packaging, and landings and value were described. The seafood buyers had many questions on each species including questions on gear, vessels, product forms, and average sizes of the different species.

After the description and discussion of each of the three species, an on-site chef served three differently prepared samples of each fish to the buyers so they could get a taste of how each could be prepared. The chef then discussed the characteristics of each fish and took questions. Each dish was excellent and gave the buyers a good feel for the products and their potential culinary uses. Although favorable reviews were given to all fish, the unofficial winner of the taste test was… dogfish!

After the Thursday orientation, the buyers spent Friday in New Bedford touring the waterfront, seafood processing facilities, a scallop vessel, and learning more about fisheries management in the Northeast. On Saturday, the buyers returned to Boston and the Exchange Conference Center for one-on-one meetings with 25 Northeast seafood dealers. These meetings were an opportunity for the foreign buyers to use the knowledge they had gained in the previous two days to begin making purchases from the regional seafood dealers.

By all accounts, the 2015 Seafood Buyers Mission was a success for local seafood dealers and the foreign buyers. Preliminary reports from Food Export-Northeast indicate that more than $6 million in sales were made onsite by Northeast seafood dealers and they project making sales in excess of $14.3 million over the next 12 months based on these meetings. Suppliers reported to Food Export-Northeast that they established 117 new business relationships. *MarineFisheries* looks forward to supporting more of these types of marketing initiatives in the future.

By Story Reed, Fisheries Policy Analyst

Photo courtesy of Food Export USA - Northeast

Seafood buyers from all over the world take a tour of fishing vessels

Creature Feature: Monkfish!

Many of you may know of monkfish on a plate, served to you in a restaurant or even a dish you've cooked up yourself. But do you know these fish are residents of waters around Massachusetts? Monkfish, also call goosefish or American angler, are a local species, living on the ocean floor from the shallowest of waters to over two thousand feet deep. Using their webbed pectoral fins—those found on either side of the body—monkfish will dig into the mud, sand, or gravel to hide while they wait for prey to swim close by.

If you've never seen a monkfish, it's unlike most fish in the ocean. Monkfish are dorso-ventrally flat, meaning that it looks like someone squished the fish so it's not very tall, but is very wide. They have eyes on the top of their head, instead of the sides, so when the fish buries itself, the eyes remain above the substrate. The wide, up-turned mouth, full of sharp, long,

DMF Staff Photo

Monkfish can be a terrifying view, but are a delicacy in many countries.

curved teeth, remains open slightly so that the fish can breathe while laying in wait.

The monkfish is a master of waiting. However, when it gets hungry, it will go fishing. Monkfish are a member of the anglerfishes, an order of fishes in which the first spine of the dorsal fin has been modified in some way to help lure prey. Some anglers have a lure that lights up and even flashes (think of Disney's *Finding Nemo*). The monkfish has a simpler lure to attract its prey. At the top of the very tall and thin spin, a flap of skin waves around like a worm in the water. When fishing, the monkfish can wave this flap around: forward and backward, side to side, at different rhythms to attract unknowing prey over to its wide waiting mouth.

Monkfish don't just eat other fish. They have been known to entice lobsters, crabs, squid, and even worms in for a tasty feast. These fish are not made for speed, but rather when an edible animal comes within range, the monkfish will move quickly to gulp the prey in a single bite. The curved teeth lining the monkfish's mouth help keep its meal from escaping.

Because they live on the bottom of the ocean, monkfish are one of our groundfish species. Popular in European cuisine, it has made its way to the American table. The meat of a monkfish is tight and is sometimes compared to lobster. Since a majority of a monkfish is the head, the only part people are interested in eating is the tail. The meat is white, and if preparing, any gray or darker colored meat or membranes should be removed. Monkfish is a mild tasting fish and can be prepared in a variety of ways. However, one should take care not to overcook the fish, as it can easily dry out.

