

# Atlantic States Marine Fisheries Commission

*Sustainably Managing Atlantic Coastal Fisheries*



2014  
ANNUAL  
REPORT



**2014**

ANNUAL REPORT  
of the

**ATLANTIC STATES  
MARINE FISHERIES  
COMMISSION**

To the Congress  
of the United States  
and to the Governors and  
Legislators of the Fifteen  
Compacting States

*Presented in compliance with the terms of the  
Compact and the state-enabling acts creating  
such Commission and Public Law 539 - 77th  
Congress assenting thereto (Chapter 283,  
Second Session, 77th Congress; 56 Stat. 267)  
approved May 4, 1942, as amended by  
Public Law 721, 81st Congress,  
approved August 19, 1950*

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# COMMONLY USED ACRONYMS

<b>AAE</b>	Annual Awards of Excellence	<b>NEAMAP</b>	Northeast Area Monitoring and Assessment Program
<b>ACCSP</b>	Atlantic Coastal Cooperative Statistics Program	<b>NEFMC</b>	New England Fishery Management Council
<b>ACFHP</b>	Atlantic Coastal Fish Habitat Partnership	<b>NEFSC</b>	Northeast Fisheries Science Center
<b>ACFCMA</b>	Atlantic Coastal Fisheries Cooperative Management Act	<b>NFHAP</b>	National Fish Habitat Action Plan
<b>ACLs</b>	Annual catch limits	<b>NFWF</b>	National Fish and Wildlife Foundation
<b>ARM</b>	Adaptive Resource Management	<b>NMFS</b>	National Marine Fisheries Service; also known as NOAA Fisheries
<b>ASMFC</b>	Atlantic States Marine Fisheries Commission (also referred to as the Commission)	<b>NOAA</b>	National Oceanic and Atmospheric Administration
<b>BRDs</b>	Bycatch reduction devices	<b>PRT</b>	Plan Review Team
<b>CPUE</b>	Catch-per-unit-effort	<b>RHL</b>	Recreational harvest limit
<b>DPS</b>	Distinct population segments	<b>RSA</b>	Research Set-Aside Program
<b>ESA</b>	Endangered Species Act	<b>SAFMC</b>	South Atlantic Fishery Management Council
<b>F</b>	Fishing mortality	<b>SAW/SARC</b>	Northeast Regional Stock Assessment Workshop and Stock Assessment Review Committee, respectively
<b>FMP</b>	Fishery Management Plan	<b>SCA</b>	Statistical catch-at-age
<b>GBK</b>	Georges Bank	<b>SCS</b>	Small coastal shark complex
<b>GOM</b>	Gulf of Maine	<b>SEAMAP</b>	Southeast Area Monitoring and Assessment Program
<b>HMS</b>	Highly Migratory Species	<b>SEDAR</b>	SouthEast Data, Assessment, and Review Process
<b>ISFMP</b>	Interstate Fisheries Management Program	<b>SEFSC</b>	Southeast Fisheries Science Center
<b>IFA</b>	Interjurisdictional Fisheries Act	<b>SFMPs</b>	Sustainable fishery management plans
<b>ITC</b>	Interstate Tagging Committee	<b>SNE</b>	Southern New England
<b>IUCN</b>	International Union for the Conservation of Nature	<b>SNE/MA</b>	Southern New England/Mid-Atlantic
<b>LCMA</b>	Lobster Conservation Management Area	<b>SPR</b>	Spawning potential ratio
<b>LCS</b>	Large coastal shark complex	<b>SSB</b>	Spawning stock biomass
<b>MAFMC</b>	Mid-Atlantic Fishery Management Council	<b>SSC</b>	Scientific and Statistical Committee
<b>MSP</b>	Maximum spawning potential	<b>TAC</b>	Total allowable catch
<b>MSTC</b>	Multispecies Technical Committee	<b>TAL</b>	Total allowable landings
<b>MSVPA-X</b>	Extended Multispecies Virtual Population Analysis	<b>TLA</b>	Traffic Light Analysis
<b>MSY</b>	Maximum sustainable yield	<b>USFWS</b>	U.S. Fish and Wildlife Service
<b>MT</b>	Metric tons		

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# GUIDING PRINCIPLES

## Mission

To promote cooperative management of fisheries – marine, shell, and diadromous – of the Atlantic coast of the United States by the protection and enhancement of such fisheries, and by the avoidance of physical waste of the fisheries from any cause

## Vision

Sustainably Managing Atlantic Coastal Fisheries

## Goals

1. Rebuild, maintain, fairly allocate, and promote Atlantic coastal fisheries
2. Provide the scientific foundation for, and conduct stock assessments to support, informed management actions
3. Promote compliance with fishery management plans to ensure sustainable use of Atlantic coast fisheries
4. Protect and enhance fish habitat and ecosystem health through partnerships and education
5. Strengthen stakeholder and public support for the Commission
6. Advance Commission and member states' priorities through a proactive legislative policy agenda
7. Ensure the fiscal stability and efficient administration of the Commission

## Commissioner Values

- Effective stewardship of marine resources through strong partnerships
- Decisions based on sound science
- Long-term ecological sustainability
- Transparency and accountability in all actions
- Timely response to new information through adaptive management
- Balancing resource conservation with the economic success of coastal communities
- Efficient use of time and fiscal resources
- Work cooperatively with honesty, integrity, and fairness

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# PREFACE

## *The Commission was formed 72 years ago by the 15 Atlantic coast states to assist in managing and conserving their shared coastal fishery resources.*

With the recognition that fish do not adhere to political boundaries, the states formed an Interstate Compact, which was approved by the U.S. Congress in 1942. The states have found that their mutual interest in sustaining healthy coastal fishery resources is best promoted by working cooperatively, in collaboration with the federal government. With this approach, the states uphold their collective fisheries management responsibilities in a cost-effective, timely, transparent, and responsive fashion.

The Commission's current budget is \$7.3 million. The base funding (\$665,255) comes from the member states'

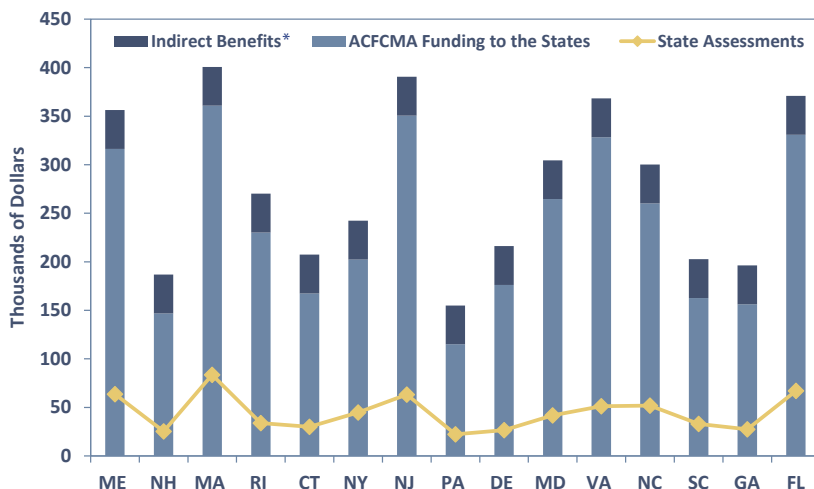
appropriations, which are determined by the value of commercial fishing landings and saltwater recreational trips within each state. The bulk of the Commission's funding comes from a combination of state and federal grants, the largest being a line-item in the NOAA Fisheries budget appropriated to implement the Atlantic Coastal Fisheries Cooperative Management Act (ACFCMA). The Commission also receives funds from NOAA Fisheries to carry out the provisions of the Interjurisdictional Fisheries Act (IFA) (P.L. 99-659). The accompanying graph illustrates the benefits states receive from ACFCMA and IFA.

The U.S. Fish and Wildlife Service (USFWS) also provides grant funding to the Commission through its Federal Aid in Sport Fish Restoration Program (Wallop/Breaux). Also, since 1999 the Commission has overseen the administration of the Atlantic Coastal Cooperative Statistics Program (ACCSP), a state and federal partnership for Atlantic coastal fisheries data collection and management. Funding for this program is provided by ACFCMA and Fisheries Information Network line in the NOAA Fisheries budget.

The Commission serves as a deliberative body of the Atlantic coast states, coordinating the conservation and management of nearshore fishery resources, including marine, shell, and diadromous species. The 15 member states of the Commission are (from north to south): Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, and Florida. Each state is represented on the Commission by three Commissioners: the director of the state's marine fisheries management agency, a state legislator, and an individual appointed by the state's governor to represent fishery interests. These Commissioners participate in deliberations in the Commission's main policy arenas: interstate fisheries management, fisheries science, habitat conservation, and law enforcement. Through these activities, the states collectively ensure the sound conservation and management of Atlantic coastal fishery resources and the resulting benefits that accrue to their fishing and non-fishing public.

### 2015 Return on State Assessments to the Commission

Source: FY15 ASMFC Assessments and FY14 ACFCMA & IFA Allocations



\*Indirect Benefits include travel and per diem for 6 people from each state to participate in Commission meetings. Please note that this figure does not include the collective benefits derived from the work of the FMP Coordinators and Science Staff.

# REPORT TO OUR STAKEHOLDERS



ROBERT E. BEAL  
*Executive Director*

On behalf of the Atlantic States Marine Fisheries Commission, I am pleased to present our 2014 Annual Report. The report fulfills our obligation to inform Congress on the use of public funds provided to the Commission and provides our stakeholders with a summary of activities and progress in carrying out our cooperative stewardship responsibilities. Commission-managed marine resources generate billions of dollars in economic activity annually and provide tens of thousands of jobs within our coastal communities.

In addition to detailing our 2014 activities, this report includes figures displaying the historical trends in stock status or catch for each managed species. These figures reflect our Commissioners' commitment to accountability and transparency in all they do to manage and rebuild fisheries under their care.

Our Commissioners sincerely appreciate the strong cooperation and support the Commission continues to receive from members of Congress as well as the governors and legislators of our member states. Commissioners recognize our history of accomplishments over these many years would not have been possible without their trust and confidence. In order to build on this success, the Commission continues to strengthen its partnerships with the Gulf and Pacific States Marine Fisheries Commissions to address issues of mutual interest. This three Commission alliance has shown to be an effective approach to unify the messages of 24 U.S. coastal states through one strong voice on national fisheries issues.

2014 marked the first year under the Commission's new Five-Year Strategic Plan (2014-2018). As part of this new Strategic Plan, the Commission adopted the new Vision of "Sustainably Managing Atlantic Coastal Fisheries." The Plan also recognizes the Commissioners' commitment to respond to improved fisheries science and build on past successes to end overfishing and sustainably manage coastal species. During the years covered by this Plan, fisheries managers are going to face a number of challenges including: uncertain fiscal resources, competing ocean uses, ecosystem functions, climate change, and protected species issues. The Commissioners reaffirmed their dedication to finding long-term, durable solutions that are best for all, rather than best for a single state or region in light of the changing political and natural environments. The Plan recognizes one of the most difficult challenges the Commission will face in the next five years will be addressing the politically and economically

sensitive issue of resource allocation. Many of the Commission's current allocation programs are based on historic fishery distribution patterns. However, the distribution of fish and fishermen is changing for a variety of reasons, including temperature changes, economics, access to fishing ports, stock rebuilding, and changing public demands. Commissioners will continue to seek opportunities to allocate our finite marine resources to maximize benefits to stakeholders. For the next five years, this Plan will capitalize on the Commissioners' passion and dedication, the power of state cooperation, and our strong partnerships with federal colleagues to address these challenges.

As I "settle-in" as the Executive Director, I continue to be amazed by the dedication, enthusiasm, and professionalism of the staff that is committed to the success of the Commission. We have innovative and motivated Commissioners who are devoted to leaving healthy and abundant marine fisheries for future generations to enjoy. It is always worth remembering the Legislative Commissioners and Governors' Appointees provide their time and expertise to the Commission without compensation. Also, the Commission is fortunate to have the strong support of our federal partners. The fiscal, staff, and technical support provided by NOAA Fisheries and USFWS to our Commission and states is an irreplaceable part of our interstate fisheries management program and science activities.

Over the past 12 months, the three Commission alliance continued to work with our state and federal partners to reinforce the social and economic returns that come from investing in marine fisheries management and science. The overall investment is relatively modest; however, the returns are impressive. Our previous management successes have demonstrated the economic returns and jobs that can result from abundant and healthy coastal fisheries. This lesson reinforces the relevance and importance of the Commission's Vision today and in the years to come. Readers can track our activities and progress by visiting our website at [www.asmf.org](http://www.asmf.org) or following us on Facebook and Twitter.

Thank you all for your commitment to the Commission and the successful management of marine resources along the Atlantic coast.



## REPORT FROM THE CHAIR



DR. LOUIS B.  
DANIEL, III  
Chair

2014 marks the first year under our new Strategic Plan. Through this Plan, Commissioners committed to end overfishing and rebuild depleted fishery resources, seek outcomes that support the economic success of coastal communities, work toward long-term ecological

sustainability, and be transparent and accountable in all their actions. Most importantly, they agreed to work together to achieve the long-term Vision of “Sustainably Managing Atlantic Coastal Fisheries.” Inherent in this Vision is the notion that fishery resources and fishermen are inextricably linked. It recognizes the Commission’s efforts to rebuild and sustainably manage fishery resources are done in order to benefit our fishing constituents and support our coastal communities. This is a laudable goal and one that will take our collective commitment to make a reality for the 26 species groups we manage. As Chair, I pledge to keep our efforts focused on achieving this goal.

To that end, the Commission tackled some important issues in 2014. These include a new management regime for glass, yellow, and silver eel fisheries with the goal of reducing mortality and increasing conservation of American eel stocks across all life stages. For our flagship species and most notable management success, Atlantic striped bass, we confirmed our commitment to be vigilant in our efforts to ensure overfishing does not occur and spawning stock biomass remains well above the threshold established by the management program.

The Commission also made significant progress towards completing three peer-reviewed benchmark stock assessments for black drum, tautog, and Atlantic menhaden; the findings of which will be presented to the respective species management boards for their consideration in early 2015. All of the assessments presented unique challenges – from data poor black drum, to the exploration of regional assessments for tautog, to the expanded use of available datasets and revised maturity schedule for Atlantic menhaden. All of the assessments will play a critical role in future management decisions and are the result of a tremendous amount of work by Commission staff and state and federal scientists.

Commission staff, working closely with leadership from the Gulf and Pacific States Marine Fisheries Commissions, has

been successful in strengthening our relationships with key congressional members and their staff. These relationships have helped stabilize our priority funding items in the face of declining federal budgets for fisheries management activities. Further, the Commission’s expertise is now being sought by members and their staff on issues ranging from fisheries data collection needs to the management of horseshoe crab and Atlantic striped bass. These interactions help to increase our value as a trusted resource and a respected management entity. Building on our past Capitol Hill accomplishments will remain a focus of the Commission’s Legislative Program.

We have also made progress in improving state/federal partnerships. The 2014 State Directors Meeting was a vital step forward, showing an increased commitment by NOAA Fisheries to more fully engage the states on a number of issues such as budget planning, stock assessment priorities, coordination in the management of highly migratory species, and Endangered Species Act actions. State/federal engagement was further enhanced at the 2014 NOAA Fisheries Leadership Meeting, where the executive directors from the three interstate fisheries commissions focused on their collective priorities for the coastal states.

While all of these developments are promising, the challenges of limited state and federal budgets and increasing fisheries science and management needs are daunting. The Commission must remain committed to strengthening state/federal engagement through improved communication and coordination. Only by doing so can we provide for more efficient and effective management across all agencies. No one state or federal agency has the resources or authority to do it alone.

In closing, I want to thank my fellow Commissioners for the trust they have placed in Doug Grout and me to serve as your Vice-Chair and Chair. We are grateful for their support and sustained commitment to the Commission and its programs. I am especially appreciative of the dedication of our Legislative and Governor-appointed Commissioners who serve without compensation for their time and efforts. They provide a critical link to state legislatures and their fishing constituents. The Commission is stronger because of their involvement. I look forward to continue to work with you – Commissioners, federal partners and stakeholders – to sustainably manage Atlantic coastal fisheries.

# STOCK STATUS OVERVIEW

In 2014, the Commission maintained sustainable fisheries for a number of rebuilt species such as Gulf of Maine American lobster, Atlantic herring, bluefish, black sea bass, scup, and spiny dogfish. The Commission initiated a new Fishery Management Plan for Jonah Crab and updated management programs for seven of its species (via amendments or addenda) in response to stock assessment information and changes in the fisheries. The Commission also took significant actions to improve stock sustainability of Atlantic striped bass, spot, and croaker fisheries; reduce fishing mortality across all American eel life stages; and improve recreational fishing opportunities for summer flounder. However, there is still substantial work ahead to fully rebuild valuable Atlantic coastal fishery resources such as American shad, river herring, northern shrimp, winter flounder, and weakfish.













The Commission maintains its role as the deliberative forum for the Atlantic coastal states to come together to discuss the biological, socioeconomic, and environmental issues central to developing management programs for each species. The task of managing finite marine resources continues to grow more complex with the consideration of climate change, predator/prey interactions, habitat, and competing ocean uses, in addition to the more traditional considerations of stock maintenance, rebuilding, and the allocation of fisheries resources.

The following section provides a summary of the status of species managed by the Commission and highlights management activities that occurred throughout 2014. For this summary, **overfishing** is defined as removing fish from the population at a rate that exceeds the threshold established in the fishery management plan (FMP). Over the long-term, this will lead to declines in the population. An **overfished** determination occurs when stock biomass falls below the threshold established by the FMP, significantly reducing the stock's reproductive capacity to replace fish removed through harvest. The term **depleted** reflects low levels of abundance though it is unclear whether fishing mortality is the primary cause for reduced stock size. **Rebuilding** occurs when stock biomass is approaching the target level established by the FMP in order to ensure population sustainability. A **rebuilt** stock is one whose biomass is equal to or above the biomass level established by the FMP in order to ensure population sustainability. **Stable/unchanged** is when a stock's biomass has been consistent in recent years. **Unknown** stock status occurs when there is no accepted stock assessment to estimate the stock condition.














Some other terms used throughout this report are benchmark stock assessment, peer-reviewed stock assessment, and stock assessment update. A **benchmark stock assessment** is a full analysis and review of the stock condition, focusing on the consideration of new data sources and newer or improved assessment models. This assessment is generally conducted every three to five years and undergoes a formal peer review by a panel of independent fisheries scientists who evaluate whether the data and methods used to produce the assessment are scientifically sound and appropriate for management use (**peer-reviewed stock assessment**). A **stock assessment update** incorporates data from the most recent years into the peer-reviewed assessment model to determine current stock status (abundance and overfishing level).

*The Atlantic States  
Marine Fisheries  
Commission  
continues to  
monitor and  
revise its  
interjurisdictional  
management  
programs for 26  
species groups,  
making progress  
toward rebuilding  
and sustainably  
managing Atlantic  
coastal fisheries.*

# QUICK GUIDE TO STOCK STATUS

STATUS/TRENDS	SPECIES		OVERFISHED	OVERFISHING	REBUILDING STATUS & SCHEDULE
↓		American Eel	Depleted	Unknown	Harvest restrictions adopted for glass, yellow, and silver eel fisheries in response to 2012 benchmark assessment
✓		Gulf of Maine (GOM)	N	N	GOM and GBK stocks rebuilt  Board approved 10% reduction in exploitation on SNE stock as 1st phase in rebuilding program as well as trap reductions in Areas 2 & 3 pending NOAA Fisheries rulemaking; benchmark assessment scheduled for 2015
✓		Georges Bank (GBK)	N	N	
↓		Southern New England (SNE)	Y	N	
↓		American Shad	Depleted	Unknown	Amendment 3 establishes 2013 moratorium unless sustainability can be documented
?		Atlantic Croaker	Unknown	N	Overfished status unknown; however, biomass has been increasing & age structure has been expanding since late 1980s; benchmark assessment scheduled for 2016
✓		Atlantic Herring	N	N	Rebuilt
?		Atlantic Menhaden	Unknown	Y	Amendment 2 implements ~25% reduction from 2011 levels, beginning in 2013; benchmark assessment to be presented to the Board in 2015
✓		Atlantic Striped Bass	N	N	Rebuilt since 1995 although female SSB has continued to decline since 2004; Board adopted harvest reductions for implementation in 2015 in response to 2013 benchmark assessment
?		Atlantic Sturgeon	Y	N	40+ year moratorium; to be rebuilt by ~2038; listed in 2012 under the ESA; benchmark assessment scheduled for 2017
?		Black Drum	?	?	FMP approved in 2013; benchmark assessment to be presented to the Board in early 2015
✓		Black Sea Bass	N	N	Rebuilt; benchmark assessment scheduled for 2016
✓		Bluefish	N	N	Biomass above threshold but below target; benchmark assessment scheduled for 2015
↔		Coastal Sharks	Varies by species and species complex		

✓ = Rebuilt    ↑ = Rebuilding    ↔ = Stable/Unchanged    ↓ = Depleted    ? = Unknown

STATUS/TRENDS	SPECIES		OVERFISHED	OVERFISHING	REBUILDING STATUS & SCHEDULE
?		Horseshoe Crab	Unknown	Unknown	2013 assessment update found New England & NY stocks to have declined, while DE Bay & Southeast stocks have increased over time series; since 2013 ARM Framework has been used to set harvest levels for horseshoe crabs of DE Bay origin
↓		Northern Shrimp	Unknown	Unknown	Abundance & biomass indices lowest on record; recruitment indices also very low; fishery moratorium in place in 2014 and 2015 to protect remaining spawning population
↔		Northern Region	Unknown	N	SPR above target and threshold SPRs; benchmark assessment scheduled for 2015
		Southern Region	Unknown	N	SPR above threshold SPR; benchmark assessment scheduled for 2015
↓		River Herring	Depleted	Unknown	Amendment 2 established 2012 moratorium unless sustainability can be documented
✓		Scup	N	N	Rebuilt; benchmark assessment scheduled for 2015
✓		Spanish Mackerel	N	N	Rebuilt
✓		Spiny Dogfish	N	N	Rebuilt
?		Spot	Unknown	Unknown	Traffic light analysis adopted to assess stock trends & initiate management response; benchmark scheduled for 2016
?		Spotted Seatrout	Unknown	Unknown	Omnibus Amendment includes measures to protect spawning stock & establishes 12" minimum size limit
✓		Summer Flounder	N	N	Rebuilt although 2013 assessment shows biomass has dropped below the target but remains above the threshold
↓		Tautog	Y	Y	Current biomass at 40% of SSB target; F target reduced to 0.15 to initiate stock rebuilding; benchmark assessment to be presented to the Board in early 2015
↓		Weakfish	Depleted	N	6-year rebuilding period if spawning stock biomass < threshold level; Board approved further harvest restrictions in 2009; benchmark scheduled for 2015
?		GOM	Unknown	N	Overfished status unknown since assessment model was not accepted by peer review
↓		SNE/Mid-Atlantic	Y	N	Current biomass at 16% of SSB target

✓ = Rebuilt    ↑ = Rebuilding    ↔ = Stable/Unchanged    ↓ = Depleted    ? = Unknown



# SPECIES HIGHLIGHTS

## AMERICAN EEL

In response to the 2012 stock assessment, which indicated that the American eel population in U.S. waters is depleted, the Commission approved Addendum III (August 2013) and Addendum IV (October 2014) to the American Eel FMP with the goal of reducing mortality and increasing conservation of American eel stocks across all life stages. Addendum III establishes management measures for both the commercial (glass, yellow, and silver) and recreational eel fisheries, and implements fishery-independent and fishery-dependent monitoring requirements. Addendum IV establishes a 907,671 pound coastwide quota for yellow eel fisheries, sets Maine's glass eel quota at 9,688 pounds, and allows for the continuation of New York's silver eel weir fishery in the Delaware River.

For yellow eel fisheries, the coastwide quota will be implemented for the 2015 fishing year but will not initially include state-specific allocations. Instead, the Addendum establishes two management triggers: (1) exceeding the coastwide quota by more than 10% in a given year, or (2) exceeding the coastwide quota for two consecutive years regardless of the percent overage. If either one of the triggers are met, then states would implement state-specific allocation based on average landings from 2011-2013.

Maine will continue to maintain daily trip level reporting and require a pound-for-pound payback in the event of quota overages in its glass eel fishery. Additionally, the state will implement a fishery-independent life cycle survey covering glass, yellow, and silver eels within at least one river system. The Addendum specifies these requirements would also be required for any jurisdiction with a commercial

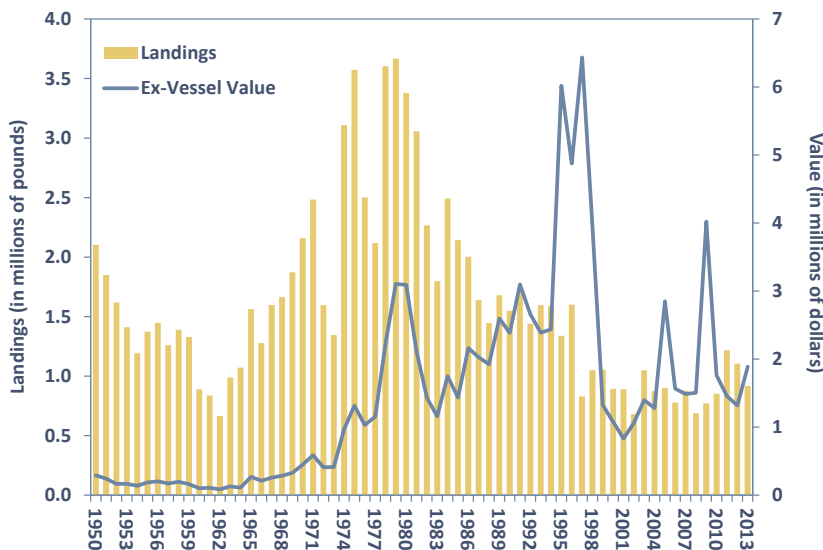
glass eel fishery harvesting more than 750 pounds.

Addendum IV provides states/jurisdictions the ability to request limited participation in the glass eel fishery based on conservation



### American Eel Total Commercial Landings and Value

Source: ASMFC 2012 American Eel Benchmark Stock Assessment Report (2012), ASMFC State Compliance Reports, and NMFS Fisheries Statistics Division, 2014



Management Actions: FMP ('99); Addendum I ('06); Addendum II ('08); Addendum III ('13); Addendum IV ('14)

programs enacted after January 1, 2011, and given there is an overall benefit to American eel populations. Examples of conservation programs include, but are not limited to, habitat restoration projects, fish passage improvements, or fish passage construction. The Addendum also provides opportunities for a limited glass eel harvest for domestic aquaculture purposes and allows the continuation of New York's Delaware River silver eel weir fishery under a transferable license cap, limited to nine permits annually.

From the 1970s to the mid-1980s, American eel supported significant commercial fisheries, with landings ranging from 2.5 - 3.6 million pounds. Landings dropped to 1.6 million pounds in 1987 and have remained at low levels, ranging from 1.5 million - 700,000 pounds since then. State reported landings of yellow and silver eels in 2013 totaled just under one million pounds and were valued at approximately \$1.1 million. Yellow and silver eel landings in 2013 were 13% below 2012 landings. Since 2010, increased demand for glass eels by foreign markets has led to a dramatic increase in the value of glass eel, with record high prices for catch being recorded. In 2012, glass eel harvest from Maine and South Carolina totaled 22,215 pounds and was valued at nearly \$40 million, 20 times greater than the average value for the past 11 years. According to preliminary landings data, Maine and South Carolina harvested an estimated 20,320 pounds of glass eels in 2013.

In 2011, the U.S. Fish and Wildlife Service (USFWS) initiated a status review of American eel under the Endangered Species Act (ESA) to assess the health of the population and the magnitude of threats facing the species. The proposed rule of its findings is scheduled to be released by September 30, 2015. Additionally in 2014, the International Union for the Conservation of Nature (IUCN) listed American eel as “Endangered” on the Red List. The IUCN assesses flora and fauna globally to determine their conservation status. Status can range from not evaluated to extinct. American eel is listed as endangered under its classification scheme, which falls under the red list category. While the IUCN list has no legal implications, it is an important metric that accounts for a variety of factors including habitat, threats, potential stresses, and research status.