By Elaine Brewer, Information and Education Coordinator

Recent Publications

Greg Skomal was on a team, lead by Tobey Curtis of School for Marine Science and Technology at the University of Massachusetts–Dartmouth (SMAST), studying habitat selection of basking sharks (*Cetorhinus maximus*). The team used smart position only transmitting tags and pop-up satellite archival tags to track the horizontal movements, active space, and habitat selection, and the depth preference, respectively, of the sharks. The team found that during the summer and fall, basking sharks within the southern Gulf of Maine tend to concentrate in small areas which are thought to have high productivity, producing good feeding grounds for the basking sharks. There is suggestion that such habitat might also be influenced by mating and other social activities. The citation for this paper is:

Curtis, T. H., S. I. Zeeman, E. L. Summers, S. X. Cadrin, and G. B. Skomal. 2014. **Eyes in the sky: linking satellite oceanography and biotelemetry to explore habitat selection by basking sharks.** *Animal Biotelemetry* 2:12.

Brad Schondelmeier, Bill Hoffman, and Mike Armstrong, with Dave Bethoney and Kevin Stokesbury of SMAST published a paper in the *North American Journal of Fisheries Management* on river herring bycatch in the Northwest Atlantic midwater trawl fisheries. This group conducted portside and at-sea observations to research the incidental catch of river herring (alewife and blueback herring, *Alosa pseudoharengus* and A. *aestivalis*, respectively) in Atlantic herring (*Clupea harengus*) fisheries. Results of this study showed differences in bycatch among and within the areas studied. Northern areas saw bycatch of mainly migratory mature or near-mature individuals while bycatch in southern areas was a mix of juveniles, prespawning adults, and migrating adults. To read more about this study, use this citation: Bethoney, N. D., K. D. E. Stokesbury, B. P. Schondelmeier, W. S. Hoffman, and M. P. Armstrong. 2014. **Characterization of river herring bycatch in the Northwest Atlantic midwater trawl fisheries.** *North American Journal of Fisheries Management* 34:4, 828-838.

Greg Skomal, with researchers from NOAA Fisheries, Florida Program for Shark Research, and Mote Marine Laboratory, published a paper on white shark distribution and historical trends in the online journal *PLoS ONE*. The team compiled historic and novel data on white shark (*Carcharodon carcharias*) into what is now the largest white shark dataset compiled for the northwest Atlantic Ocean. Analysis of the data shows white sharks primarily between Massachusetts and New Jersey during the summer months, visiting Florida during the winter. In the spring and fall, the sharks are widely distributed throughout the coast. The results also show that white shark populations appear to have begun increasing since the 1990s, after significant declines in the 1970s and 1980s. This article can be found on our Publications page as Contribution 49. The citation for this article is:

Curtis, T. H., C. T. McCandless, J. K. Carlson, G. B. Skomal, N. E. Kohler, et al. 2014. **Seasonal distribution and historic trends in abundance of white sharks, *Carcharodon carcharias*, in the western North Atlantic Ocean.** *PLoS ONE* 9:6, e99240.

Scott Elzey, Katie Rogers, and Kimberly Trull from the Division's Age and Growth Laboratory in Gloucester recently published in NOAA's *Fishery Bulletin*. The team compared the precision of four aging techniques of American shad (*Alosa sapidissima*). Age estimates were compared from obtained sagittal otoliths, vertebrae, scales, and opercula—each of these structures can be used in aging most fish, however, some methods are better than others, depending on the species. For American shad, the authors found age determination from otoliths to be the most precise. To read the paper in its entirety, find it on our Publications page. It is Contribution 53. The citation is:

Elzey, S. P., K. A. Rogers, and K. A. Trull. 2015. **Comparison of 4 aging structures in the American shad (*Alosa sapidissima*).** *Fishery Bulletin* 113:47-54.

Greg Skomal, with Lisa Natanson of NOAA's Northeast Fisheries Science Center, published research on North Atlantic Ocean white shark age and growth. The team aged white sharks by counting band pairs on the vertebrae of species collected between 1963 and 2010. Their findings show that white sharks from the North Atlantic Ocean grow more slowly and live longer than previous estimates. To read this paper in its entirety, find it on our Publications page as Contribution 51. The citation is:

Netanson, L. J. and G. B. Skomal. 2015. **Age and growth of the white shark, *Carcharodon carcharias*, in the western North Atlantic Ocean.** *Marine and Freshwater Research* DOI: 10.107/MF14127.