## AMERICAN LOBSTER & JONAH CRAB

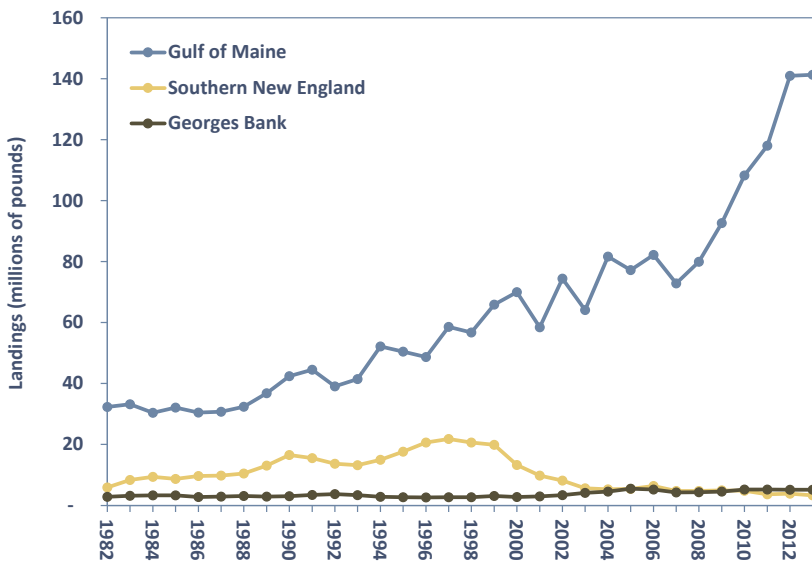
The American lobster fishery remains one of the most valuable fisheries along the Atlantic coast with an estimated ex-vessel value of \$460 million in 2013. The Gulf of Maine (GOM) fishery accounts for the lion’s share of the landings, harvesting 94% of total landings in 2013 (150 million pounds). In 2014, the American Lobster Management

Board continued to monitor the progress of the Southern New England (SNE) Lobster Conservation Management Areas (LCMAs) in achieving the required 10% reduction in exploitation in order to address rebuilding. While the 2009 benchmark assessment found record high stock abundance and recruitment (number of lobsters entering the fishery) throughout most of GOM and Georges Bank (GBK), it also found continued low abundance and persistently low recruitment in SNE. Environmental changes in concert with fishing mortality have been identified as principal causes of this low recruitment and poor stock condition. The next benchmark stock assessment for American lobster is scheduled to be completed for Board consideration in 2015.

Using landings as a proxy for exploitation, Technical Committee review of the implemented measures within SNE found LCMAs 2, 3 and 6 met the required reductions while LCMAs 4 and 5 did not. LCMA 4 submitted a proposal for a closed season from April 30 through May 31.

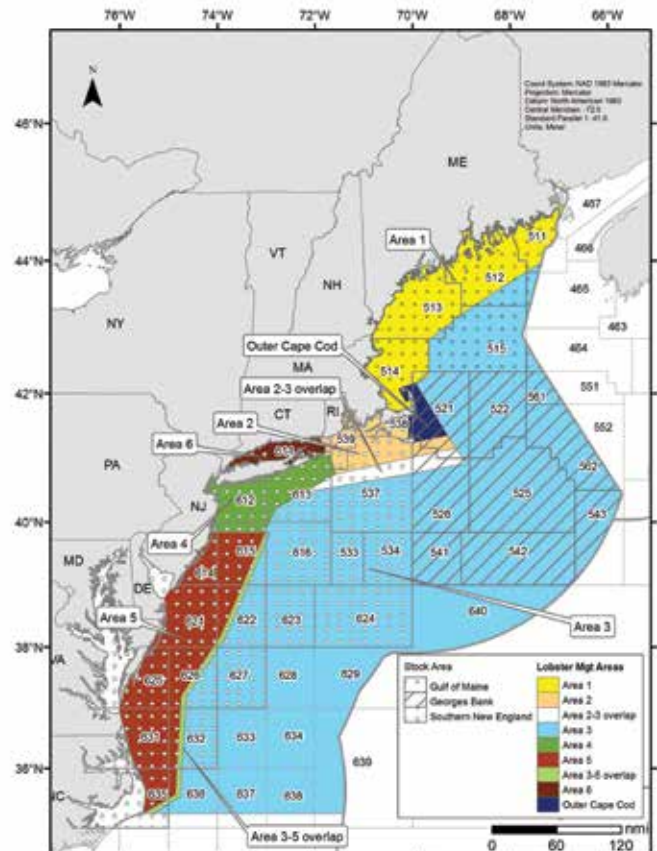
**Preliminary American Lobster Landings by Stock Unit**

Source: ACCSP Data Warehouse, 2014



Timeline of Management Actions: Amendment 3 ('97); Addendum I ('99); Addendum II ('01); Addendum III ('02); Addenda IV & V ('04); Addenda VI & VII ('05); Addenda X & XI ('07); Addendum XIII ('08); Addendum XIV ('09); Addendum XV ('09); Addendum XVI ('10); Addendum XVII ('11); Addendum XVIII ('12); Addenda XIX – XXIII ('13); Addendum XXIII ('14)

**Map of American Lobster Stock Assessment and Management Areas**

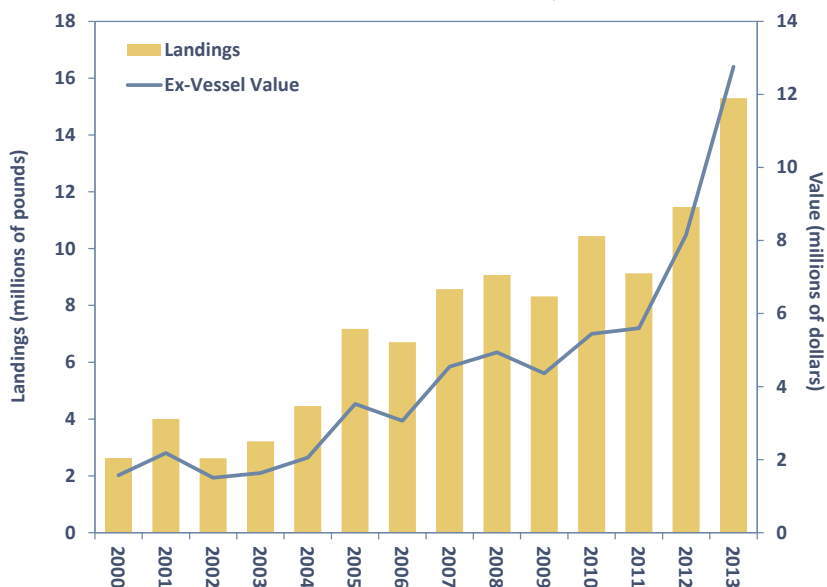




# SPECIES HIGHLIGHTS

## Jonah Crab Landings and Value

Source: NMFS Fisheries Statistics Division, 2014



In 2014, the American Lobster Board also initiated development of a Jonah Crab FMP to address the increased market demand for, and resultant fishing pressure on, Jonah crab. Given the absence of state and federal management programs and a coastwide stock assessment for Jonah crab, there is concern current harvest may compromise the sustainability of the resource. Since Jonah crab is commonly caught as bycatch in the American lobster fishery, the new plan will fall under the purview of the American Lobster Board. The Board will work closely with the New England Fishery Management Council (NEFMC) as it develops the Draft Jonah Crab FMP. The Draft FMP, which is expected to be completed in 2015, will include management objectives, proposed commercial and recreational management measures, monitoring requirements, and recommendations for federal waters fisheries.

This proposal was approved by the Management Board for implementation in both LCMAs 4 and 5.

In April 2014, NOAA Fisheries published a final rule on implementation of a limited entry program in LCMA 2 and Outer Cape Cod (OCC) as well as a trap transfer program to allow federal lobster permit holders with qualified allocations for LCMAs 2, 3, and OCC to transfer traps with other federal lobster permit holders. While the majority of the measures implemented are based on the Commission's recommendations and consistent with the Commission's plan, there are a few measures which are either inconsistent with or not addressed by the Commission's plan. Draft Addendum XXIV to Amendment 3 to the American Lobster FMP, which will be reviewed by the Board in early 2015, is the final step in ensuring consistency between federal and state trap transferability programs.

## ATLANTIC CROAKER

In 2014, the South Atlantic State/Federal Fisheries Management Board approved Addendum II to Amendment 1 to the Atlantic Croaker FMP. The Addendum establishes a new management framework called the Traffic Light Analysis (TLA) to evaluate fisheries trends and develop state-specific management actions (e.g., bag limits, size restrictions, time & area closures, and gear restrictions) when harvest and abundance thresholds are exceeded for three consecutive years. The name comes from assigning a color (red, yellow, or green) to categorize relative levels of indicators on the condition of the fish population (abundance metric) or fishery (harvest metric). For example, as harvest or abundance increase relative to their long-term mean, the proportion of green in a given year will increase and as harvest or abundance decrease, the amount of red in that year becomes



more predominant. The TLA improves the management approach as it illustrates long-term trends in the stock and includes specific management recommendations in response to declines in the stock or fishery.

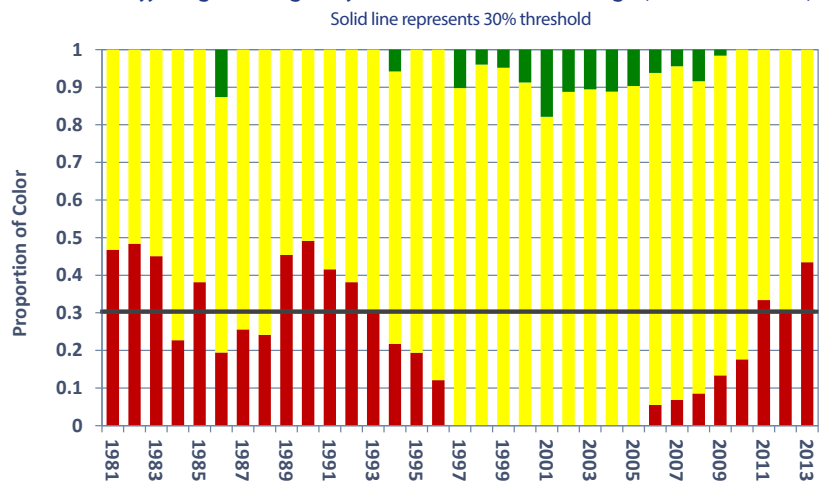
A popular inshore bottom dwelling fish, Atlantic croaker are sought by recreational anglers and commercial fishermen from New Jersey to the east coast of Florida. An estimated 13.9 million pounds of croaker were landed in 2013, with approximately 70% landed by the commercial sector and 30% harvested by recreational anglers. The majority of these landings occurred in the Mid-Atlantic region.

Atlantic coast commercial landings have exhibited a cyclical pattern, with low landings in the 1960s to early 1970s and the 1980s to early 1990s, and high landings in the mid- to late 1970s and the mid-1990s to early 2000s. Commercial landings increased from a low of 3.7 million pounds in 1991 to a peak of 30.1 million pounds in 2001; however, landings have declined consistently since 2003 to 9.9 million pounds in 2013. The majority of commercial landings come from Virginia (56%) and Maryland (15%). New Jersey had the next highest level, harvesting 11% of total coastwide landings.

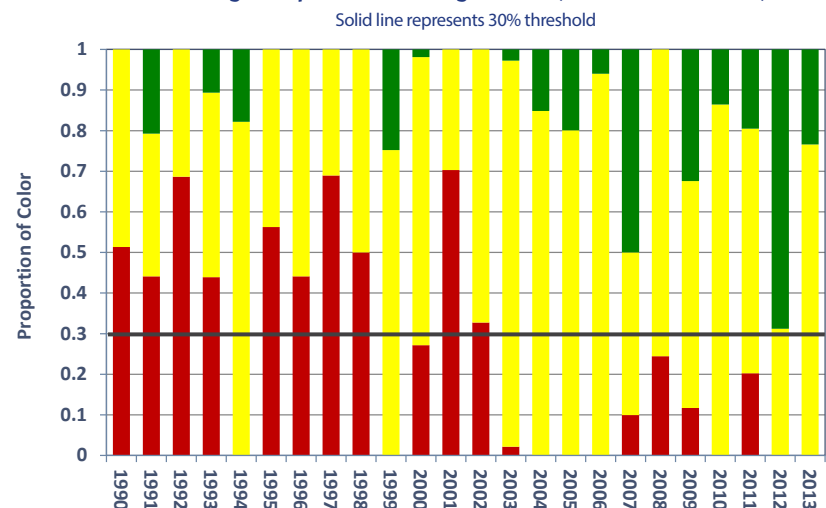
From 1981-2013, recreational landings have varied between 1.3 and 11.1 million pounds. Landings generally increased until 2001 and held stable from 2001-2006 before exhibiting a declining trend from 2007-2013. In 2013, recreational anglers landed an estimated 3.9 million pounds and released 14 million fish. Releases increased in 2013 from the 10 year average.

The 2010 benchmark assessment determined Atlantic croaker was not experiencing overfishing. Although model estimates of spawning stock biomass (SSB) were too uncertain to be used to precisely determine overfished stock status, biomass has been increasing and the age structure of the population has been expanding since the late 1980s. The assessment considered the population to be a single stock on the Atlantic coast. The previous stock assessment divided the stock into Mid-Atlantic and South Atlantic regions and assessed only the Mid-Atlantic region.

**Traffic Light Analysis of Atlantic Croaker Landings (Harvest Metric)**



**Traffic Light Analysis of Atlantic Croaker Fishery-independent Survey Indices (Abundance Metric)**



Management response is triggered when proportion of red exceeds the 30% threshold level for three consecutive years in both fishery characteristics (harvest and abundance metrics).

Timeline of Management Actions: FMP ('87); Amendment 1 ('05); Addendum I ('11); Addendum II ('14)

A major source of uncertainty identified by the assessment is the magnitude of Atlantic croaker bycatch in South Atlantic shrimp trawls. Most croaker caught in this fishery are less than one year old, too small to be marketed, and thus are discarded. Croaker is one of the largest components of the shrimp trawl catch; some studies found that shrimp trawls caught more croaker than shrimp. There are no continuous monitoring programs to account for these discards. In some years, the best available estimates of discards are as large as or larger than reported landings.





# SPECIES HIGHLIGHTS

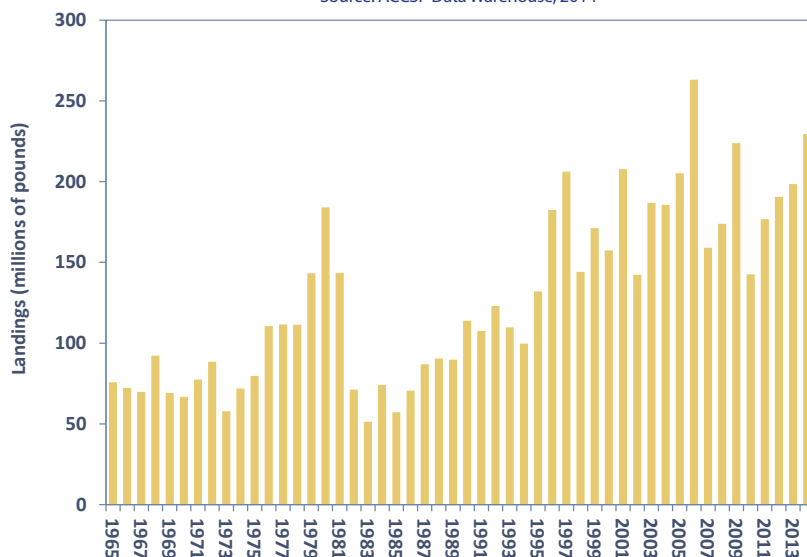
## ATLANTIC HERRING

Throughout the Northeast and Mid-Atlantic, Atlantic herring play an important role both ecologically and from a human use perspective. The resource is a primary prey species for finfish, seabirds, and marine mammals, and is used as an affordable bait for valuable commercial species such as American lobster, Atlantic striped bass, and bluefin tuna. Commercially, they are also a valued commodity overseas where they are frozen and salted as a food fish. Total domestic harvest (207 million pounds) was valued at \$31.8 million in 2013, an increase of more than 10% from 2012. The majority of landings are taken from GOM, but fisheries also occur in GBK and areas south and west of Cape Cod.

The Atlantic herring fishery is managed cooperatively by the Commission through its Atlantic Herring Section and NEFMC. Commission management extends from the shore out to 3 miles, while NEFMC oversees management in federal waters (3-200 miles from shore). In 2014, the Atlantic Herring Section initiated Draft Amendment 3 to the Atlantic Herring FMP. The draft amendment proposes changes to the spawning regulations and the fixed gear set-aside rollover provision, and considers a requirement for vessel holds to be empty of fish prior

### Atlantic Herring Commercial Landings

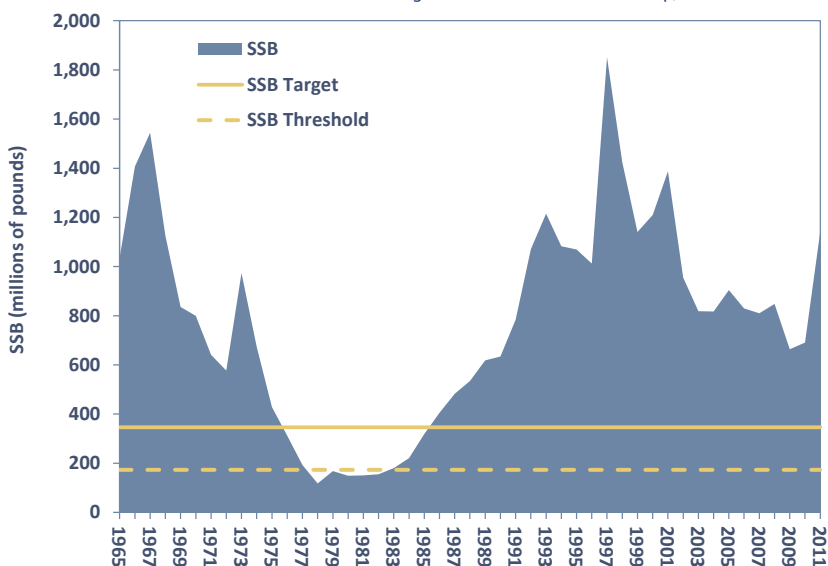
Source: ACCSP Data Warehouse, 2014



to entering the fishery. The Draft Amendment proposes adjusting the method for closing the fishery due to spawning events. The proposed method, which incorporates the latest information on herring reproduction, would forecast the expected onset of spawning and give advance notice when a spawning closure is likely to occur. This would allow industry to plan their activities accordingly.

### Atlantic Herring Spawning Stock Biomass (SSB)

Source: 54th Northeast Regional Stock Assessment Workshop, 2012



Timeline of Management Actions: FMP ('93); Amendment 1 ('99); Amendment 2 ('06); Addendum I ('09); Addendum II ('10); Addendum V; ('12); Addendum VI ('13)

The 2012 benchmark stock assessment indicates Atlantic herring are rebuilt relative to the target SSB, and are not overfished or experiencing overfishing. SSB was estimated to be over 1.14 billion pounds, more than three times greater than the target level of 346 million pounds. Although the stock complex is assessed as a whole, catch limits are allocated among four management areas based on estimates of stock composition and relative biomass.

The Section set the 2013-2015 annual catch limit (ACL) at 237.7 million pounds per year, an 18% increase from 2010-2012 limits. The ACL was further subdivided by Atlantic herring management areas as follows: Area 1A (inshore GOM) = 68.8 million pounds, Area 1B = 10.14 million pounds, Area 2 = 66.15 million pounds, and Area 3 = 92.6 million pounds. For the 2014 fishing season, Area 1A's sub-ACL is distributed seasonally with 72.8% available from June 1-September 30 (Trimester 2) and

27.2% available from October 1-December 31 (Trimester 3). Directed fisheries within a management area will close when 92% of that period's quota has been harvested, and the stock-wide fishery will close when 95% of the ACL is projected to be reached.

Maine, New Hampshire, and Massachusetts continued to modify days-out of the fishery during the season, setting five landing days for Trimester 2 and four landing days in Trimester 3 in order to prolong the fishery in Area 1A, making herring available during peak demand. In late October 2014, the Area 1A fishery was closed having reached 92% of the management area's ACL.

In 2014, NEFMC approved, and submitted for approval by NOAA Fisheries, Framework Adjustment 4 to address measures such as slippage and dealer weighing provisions. Framework 4 includes an empty fish hold provision to complement the provision proposed by the Commission's Draft Amendment 3.

To address concerns raised by the Commission and stakeholders regarding shad and river herring bycatch in the Atlantic herring and mackerel fisheries, both the NEFMC and the Mid-Atlantic Fishery Management Council (MAFMC) implemented catch caps the fisheries for 2014. The MAFMC established a 236 mt catch cap in the mackerel fishery and the NEFMC put in place area-specific catch caps that totaled 312 mt in the Atlantic herring fishery.

## ATLANTIC MENHADEN

Atlantic menhaden are a small, oily, schooling fish of historical, economic, and ecological importance. Historically, menhaden supported large-scale commercial reduction fisheries bringing considerable growth to Atlantic coastal communities. Today, the reduction fishery is a fraction of what it once was with one processing plant and several vessels operating on the Atlantic coast. The reduction fishery is so named because menhaden are processed (or reduced) into other products, such as agricultural fertilizer, fishmeal and oil, as well as livestock and aquaculture feeds. Additionally, menhaden have become increasingly valuable for use as bait in many



important fisheries, including American lobster and blue crab commercial fisheries and striped bass recreational fisheries. Ecologically, the species plays an important role in marine ecosystems as a forage fish (prey) for many fish, sea birds, and marine mammals.

In 2014, the Atlantic Menhaden Management Board reviewed the results of the 2013 fishing year and implementation of Amendment 2 to the Atlantic Menhaden FMP. Total 2013 harvest excluding bycatch was 166,077 mt, 2.8% below the coastwide total allowable catch (TAC) of 170,800 mt established through Amendment 2. In 2013, the reduction fishery harvested 131,034 mt while the bait fishery harvested approximately 35,043 mt. A total of 1,942 mt were harvested under the 6,000 pound bycatch allowance with approximately 91% of bycatch coming from pound nets. Bycatch accounted for 1.2% of the total coastwide harvest, but does not count towards the TAC. Amendment 2 does not provide for the rollover of unused quota from one year to the next because the stock is currently experiencing overfishing.

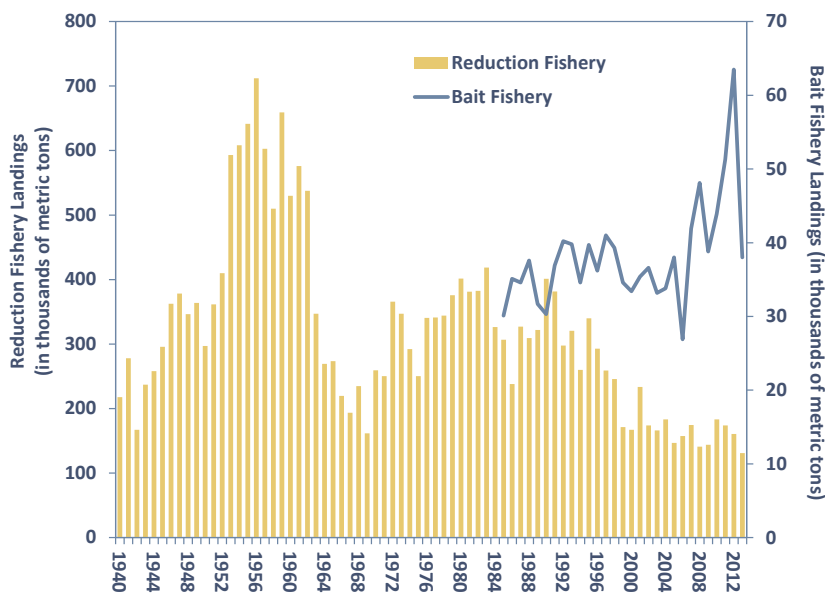
2014 Atlantic Menhaden Quotas		
State	2014 Quota (mt)	2014 Quota (lbs)
ME	66.58	146,787
NH	0.05	112
MA	1417.94	3,126,024
RI	30.29	66,779
CT	29.50	65,034
NY	93.76	206,695
NJ	18924.42	41,721,164
DE	22.33	49,230
MD	2320.98	5,116,874
PRFC	1049.69	2,314,174
VA	144272.84	318,066,790
NC	833.23	1,836,948
SC	-	-
GA	-	-
FL	30.39	66,995
<b>TOTAL</b>	<b>169092</b>	<b>372,783,605</b>



# SPECIES HIGHLIGHTS

## Atlantic Menhaden Landings by Reduction and Bait Fisheries

Source: ASMFC State Reports and ACCSP Data Warehouse, 2014



Timeline of Management Actions: FMP ('81); FMP Revision ('91); Amendment 1 ('01); Addendum I ('04); Addendum II ('05); Addendum III ('06); Addendum IV ('09); Addendum V ('11); Amendment 2 ('12); Addendum I ('13)

below the target level since 2006, the Atlantic Striped Bass Management Board approved Addendum IV to Amendment 6 to the Atlantic Striped Bass FMP in 2014. While the stock is not overfished and overfishing is not occurring, the Addendum establishes new fishing mortality reference points and requires harvest reductions coastwide in order to reduce fishing mortality to a level at or below the new target.

Coastal states will implement a 25% harvest reduction from 2013 levels for both their commercial and recreational fisheries. Commercial quotas established in Amendment 6 will be reduced by 25% while maintaining current size limits to minimize discard mortality. The Addendum prohibits the transfer of unused commercial quotas to serve as a conservation benefit to the resource. The coastal recreational fishery harvest will be reduced by implementing a one fish bag limit while keeping a 28" size limit. Under Amendment 6, states may use conservation equivalency to develop state-specific measures that are different than one fish at 28" for their coastal fisheries but still achieve a 25% reduction in harvest.

Amendment 2 implementation also improved catch reporting as well as expanded biological monitoring for the bait fishery. The accompanying table (on page 17) details state quotas for the 2014 fishing year after setting aside 1% for episodic events. Any overages in the 2013 quotas because of late reports will come out of the 2014 quotas.

Throughout 2014, the Commission also finalized for peer review the 2015 benchmark stock assessment, the results of which will be presented to the Atlantic Menhaden Board in early 2015.

## ATLANTIC STRIPED BASS

In response to the results of the 2013 benchmark assessment, which indicated fishing mortality was above the new fishing mortality target, and female SSB has been steadily declining

The Chesapeake Bay states/jurisdictions will reduce their 2012 Bay commercial harvest level by 20.5% and will submit conservation equivalency proposals to achieve a 20.5% reduction from the Bay recreational fishery. The Technical Committee will continue to work on Chesapeake

Bay-specific reference points for future management.

All states/jurisdictions will promulgate regulations prior to the start of their 2015 fisheries. All submitted conservation equivalency proposals will be reviewed by the Technical Committee to ensure the proposals meet the required harvest reductions. The Board



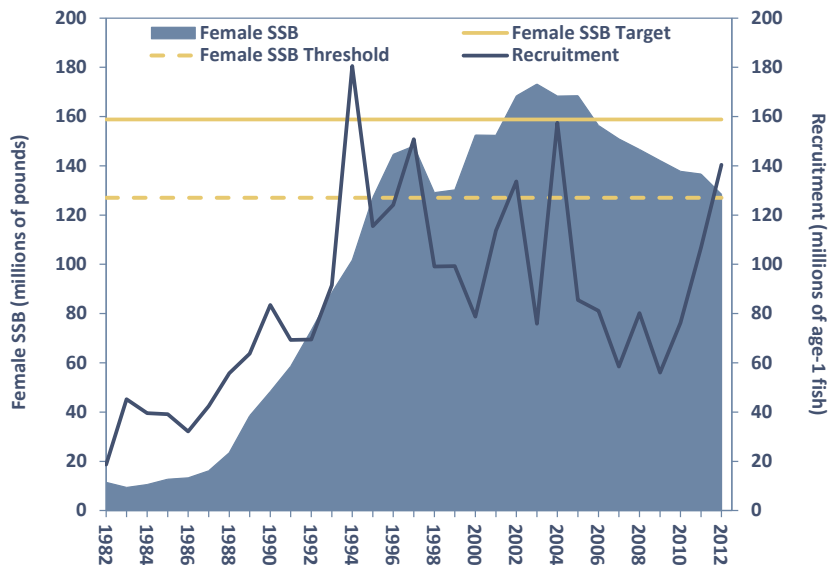
will review and consider approval of the Technical Committee-approved proposals in early 2015.