Steve Correia, with Eric Thunberg of NOAA's Northeast Fisheries Science Center, published on the diversity in the New England groundfish fishing fleet. The New England groundfish fishery has had varied management systems throughout the past decades. As management strategies changed, the active fleet decreased from over 1000 vessels, during the 1990s and 2001, to less than 400 by 2012. Management once again shifted, this time to fleet diversity, which looks at vessel size, gear, and region—not landings or economic value. The research discovered that although fleet size and overall diversity have declined, the central groundfish fleet has remained stable. The full paper can be found on our Publications page as Contribution 55. The citation is:

Thunberg, E. M. and S. J. Correia. 2015. **Measures of fishing fleet diversity in the New England groundfish fishery.** *Marine Policy* 58, 6-14.

Greg Skomal was on a team of researchers studying blacktip shark (*Carcharhinus limbatus*) and lemon shark (*Negaprion brevirostris*) habitat use. The team studied known shark nurseries in the water of St. John, United States Virgin Islands. Using passive acoustic telemetry, just over 100 sharks were monitored. Although both species moved throughout the nurseries, each species demonstrated site fidelity to specific areas throughout the entirety of the study. Blacktips generally occupied areas that were 5 to 6.5 feet deep with seagrass and sand or mud. Lemon sharks generally were found in or around areas with less water (typically less than 3 feet) and had mangroves fringing seagrass. The entire study can be found on our Publications page as Contribution 54. The citation is:

Legare, B., J. Kneebone, B. DeAngelis, and G. Skomal. 2015. **The spatiotemporal dynamics of habitat use by blacktip (*Carcharhinus limbatus*) and lemon (*Negaprion brevirostris*) sharks in nurseries of St. John, United States Virgin Islands.** *Marine Biology* DOI: 10.1007/s00227-015-2616-x.

Gary Nelson recently received the Robert L. Kendall Award for the Best Paper in 2014 for *Transactions of the American Fisheries Society*. His paper explains what cluster sampling is, how it should be used in fisheries research, and the current statistical approaches used to analyze appropriately clustered data. Congratulations to Gary for being presented this prestigious award! The citation for this paper is:

Nelson, G. A. 2014. **Cluster Sampling: A Pervasive, Yet Little Recognized Survey Design in Fisheries Research.** *Transactions of the American Fisheries Society*143:4, 926-938.

Accolades

Micah Dean (*left*) was presented with a Certificate of Recognition in the Massachusetts Performance Recognition Program for his work on spawning aggregations of Atlantic cod. Micah not only monitors spawning aggregations but also assists in developing ways for commercial and recreational fishers to avoid them. Acting Director David Pierce (*right*) congratulates Micah on work well done.

Comings and Goings

Collin Farrell recently joined the age and growth lab at the Gloucester office. He determines the ages of a variety of species using otoliths, scales, opercula, and fin spines in order to assist fisheries management. Collin recently completed his undergraduate degree in Natural Resources at Cornell University. Prior to his start with the Division, Collin worked at the Cornell Biological Field Station on Oneida Lake in Upstate New York as a technician, where he used a variety of sampling gear, collected recreational catch data, and processed macroinvertebrate samples. As an avid hockey player, you can probably find Collin hanging around the rink after work.

The past four years, **Melissa Campbell** has worked for the Division as a Red Tide technician collecting samples, identifying phytoplankton, and assisting with field and lab duties in Gloucester relating to the classification of shellfish growing areas. Recently, she was hired as a shellfish biologist. In addition to the duties Melissa had as a technician, she now also oversees the Newburyport shellfish purification plant on weekends. Melissa performs bacteriological testing of shellfish and seawater in the laboratory. She graduated from the University of New England in Biddeford Maine, receiving a bachelor of science in marine biology.

Ryan Joyce joined *MarineFisheries* as a shellfish biologist at the end of December. Ryan received his undergraduate degree from Roger Williams University and his Master's degree from the College of Charleston, South Carolina where he studied oyster reef restoration. He has worked for the Division's Anadromous Fish section as a seasonal technician for two years before moving to Shellfish. As a shellfish biologist, he will work on growing area classification in Hingham and Hull Bays and in the North Shore. His work will also include bio-toxin monitoring and providing technical assistance in shellfish aquaculture and management issues.

Maren Olson is a recently hired Program Coordinator for outreach in both the Clean Vessel Act (CVA) and Angler Education Programs.