From 2003-2013, total coastal recreational harvest has ranged from a high of 31 million pounds in 2006 to a low of 19.2 million pounds in 2012, with an average of 26.4 million pounds. Landings from New York (25%), Massachusetts (19%), New Jersey (19%), and Maryland (11%) have comprised approximately 74% of annual recreational landings since 2003. The number of fish released alive increased annually after the passage of Amendment 6 (2003) to a high of 23.3 million fish in 2006. Since then, the number of fish released alive has decreased by 77% to a low of 5.2 million fish in 2012. Reasons for the decline may be attributed to a reduction in stock size from the peak in 2003, a decreased availability of fish staying in nearshore areas, and changes in angler behavior in response to socioeconomic factors.

The total coastal commercial harvest from 2003-2013 ranged between 2.53-3.15 million pounds and averaged 2.87 million pounds. Massachusetts and New York land on average 65% of the total coastal quota. Commercial harvest in the Chesapeake Bay from 2003-2013 ranged between 3.29-4.4 million pounds and averaged 4.06 million pounds. Within the Albemarle Sound/Roanoke

### Atlantic Striped Bass Female Spawning Stock Biomass (SSB) and Recruitment (Age-1)

Source: 57th Northeast Regional Stock Assessment Workshop, 2013

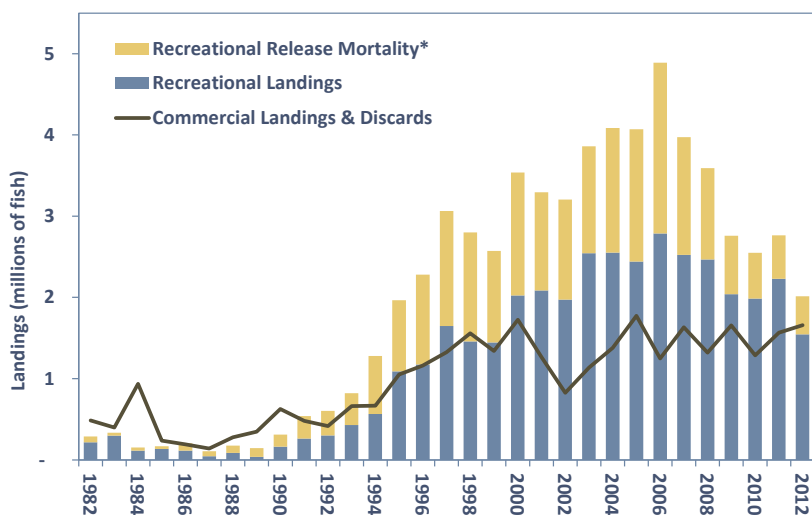


Timeline of Management Actions: Amendments 1 & 2 ('84); Amendment 3 ('85); Amendment 4 ('90); Amendment 5 ('95); Amendment 6 ('03); Addendum I ('07); Addendum II ('10); Addendum III ('12); Addendum IV ('14)

River management area, commercial harvest (Albemarle Sound only) from 2003-2013 ranged from 68,214-273,636 pounds and averaged 165,504 pounds.

### Atlantic Striped Bass Commercial Landings and Discards & Recreational Landings and Release Mortality

Source: 57th Northeast Regional Stock Assessment Workshop, 2013



\*Recreational release mortality assumes that 9% of fish released alive die.

## ATLANTIC STURGEON

For the past 25 years, the 15 Atlantic coast states, through the Commission, have sought to effectively manage Atlantic sturgeon throughout its range. With the approval of Amendment I to the Atlantic Sturgeon FMP in 1998, which implemented a 40-year coastwide moratorium on harvest, states committed to protecting this ancient species. Additionally, states have invested considerable resources to increase understanding of sturgeon biology and life history.

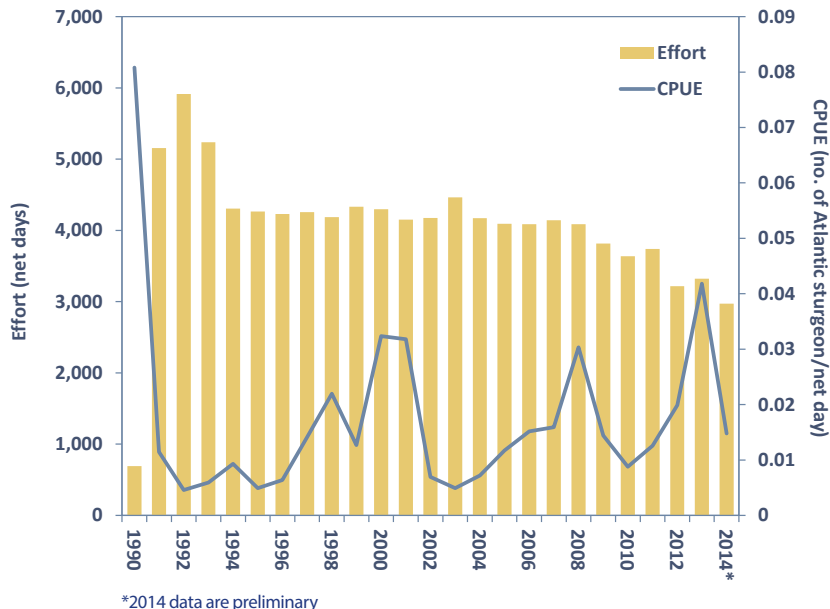
Very little is known about the Atlantic sturgeon's stock status. Reliable data are difficult to obtain because many river systems have few fish, and rivers with more fish are often not easily sampled. Several states have been conducting long-term monitoring of Atlantic sturgeon. Data from two of these efforts are provided in the accompanying graphs, which depict catch per unit effort (CPUE) for fishery-independent



# SPECIES HIGHLIGHTS

## Fishery-independent Catch Rates of Juvenile Atlantic Sturgeon in Albermarle Sound

Source: NC Division of Marine Fisheries, 2014

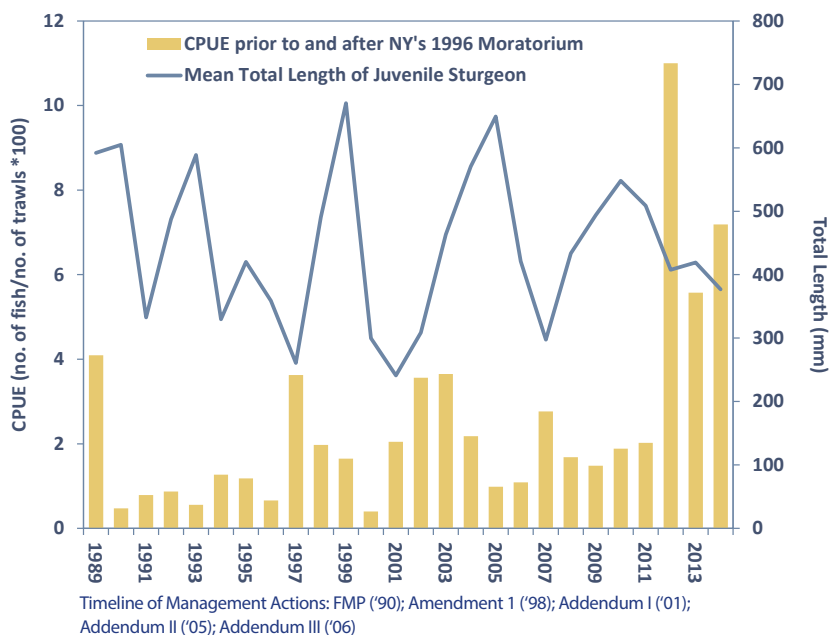


surveys conducted by North Carolina and New York. Both surveys have experienced significant fluctuations in recent years. However, in 2013, North Carolina's CPUE was the second highest value in the past twenty years. Further, the spike of juveniles seen in New York's survey are believed to be a direct result of the New York's moratorium in 1997 and the concomitant increase of spawning fish in the Hudson River.

In 2014, the Sturgeon Board evaluated progress on the development of a coastwide benchmark stock assessment for Atlantic sturgeon to evaluate stock status, stock delineation, and bycatch. The assessment responds to the 2012 ESA listing of Atlantic sturgeon as threatened for the GOM distinct population segment (DPS) and endangered for the remaining DPSs (New York Bight, Chesapeake Bay, Carolina, and South Atlantic). Based on the Atlantic Sturgeon Stock Assessment Subcommittee's preliminary data gathering and model development work, the Board decided to move the completion date for the assessment from 2015 to 2017 in order to allow for a more comprehensive assessment on a stock or DPS scale as well as incorporate the most recent data from studies currently underway.

## Catch Per Unit Effort (CPUE) of Hudson River Juvenile Atlantic Sturgeon

Source: NY State Dept. of Environmental Conservation with data from Hudson River Power Generating Companies Hudson River Monitoring Program, 2014

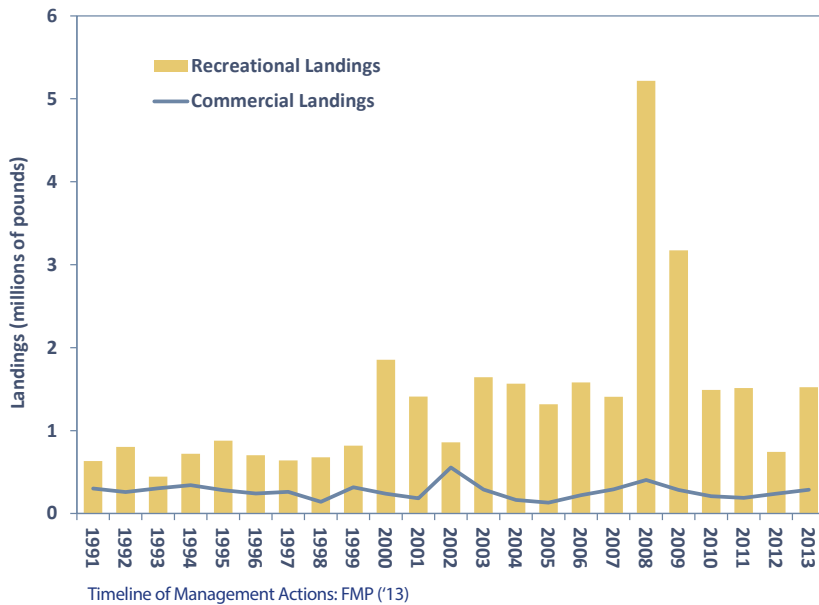


## BLACK DRUM

The Commission adopted the Interstate FMP for Black Drum in 2013 to address a number of concerns, including increased harvest on juvenile and brood stock fish, and a lack of consistent coastwide regulations or management goals that may negatively impact the black drum population as fishing pressure shifts from other stocks. In 2014, all the states within the management unit (New Jersey to Florida) implemented a minimum size limit of at least 12" and a maximum possession limit, which vary by state. The FMP requires all states to further increase the minimum size limit to at least 14" by January 1, 2016. Further, the FMP establishes a management framework to address future concerns or changes in the fishery or population. This will be particularly important as the Commission works towards finalizing the first coastwide benchmark

## Black Drum Commercial and Recreational Landings

Source: ACCSP Data Warehouse and NMFS Fisheries Statistics Division, 2014



The black drum fishery is predominantly recreational, with anglers landing about three times the fish (by weight) than the commercial fishery. From 2000–2008, recreational harvest trended upward with harvest peaking at 5.4 million pounds in 2008. Harvest has been on the decline since then with an estimated 1.5 million pounds harvested in 2013. Florida and North Carolina fisheries comprise the majority of recreational harvest.

Historically, commercial landings averaged approximately 368,000 pounds in the 1950s and 1960s and then declined to an average of approximately 211,000 pounds in the 1970s and 1980s. The commercial fishery landed approximately 286,600 pounds in 2013. Since 2000, the majority of commercial landings occur in Virginia and North Carolina, while a smaller portion is landed in New Jersey, Maryland, Delaware, and Florida. In recent years, gillnets and pound nets have been the primary gear used.

stock assessment for black drum, which will be considered by the South Atlantic Management Board in early 2015.

Throughout 2014, the Commission made significant progress on the benchmark stock assessment and peer review for black drum. Black drum is considered a data poor species. There are no targeted surveys for black drum and current surveys do not sufficiently intersect with the vast age and size ranges within the population. Most landings are restricted to younger and smaller fish with some large adults. A few surveys do encounter and sample adult fish across the wide range of potential ages, but these surveys do not indicate any major trends in the status of the population, which may be due to low or inconsistent intercepts of black drum. Due to these data limitations, data poor assessment techniques are being used for the benchmark stock assessment.

## BLACK SEA BASS

For nearly two decades, the Commission and MAFMC have jointly managed the black sea bass stock north of Cape Hatteras. The management program includes quotas to restrict the commercial fishery and possession limits, seasons, and minimum sizes to control recreational landings.

Although the black sea bass fishery was declared rebuilt in 2009, the unique life history characteristics of the species (e.g., it is a protogynous hermaphrodite, which means it changes sex from female to male) contributes to some level of uncertainty about the size of the stock. The

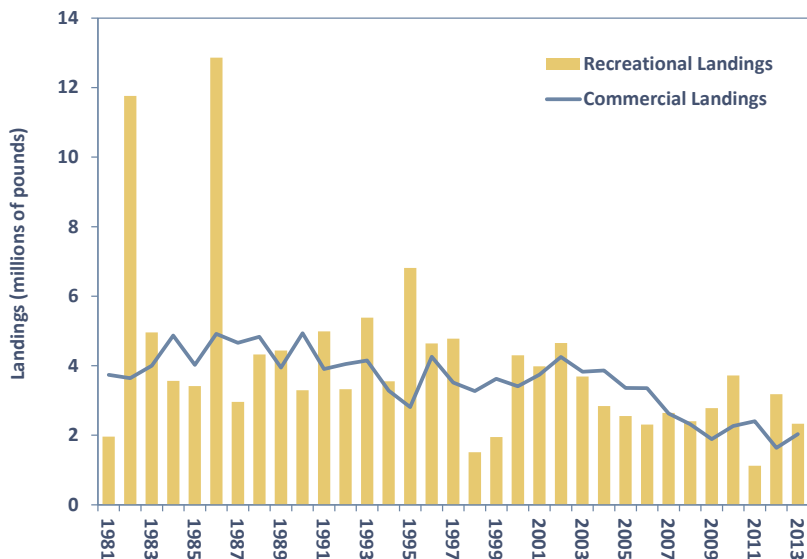




# SPECIES HIGHLIGHTS

## Black Sea Bass Commercial and Recreational Landings

Source: NMFS Fisheries Statistics Division, 2014



Timeline of Management Actions: FMP ('96); Amendment 10 ('97); Amendment 11 ('98); Amendment 12 ('99); Amendment 13 ('03); Addenda II & III ('04); Addendum XVI ('05); Addendum XIX ('07); Addendum XX ('09); Addendum XXI ('11); Addendum XXIII ('13); Addendum XXV ('14)

2014 regulations were modified to reduce harvest by 7% to achieve the 2014 RHL. The Board also approved the continuation of ad hoc regional management for the 2015 recreational fishery. Board action on final management measures for the 2015 recreational fishery is expected to occur in early 2015.