She worked with *MarineFisheries* in 2014 as a seasonal contractor, assisting with CVA outreach. Between her terms with the Division, Maren was a contractor at National Marine Fisheries Service where she supported their lobster management group. Prior to this, she worked on a commercial lobster boat out of Gloucester for four years. Maren graduated from the University of Wisconsin with degrees in Biological Sciences and Psychology and enjoys getting out on the ocean.

DMF *Rules UPDATE*

Public Hearings • Regulations • Legislation

During the period of January 1, 2015 through June 30, 2015 the following regulatory changes were enacted by the Division of Marine Fisheries after public hearings and Marine Fishery Advisory Commission approval. Annual specifications and emergency regulations promulgated during this period have also been listed.

Atlantic Sea Herring

Through declaration, *MarineFisheries* established a days-out schedule for the 2015 Area 1A Trimester 2 (June 1–September 30) Atlantic sea herring fishery. For the period June 1–July 5, the directed sea herring fleet was authorized to land Mondays –Fridays and required to take days-out on Saturdays and Sundays. From July 6 to September 30, or until further notice, the directed sea herring fishery was authorized to land seven days per week.

Black Sea Bass

New recreational fishing limits for black sea bass were established for 2015. For 2015, the open recreational fishing season occurs May 23–August 27 with an 8-fish bag limit and 14-inch minimum size. The open fishing season was shortened by about three weeks in order to reduce estimated harvest of black sea bass by 33%, to comply with interstate mandates.

Gulf of Maine Cod

Through emergency action effective April 16, *MarineFisheries* adopted recreational and commercial measures to complement Framework 53 to the federal Northeast Multispecies Groundfish Management Plan. In the recreational fishery, the retention, possession, and landing of cod taken from the state's Gulf of Maine Management Area was prohibited; this matched the closure in the adjacent federal zone. In the commercial fishery, *MarineFisheries* adopted a state-waters trip limit of 200 pounds. This trip limit applies to any state-waters only groundfish endorsement permit holder or federally permitted vessel authorized to fish in state waters. The 200-pound trip limit matched the federal common pool trip limit. These actions were taken in response to the most recent Gulf of Maine cod stock assessment indicating the stock is in severe decline with spawning stock biomass just at 3-4% of its target.

MarineFisheries went out to public hearing in late spring/early summer on these management measures as well as revising the state's longstanding commercial groundfish closures. Final rules are expected in the second half of 2015.

Protected Species and Pot/Trap Fishery Management

MarineFisheries adopted the Massachusetts Large Whale Seasonal Trap/Pot Gear Closure to complement changes to federal regulations through the Atlantic Large Whale Take Reduction Plan (ALWTRP). This closure is in effect from February 1 through April 30 in waters of Massachusetts Bay, Cape Cod Bay, and throughout the Outer Cape Cod Lobster Conservation Management Area (OCC LCMA). This closure is designed to reduce interactions between the buoy lines of pot/trap gear and endangered right whales (when they seasonally aggregate in our waters) and thereby reduce the risk of injury or mortality from entanglement. *MarineFisheries* also adjusted the timing of the mandatory OCC LCMA haul-out period and Critical Habitat Area rules so that they correspond with this new closure.

On June 1, federal regulations were again adjusted through the ALWTRP that established new commercial endline requirements for single pots and trawls. Single pots are now to have a 12-inch LCMA specific marking at the top, middle, and bottom of each buoy line. For LCMA1 it is a 6-inch white and 6-inch red mark; for LCMA 2 it is a 6-inch black and 6-inch red mark; and for OCC LCMA it is a 6-inch yellow and 6-inch red mark. Pot trawls are to be marked with a 12-inch red mark at the top, middle, and bottom of each buoy line. Additionally, all trawls of two or three traps must be configured with only one buoy line, whereas trawls of four or more traps may feature two endlines. These new regulations apply to all commercial lobster fishermen in Massachusetts. *MarineFisheries* intends to go out to public hearing to complement these federal regulations in the fall of 2015.

Small Mesh Squid

Due to concerns about a localized depletion of forage, *MarineFisheries* eliminated a provision that allowed vessels to use small mesh trawls for squid in state-waters south of Martha's Vineyard and Nantucket after June 9. Vessels may still fish with small mesh trawls for squid in the state-waters south of Vineyard Sound, Nantucket Sound, and south of the islands during the longstanding April 23 through June 9 season.