After peaking at 22 million pounds in 1952, commercial landings markedly decreased in the 1960s and have since ranged from 1.3 to 4.4 million pounds. From 1988-1997, landings averaged 2.86 million pounds. In 1998, a quota system was incorporated into the management program and state-by-state shares were introduced in 2003. Since 1998, landings have ranged from 2.86 to 3.53 million pounds, with 2013 landings estimated at 2.04 million pounds. The principal gears used in the fishery are pots, otter trawl, and handline.

## BLUEFISH

Jointly managed by the Commission and MAFMC since 1998 through state-specific quotas for the commercial fishery and a maximum possession limit to constrain the recreational fishery, bluefish were declared rebuilt in 2009. The 2014 stock assessment update finds the resource to be in good

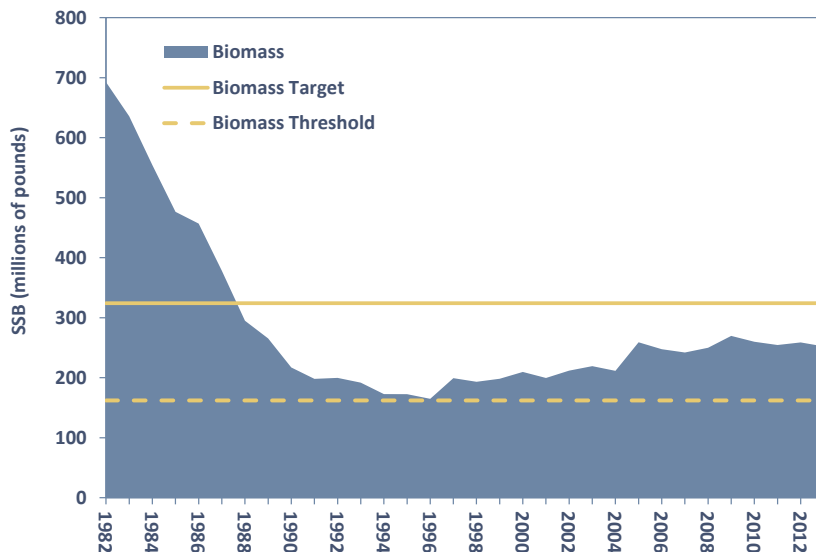
response of this species, as well as other hermaphroditic species, to exploitation is not fully understood. The latest stock assessment update, completed in 2012, indicates black sea bass are not overfished and are not experiencing overfishing, with biomass estimated to be 102% of the biomass target.

Given these findings, the Commission and MAFMC adopted a 2.24 million pound commercial quota and a 2.33 million pound recreational harvest limit (RHL) for the 2015 fishing season. After peaking in 1985 at 12.35 million pounds, recreational harvest averaged 3.75 million pounds annually from 1988-1997. Recreational harvest limits were put in place in 1998 and harvest has ranged from 1.1-4.4 million pounds from 1998-2012. Recreational harvest in 2013 was estimated at 2.34 million pounds.

In 2014, the Summer Flounder, Scup, and Black Sea Bass Management Board approved regional and state-by-state approaches for the 2014 black sea bass recreational season in order to mitigate potential disproportionate impacts to individual states that coastwide measures may cause. The 2013 regulations resulted in a harvest of 2.34 million pounds, approximately 80,000 pounds over the 2013 coastwide target.

## Bluefish Biomass

Source: Northeast Fisheries Science Center Bluefish Stock Assessment Update, 2014



Timeline of Management Actions: FMP ('80); Amendment 1 ('98); Addendum I ('12)

condition; it is neither overfished nor experiencing overfishing. Total biomass is estimated at 252 million pounds, approximately 78% of its target and about a 3% decline from 2010. Fishing mortality is estimated to be 0.118, below the fishing mortality threshold (0.19). Taking these findings, 2013 landings, and the suspension of the Research Set-Aside (RSA) Program for 2015 into account, the Commission and MAFMC adopted a 5.12 million pound commercial quota and a 13.07 million pound RHL for the 2014 fishery.



upcoming benchmark assessment scheduled for 2015.

Since reaching a low of 8.2 million pounds in 1999, recreational harvest has averaged approximately 16.2 million pounds annually. In 2013, anglers harvested a total of 15.2 million pounds of bluefish, a 30% increase from 2012. Landings from the commercial fishery have been consistently lower than the recreational catch. Commercial landings decreased from 16.5 million pounds in 1981 to 7.3 million pounds in 1999. The commercial fishery has been regulated by a quota since implementation of Amendment 1 in 2000, and has since averaged around 6.5 million pounds annually. In 2013, landings were 4.3 million pounds, three-quarters of which were harvested in New York, New Jersey, and North Carolina.

A coastwide biological sampling program to improve the quantity and quality of information used in future bluefish stock assessments was approved and implemented in 2012. The 2014 review of this program found the geographic range, distribution of sampling times, and program design are effectively capturing age data, which will be used in the

## COASTAL SHARKS

Forty species of Atlantic coastal sharks are managed cooperatively throughout their range by the Commission's Interstate Atlantic Coastal Sharks FMP and NOAA Fisheries' 2006 Consolidated Highly Migratory Species (HMS) FMP for Coastal Sharks. The Interstate FMP establishes a suite of management measures for recreational and commercial shark fisheries in state waters. The FMP, approved in 2008 and fully implemented by the states in 2010, was developed to complement federal shark management and ensure consistency between state and federal management measures. In 2014, the Coastal Sharks Management Board approved a commercial possession limit of 36 fish for the 2015 large coastal shark fishery based on the

**Stock Status of Atlantic Coastal Shark Species and Species Groups**

Species or Complex Name	Stock Status		References / Comments
	Overfished	Overfishing is Occurring	
Porbeagle	Approaching	N	Porbeagle Stock Assessment, ICCAT Standing Committee on Research and Statistics Report (2009)
Dusky	Y	Y	SEDAR 21 (2011); designated a prohibited species
Large Coastal Sharks	Unknown	Unknown	SEDAR 11 (2006); difficult to assess as a species complex due to various life history characteristics/lack of available data
Blacktip	Unknown	Unknown	SEDAR 22 (2006)
Sandbar	Y	Y	SEDAR 21 (2011)
Atlantic Sharpnose	N	N	SEDAR 34 (2013)
Blacknose	Y	Y	SEDAR 21 (2011)
Bonnethead	N	N	SEDAR 34 (2013)
Finetooth	N	N	SEDAR 13 (2007)
Smooth Dogfish	Unknown	Unknown	No assessment; benchmark assessment scheduled for 2015





# SPECIES HIGHLIGHTS

successful distribution of the quota in 2014. This quota is consistent with federal specifications.

Stock status is assessed by species complex for most coastal shark species and by species group for species with enough data for an individual assessment. The accompanying table (on page 23) outlines the stock status of each species or species group. There is no assessment for smooth dogfish on the Atlantic coast. The first coastwide assessment and peer review is scheduled for completion in 2015.

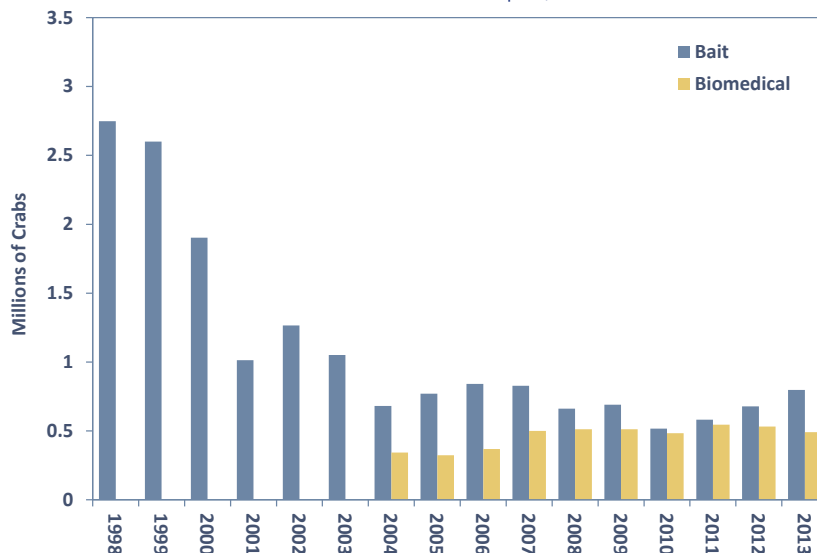
Commercial landings of Atlantic large coastal species (LCS) in 2013 were approximately 434,300 pounds (dressed weight), a slight decrease from 2012. Commercial landings of small coastal shark (SCS) species in 2012 were approximately 260,140 pounds (dressed weight), a decrease of approximately 38% from 2011. Total U.S. landings of Atlantic pelagic species of sharks were 257,900 pounds (dressed weight) in 2013.

The SCS complex dominated recreational landings of sharks in 2013 with 59,277 fish harvested. This is approximately 83% of harvest. The LCS complex came next with approximately 2,528 fish harvested in 2013.



## Horseshoe Crab Bait Landings and Biomedical Harvest

Source: ASMFC State Reports, 2014



Please note the following details regarding biomedical harvest numbers:

- \* Harvest numbers include all horseshoe crabs brought to bleeding facilities, including those that were harvested as bait and counted against state quotas.
- \* Most of the biomedical crabs harvested are returned to the water after bleeding; a 15% mortality rate is estimated for all bled crabs.

Timeline of Management Actions: FMP ('99); Addendum I ('00); Addendum II ('01); Addendum III ('04); Addendum IV ('06); Addendum V ('08); Addendum VI ('10); Addendum VII ('12)

## HORSESHOE CRAB

Horseshoe crab is the first Commission managed species to incorporate ecosystem principles into its management program. The species is managed under the Adaptive Resource Management (ARM) Framework, which incorporates both shorebird and horseshoe abundance levels into the horseshoe crab specifications. For the 2014 fishing year, harvest in the Delaware Bay area was limited to 500,000 male-only horseshoe crabs. The species is also valuable to the conch and American eel fisheries and the pharmaceutical industry. A chemical in the horseshoe crab tissue makes it an ideal bait to catch conch and eel. Horseshoe crab blood is used by the biomedical industry to produce *Limulus Amoebocyte Lysate*, an important tool in the detection of contaminants in patients, drugs, and medical supplies.

Red knots, the shorebird that most relies on horseshoe crab eggs for food, was listed as threatened under the ESA in 2014. The ARM Framework was cited as one of the main reasons the species was not listed as endangered (due to adequate management in place). However, the

ARM Framework's utility is currently threatened due to a lack of abundance data on horseshoe crabs. The Commission is working to develop abundance estimates to use in the ARM Framework so this important management tool can continue to be used to set harvest specifications for horseshoe crabs of Delaware Bay origin.



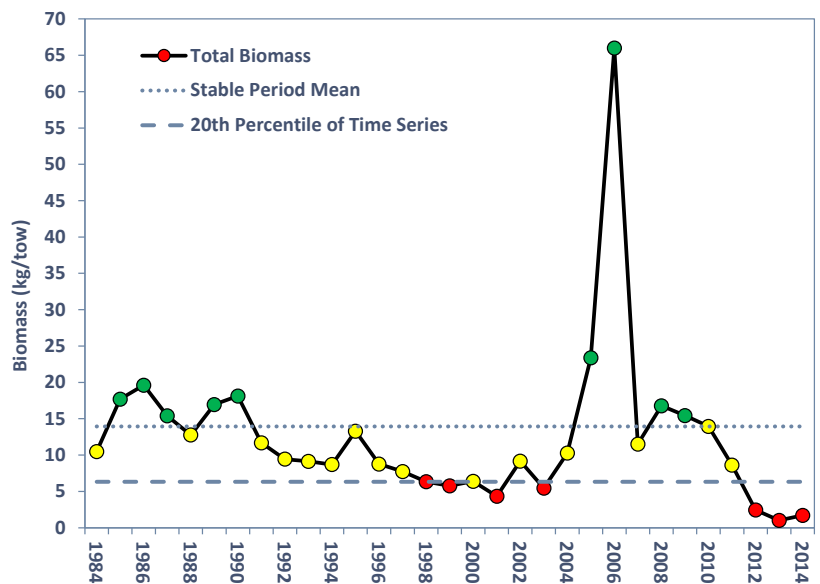
fishable biomass is the lowest on record. The recruitment index increased slightly in the 2014 survey, but is the ninth lowest in the time series. These recruits (2013 year class) are not expected to reach exploitable size until 2017. Despite the marginal increase in

Reported coastwide bait landings in 2013 remained well below the coastwide quota at 897,314 crabs. Biomedical harvest in 2013 was estimated at 545,973 crabs. As required by the FMP, bled crabs are returned to the water from where they were harvested except in some states where bled crabs are sold to the bait industry to minimize the impact on the population. The Board is working with the biomedical industry to find ways to incorporate biomedical data into a regional stock assessment.

recruitment, the population continues to meet the criteria defining a collapsed stock.

In 2014, the Section initiated Draft Amendment 3 to develop a limited entry program to be implemented as the resource recovers.

**Total Biomass of Northern Shrimp from the Gulf of Maine Summer Shrimp Survey**  
Stock Status Report for Gulf of Maine Northern Shrimp, 2014



The graph represents the annual biomass index relative to the reference period (dashed line) and to the 20th percentile of the time series (dotted line). The reference period (1985-1994) is the time period during which the fishery experienced stable landings and value. Green dots are values that are equal to or above the stable period mean (SPM); red dots are values that are equal to or below the 20th percentile of the time series; yellow dots are values between the SPM and the 20th percentile.

Timeline of Management Actions: FMP ('86); Amendment 1 ('04); Amendment 2 ('11); Addendum 1 ('12)

## NORTHERN SHRIMP

While northern shrimp have historically provided a small but valuable fishery to the New England states, poor stock condition, largely driven by environmental factors, led the Northern Shrimp Section to institute a fishery moratorium for both the 2014 and 2015 fishing seasons; the first time in over 30 years the fishery was closed. Since the 2014 benchmark stock assessment was not accepted by the peer review panel for management use, the Northern Shrimp Technical Committee evaluated a suite of indicators to determine the status of the stock for 2014. Using these indicators, the Technical Committee found that abundance and biomass indices for 2012-2014 were the lowest on record of the 31-year time series. Recruitment indices for the 2010-2012 year classes were also well below average, and included the two smallest year classes on record. As a result, the index of current



# SPECIES HIGHLIGHTS

## RED DRUM

Red drum are one of the most recreationally sought-after fish throughout the South Atlantic. It is a nearshore fishery, targeting small, “puppy drum” in shallow estuarine waters and large trophy fish along the Mid- and South Atlantic barrier islands. Recreational harvest initially peaked in 1984 at 2.6 million pounds and harvest has fluctuated without trend since 1988 between 800,000-2.1 million pounds. The 2013 recreational landings of 2.7 million pounds represent a 58% increase from the previous 11-year average (2003-2013), and a new high for the entire time series. Since 1990, recreational landings have averaged approximately 87% of total red drum landings.

The commercial fishery was more prevalent in the 1980s but has declined since then. Landings have averaged approximately 180,000 pounds per year since 1990. In 2013, coastwide commercial landings increased to 402,000 pounds, the highest value since 1984. North Carolina was responsible for landing 92% of the commercial harvest in 2013.

Red drum are managed solely by the Commission through Amendment 2 to the Interstate FMP. The Amendment

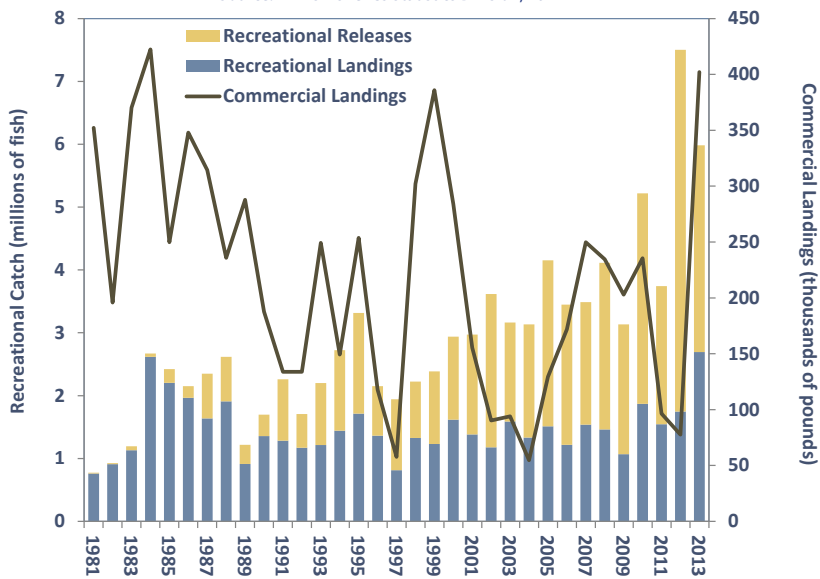


requires states to implement recreational creel and size limits to achieve the fishing mortality target, including a maximum size limit of 27”, and maintain existing commercial regulations. A harvest moratorium and Presidential Executive Order, enacted in 2007, prevents any harvest or sale of red drum from federal waters. In 2014, the South Atlantic State/Federal Fisheries Management Board approved changes to Virginia’s commercial red drum fishery which reduces the maximum size limit from 26 to 25” and increases the possession limit from 3 to 5 fish.

The latest benchmark stock assessment, conducted in 2009, indicates the stock is not experiencing overfishing and sufficient numbers of young fish are surviving to become breeding adults. Data limitations resulting from species’ life history, characteristics and management program, which targets smaller, inshore fish, present unique challenges to scientists as they try to assess the status of the stock. Relatively little is known about the adult (spawning) population (ages four and older), as these fish are primarily found in offshore waters where fishing for red drum is prohibited under federal law. The impact of these limitations is a stock assessment that adequately describes abundance and exploitation rates for the pre-adult component of the population (ages one to three), particularly for the northern region, but provides no reliable information on the adult component. The stock assessment model was considered to be informative only about the relative, not absolute, trends in age one to three abundance and exploitation for the southern region. Therefore, only general conclusions about trends in stock status could be provided for the southern region. The next benchmark stock assessment is scheduled for 2015.

**Red Drum Commercial Landings and Recreational Catch**

Source: NMFS Fisheries Statistics Division, 2014



Timeline of Management Actions: FMP ('84); Amendment 1 ('91); Amendment 2 ('02); Addendum I ('13)

## SCUP

For decades, scup have been eagerly pursued by commercial, recreational, and subsistence fishermen throughout SNE and the Mid-Atlantic, largely due to their fine flavor and avid pursuit of baited hooks. A migratory, schooling species found on the continental shelf of the Northwest Atlantic, scup commonly inhabit waters from Cape Cod, Massachusetts to Cape Hatteras, North Carolina, with area-specific abundance largely influenced by water temperature.

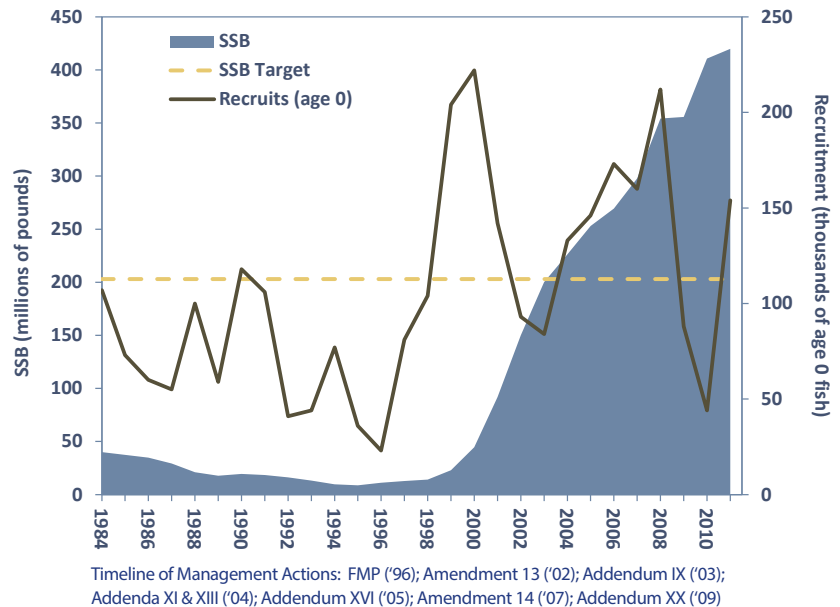
Scup are one of four species jointly managed by the Commission and MAFMC. Scup are considered rebuilt and not experiencing overfishing. The 2012 scup stock assessment update estimates SSB at 420 million pounds, 207% of its target. Using these findings and 2013 landings, both the Commission and MAFMC set the commercial quota at 21.23 million pounds and the RHL at 6.8 million pounds for the 2015 fishery. In addition, the Board increased the commercial possession limit for the Winter II commercial (November 1-December 31) season from 12,000 to 18,000 pounds for the 2014 fishery due to the rollover of unused quota from Winter I to Winter II.

The scup resource is currently allocated 78%/22% to the commercial and recreational fisheries, respectively.



### Scup Spawning Stock Biomass (SSB) and Recruitment

Source: Northeast Fisheries Science Center Stock Assessment Update, 2012



Commercial landings peaked in 1960 at 48.5 million pounds. In recent years, landings have fluctuated from 15.6 million pounds in 1991 to a time series low of 2.7 million pounds in 2000. The commercial fishery landed 17.4 million pounds in 2013. For the past several years, Rhode Island and New Jersey have harvested the largest share of the commercial landings. Scup are primarily caught in otter trawls but are also caught using floating fish traps and hand lines. Recreational landings declined steadily from 11.6 million pounds in 1986 to 0.9 million pounds in 1998, the lowest value in the time series. In 2013, recreational anglers harvested 5.3 million pounds, with the majority of harvest occurring in Massachusetts, New York, Rhode Island, and Connecticut.

## SHAD & RIVER HERRING

The Commission continues to make significant progress in the conservation and management of shad and river herring stocks coastwide through implementation of Amendments 2 and 3 to the Shad and River Herring FMP. Both Amendments require states and jurisdictions to close their shad and river herring fisheries unless they develop and implement sustainable fishery management plans (SFMPs). The Amendments define a sustainable fishery as “a commercial and/or recreational fishery that will not



# SPECIES HIGHLIGHTS

diminish the potential future stock reproduction and recruitment.” Plans must clearly demonstrate that the state’s or jurisdiction’s shad and river herring fisheries meet this definition of sustainability through the development of sustainability targets which must be monitored, achieved, and maintained.

The Commission also continues to collaborate with NEFMC and MAFMC to address the bycatch of these species in federal fisheries. NEFMC recently approved a 312 mt catch cap for shad and river herring in the Atlantic herring fishery. MAFMC approved a 236 mt bycatch cap in the Atlantic mackerel fishery and established a



working group to address issues related to river herring conservation and management.

## American Shad

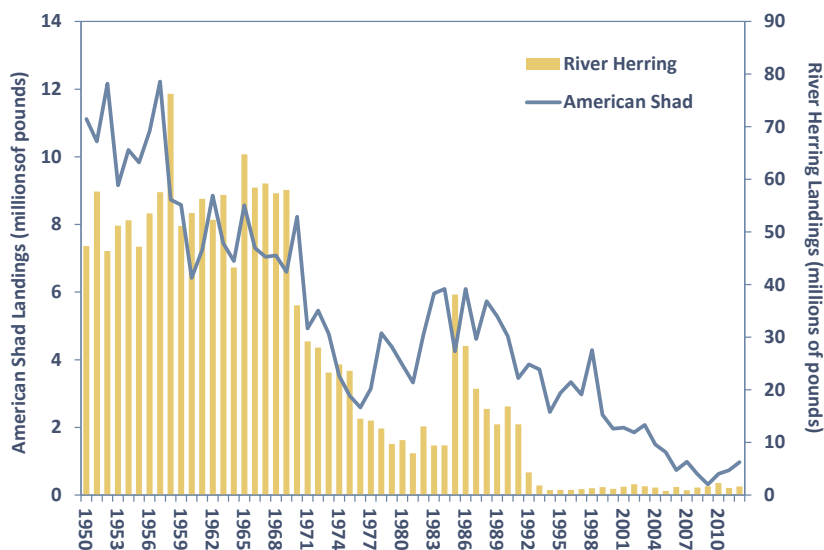
The following states/jurisdictions are operating under approved SFMPs for American shad: Connecticut, the Delaware River Basin Fish and Wildlife Management Cooperative (representing New York, New Jersey, Delaware, and Pennsylvania), the Potomac River Fisheries Commission, North Carolina, South Carolina, Georgia, and Florida. The remaining states with no SFMPs were required to maintain closures of their shad fisheries in 2014.

The most recent benchmark stock assessment, conducted in 2007, indicates American shad stocks are currently at all-time lows and do not appear to be recovering. It identified the primary causes for the continued stock declines as a combination of excessive total mortality, habitat loss and degradation, and migration and habitat access impediments. Although improvement has been seen in a few stocks, many remain severely depressed compared to historic levels. Coastwide landings for American shad were 583,076 pounds in 2013.

To improve data collection, Amendment 3 requires fishery-independent and -dependent monitoring for some states or jurisdictions. This includes monitoring of juvenile and adult American shad stocks; hatchery production; and commercial, recreational, and bycatch fisheries. Additionally, the Amendment increases coordination of monitoring activities for river systems under shared jurisdictions, as

**American Shad & River Herring Commercial Landings**

Source: NMFS Fisheries Statistics Division, 2014



Timeline of Management Actions: FMP ('85); Amendment 1 ('95); Amendment 2 – River Herring ('09); Amendment 3 – American Shad ('10)

### River Herring Stock Status Relative to Historic Levels (pre-1970)

Source: ASMFC River Herring Benchmark Assessment, 2012

State	River	Status Relative to Historic Levels/ Recent Trends
ME	Damariscotta Union	Depleted <sup>A</sup> , Stable <sup>A</sup> Increasing <sup>A</sup> , Stable <sup>A</sup>
NH	Cocheco Exeter Lamprey Oyster Taylor Winnicut	Unknown <sup>A,B</sup> , Stable <sup>A,B</sup> Depleted <sup>A</sup> , Increasing <sup>A</sup> Depleted <sup>A</sup> , Unknown <sup>A</sup> Depleted <sup>B</sup> , Stable <sup>B</sup> Depleted <sup>B</sup> , Decreasing <sup>B</sup> Depleted <sup>A,B</sup> , Unknown <sup>A,B</sup>
MA	Mattapoissett Monument Parker Stony Brook	Depleted <sup>A</sup> , Unknown <sup>A</sup> Depleted <sup>A</sup> , Unknown <sup>A</sup> Depleted <sup>A</sup> , Unknown <sup>A</sup> Depleted <sup>A</sup> , Unknown <sup>A</sup>
RI	Buckeye Gilbert Nonquit	Depleted <sup>A</sup> , Unknown <sup>A</sup> Depleted <sup>A</sup> , Decreasing <sup>A</sup> Depleted <sup>A</sup> , Decreasing <sup>A</sup>
CT	Connecticut	Depleted <sup>B</sup> , Decreasing <sup>B</sup>
NY	Hudson	Depleted <sup>A,B</sup> , Decreasing <sup>A,B</sup>
MD, DE	Nanticoke	Depleted <sup>A,B</sup> , Decreasing <sup>A,B</sup>
VA, MD, DC	Potomac	Depleted <sup>A,B</sup> , Stable <sup>A,B</sup>
NC	Chowan	Depleted <sup>A,B</sup> , Stable <sup>A,B</sup>
SC	Santee-Cooper	Depleted <sup>B</sup> , Increasing <sup>B</sup>

A = alewife only;

B = blueback herring only;

A,B = alewife and blueback herring by species



well as between freshwater and marine agencies.