Spiny Dogfish Trip Limits

Through declaration, *MarineFisheries* adopted a 5,000 pound daily trip limit for the 2015/2016 commercial spiny dogfish fishery. The 2015/2016 opened May 1, 2015 and will remain open until April 30, 2016 or the 29.35 million pound quota for the Northern Region (Maine to Connecticut) is taken, whichever occurs sooner. This declaration complements the federal and interstate trip limit specifications.

Striped Bass

For 2015 and beyond, the recreational bag limit for striped bass was reduced from 2-fish per angler per day to 1-fish per angler per day. The minimum size remains at 28 inches. The commercial quota was also reduced by 25%, from about 1.16 million pounds to about 870,000 pounds. This action was taken to comply with Addendum IV to the Atlantic Striped Bass Interstate Fishery Management Plan. The addendum was developed in response to the 2013 benchmark stock assessment to reduce fishing mortality below the target and increase female spawning stock biomass above the target. To accomplish this requires both the coastal commercial and recreational fisheries to reduce harvest by 25% from 2013 levels.

Additionally, *MarineFisheries* implemented a new fin clipping rule to prevent stockpiling in the commercial striped bass fishery. This rule requires all commercial striped bass fishermen fishing recreationally during a closed day in the commercial fishing season to entirely remove the right pectoral fin from any striped bass that meets or exceeds the 34-inch commercial minimum size. All striped bass with their right pectoral fin entirely removed are prohibited from being sold into commerce.

Vibrio Management

To implement the 2015 *Vp* Management Plan, new regulations were promulgated to clarify and improve existing time-to-temperature, reporting and oyster handling requirements. This was done to further limit the risk of *Vp* infection caused by the consumption of improperly handled raw oysters and to comply with mandates from the US Food and Drug Administration.

White Shark Permit

Through emergency action effective June 5, *MarineFisheries* adopted a regulation requiring any entity that attracts, captures or performs research on a white shark, or attempts to do so, within state-waters to hold a scientific research permit issued by *MarineFisheries*. This permit requirement constrains certain activities, particularly those that involve shark chumming. Recent research suggests that these types of activities may alter shark behavior towards human. This is problematic as it puts both shark and human safety at risk.

MarineFisheries held a public hearing on this matter on July 22 and expects a final rule to be promulgated in the second half of 2015.

MarineFisheries is now on Facebook!

It's been roughly two years since the Division joined Twitter, YouTube, and Flickr. Many of our updates, including advisories and special notices, are posted on Twitter. YouTube houses many Division videos, both in the field and produced. Flickr is a new and growing warehouse of Division photos, available for the public to download and use freely.

A few short months ago, we also added Facebook to our social media. Facebook is used to engage *MarineFisheries'* constituents more readily through posts about what the agency does, who the agency is, and some fun information in between.

Want to join the conversation? We're looking forward to hearing from you! Have a question or comment for us? Use Twitter or Facebook to connect. Post photos and/or videos of your catches (and releases!) as well. Be sure to tag us and use #FishMA in your post!

Twitter: *http://www.twitter.com/MassDMF* (handle: @MassDMF)

Facebook: *http://www.facebook.com/MAMarineFisheries*

YouTube: *http://www.youtube.com/user/massmarinefisheries*

Flickr: *http://www.flickr.com/photos/mamarinefisheries*

A few of our sister agencies are on social media as well! Check them out at:

Massachusetts Division of Fisheries and Wildlife: *https://www.facebook.com/MassWildlife*

Massachusetts Department of Fish and Game: *https://twitter.com/massdfg*

Massachusetts Division of Ecological Restoration: *https://twitter.com/massecorestore*

Massachusetts Environmental Police: *https://www.facebook.com/MAEnvironmentalPolice*

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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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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.

Charles D. Baker, Governor
Matthew A. Beaton, Secretary, EEA
George N. Peterson, Jr., Commissioner, DFG
David E. Pierce, **Ph.D.**, Acting Director, *MarineFisheries*

Comments and suggestions for the newsletter are welcome. Please contact the Editors at (617) 626-1520, or write to:
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