### River Herring

Amendment 2, adopted in 2009, prohibited commercial and recreational river herring fisheries in state waters as of January 1, 2012, unless a state or jurisdiction develops and receives approval for a SFMP. SFMPs have been approved for Maine, New Hampshire, New York, North Carolina, and South Carolina. The remaining states and jurisdictions closed their commercial and recreational fisheries in 2012.

The 2012 benchmark stock assessment found of the 52 stocks of alewife and blueback herring for which data were available for use in the assessment, 23 were depleted relative to historic levels, one stock was increasing, and the status of 28 stocks could not be determined because the time-series of available data was too short. Estimates of abundance and fishing mortality could not be developed because of the lack of adequate data. The depleted determination was used instead of overfished because of the many factors that have contributed to the declining abundance of river herring, which include not just directed and incidental fishing, but also habitat loss, predation, and climate change.

In 2013, NOAA Fisheries conducted a status review of river herring under the ESA and found that the listing was not warranted. As part of that finding, NOAA Fisheries committed to partnering with the Commission and other stakeholders to develop

a comprehensive conservation plan for river herring throughout its entire range. This Technical Expert Working Group, convened in 2014, will continue to develop a plan throughout 2015. Several river herring research products were funded in 2014 to support this effort.

### SPANISH MACKEREL

A fast swimming fish known to gather in large schools and travel great distances, Spanish mackerel can be found throughout the coastal waters of the eastern U.S. and the Gulf of Mexico. Cooperative management by the Commission and the South Atlantic Fishery Management Council (SAFMC) has successfully rebuilt Spanish mackerel stocks after years of overfishing. The latest benchmark stock assessment, conducted in 2012, indicates Spanish mackerel are not overfished and not experiencing overfishing.

Total 2013 landings were 4.3 million pounds, with commercial and recreational fisheries harvesting approximately 67% and 33% of the resource, respectively. From 1981-2013, the commercial fishery accounted for approximately 70% of the total landings. Coastwide commercial landings have been consistently below 4 million pounds since

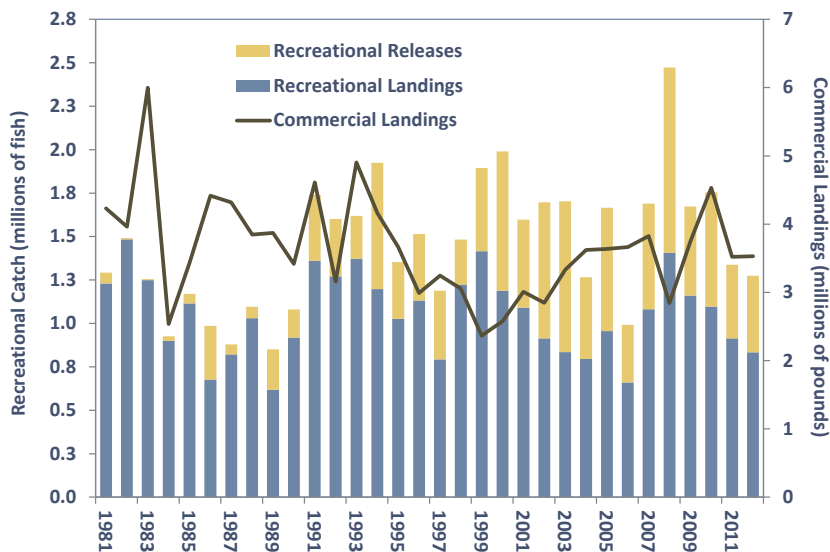
1995, with the exception of 2010 when commercial landings increased to 4.5 million pounds. 2013 landings are estimated at 2.9 million pounds. Almost two-thirds of the landings occur in Florida, with the remaining amount



# SPECIES HIGHLIGHTS

## Spanish Mackerel Commercial Landings and Recreational Catch (Landings and Alive Releases)

Source: ACCSP Data Warehouse and NMFS Fisheries Statistics Division, 2014



Timeline of Management Actions: FMP ('90); Omnibus Amendment ('11); Addendum I ('13)

After the 2014 fishing year, the Board will evaluate the success of the program for possible use in future years.

## SPINY DOGFISH

In 2014, spiny dogfish fishermen and processors continued to work to create a domestic market for the species. A majority of U.S. caught spiny dogfish are exported to Europe. Recent changes in the European market have impacted the domestic demand for the product. Given that spiny dogfish has been rebuilt since 2008, and other New England stocks are overfished or experiencing overfishing, spiny dogfish provides a sustainable alternative for fishermen, processors, and seafood consumers.

The Commission and MAFMC have jointly managed spiny dogfish since 2000. Stringent state and federal management measures successfully rebuilt the stock by 2008. The 2014 stock assessment update indicates the resource continues to be in good condition, with spiny dogfish not overfished and not experiencing overfishing.

Commercial landings totaled 16 million pounds in 2014, a decrease in recent years due to market conditions. Discards have remained relatively stable, around 11 million pounds

harvested in North Carolina. The primary commercial gear are gillnets (40%), cast nets (27%), and hook and line (30%).

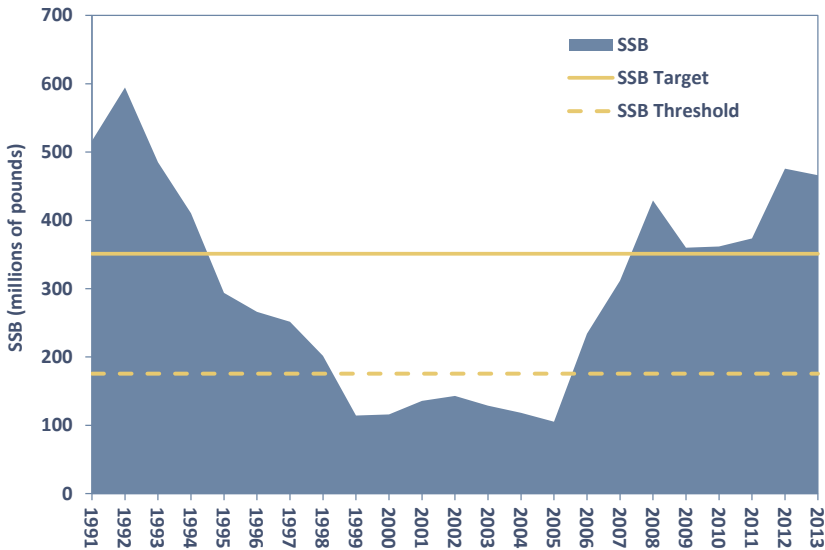
Recreational anglers harvested 1.4 million pounds of Spanish mackerel in 2013. The number of recreationally-harvested fish appears to show a cyclical trend, with low harvests in the early to mid-1980s and mid- to late 1990s, interspersed with higher harvests. Florida and North Carolina continue to account for the majority of recreational landings in both number and weight (on average, 86% by number since 1981). Many recreational anglers target and catch Spanish mackerel to use whole fish as bait for big game fishing.

The 2013 pilot program, which allowed states to reduce the Spanish mackerel minimum size limit for the commercial pound net fishery to 11½" during the months of July through September, was continued for the 2014 fishing year. The measure is intended to reduce waste of these shorter fish, which are discarded dead in the summer months, by converting them to landed fish that will be counted against the quota.



### Spiny Dogfish Spawning Stock Biomass (SSB) (>=80 cm)

Source: NEFSC Update on the Status of Spiny Dogfish in 2013 and Projected Harvests at the  $F_{MSY}$  Proxy and PSTAR of 40%



Timeline of Management Actions: Emergency Action ('00); FMP ('03); Addendum I ('05); Addendum II ('08); Addendum III ('11); Addendum IV ('12); Addendum V ('14)

saltwater habitats from the Chesapeake Bay to South Carolina, spot are an important forage species for predators such as Atlantic striped bass, weakfish, summer flounder, bluefish, and sharks. They are also an excellent food and sport fish, supporting recreational and commercial fisheries in the Mid- and South Atlantic, with total 2013 landings estimated at 6.1 million pounds. No coastwide assessment has been performed for spot; however, spot are a target or component of several state surveys using trawls, gillnets, or seine nets. Abundance indices have been highly variable throughout the survey time series. The Commission will begin preparations for the development of the first coastwide benchmark stock assessment in 2015 for final presentation to the South Atlantic Management Board in 2016.

over the past decade, and are expected to remain near that level in the future. Canadian landings have also decreased significantly in recent years. It is anticipated the Canadian dogfish harvest will not increase in the near future given the current lack of demand and the subsequent closure of Canadian spiny dogfish processors.

In the interim in the absence of a coastwide stock assessment, the South Atlantic Board approved Addendum II to the Spot FMP in 2014. The Addendum establishes use of a TLA (similar to that used for Atlantic croaker) to evaluate fisheries trends and develop state-specified management actions (e.g., bag limits, size restrictions, time and area closures, and gear restrictions) when harvest and abundance thresholds are exceeded for two consecutive years. The name comes

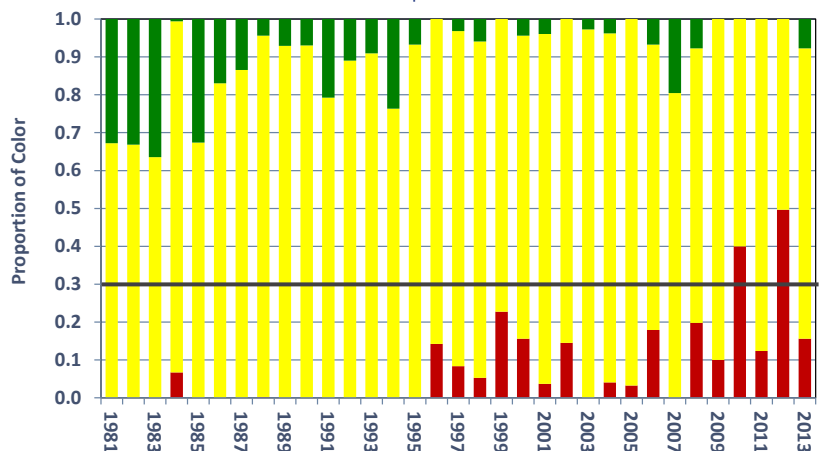
With a healthy stock status, the Spiny Dogfish Management Board approved a 49.37 million pound quota for the 2014/2015 fishing season (May 1-April 30), with a maximum possession limit of 5,000 pounds per day for the northern region states (Maine through Connecticut) and state-specific trip limits for the southern region states (New York to North Carolina). These measures are consistent with those recommended for federal waters.

## SPOT

Spot is one of the 275 sciaenid species worldwide. The Commission manages six sciaenid species, which are commonly called drums, croakers, or hardheads for the repetitive throbbing or drumming sounds they produce. A small to medium bodied, short-lived species found in brackish and

### Traffic Light Analysis of Spot Commercial and Recreational Harvest (Harvest Metric)

Solid line represents 30% threshold



Management response is triggered when proportion of red exceeds the 30% threshold level for two consecutive years in both fishery characteristics (harvest and abundance metrics).

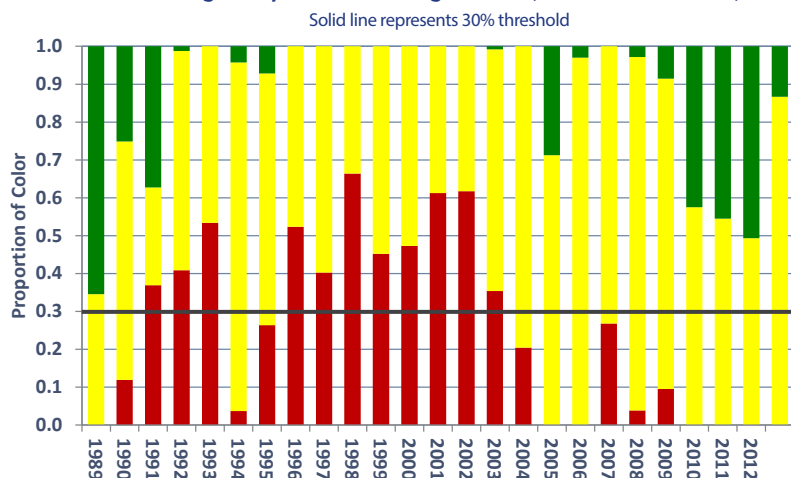
Timeline of Management Actions: FMP ('87); Omnibus Amendment ('11); Addendum I ('14)





# SPECIES HIGHLIGHTS

**Traffic Light Analysis of Spot  
Fishery-independent Survey Indices (Abundance Metric)**



Management response is triggered when proportion of red exceeds the 30% threshold level for two consecutive years in both fishery characteristics (harvest and abundance metrics).

Timeline of Management Actions: FMP ('87); Omnibus Amendment ('11); Addendum I ('14)

from assigning a color (red, yellow, or green) to categorize relative levels of indicators on the condition of the fish population (abundance metric) or fishery (harvest metric). For example, as harvest or abundance increase relative to their long-term mean, the proportion of green in a given year will increase and as harvest or abundance decrease, the amount of red in that year becomes more predominant. The TLA improves the management approach as it illustrates long-term trends in the stock and includes specific management recommendations in response to declines in the stock or fishery.

Total landings in 2013 were 6.1 million pounds, with 56% harvested by the commercial sector and 43% by the recreational fishery. Commercial harvest in 2013 was estimated at 3.4



million pounds, with the majority taken in gillnets. This is a 171% increase from landings in 2012. Small spot are also a major component of the bycatch in haul seine and pound net fisheries in Chesapeake Bay and North Carolina, as well as a significant part of the bycatch of the South Atlantic shrimp trawl fishery. However, substantial reductions in the magnitude of bycatch have occurred in the latter fishery in recent years.

For the past three decades, recreational harvest along the Atlantic coast has varied between 1.7 and 6.9 million pounds. There was an increasing trend in the recreational harvest from the low of 3.6 million pounds in 1999 to a high of 5.5 million pounds in 2007; in 2013 harvest was 2.7 million pounds.

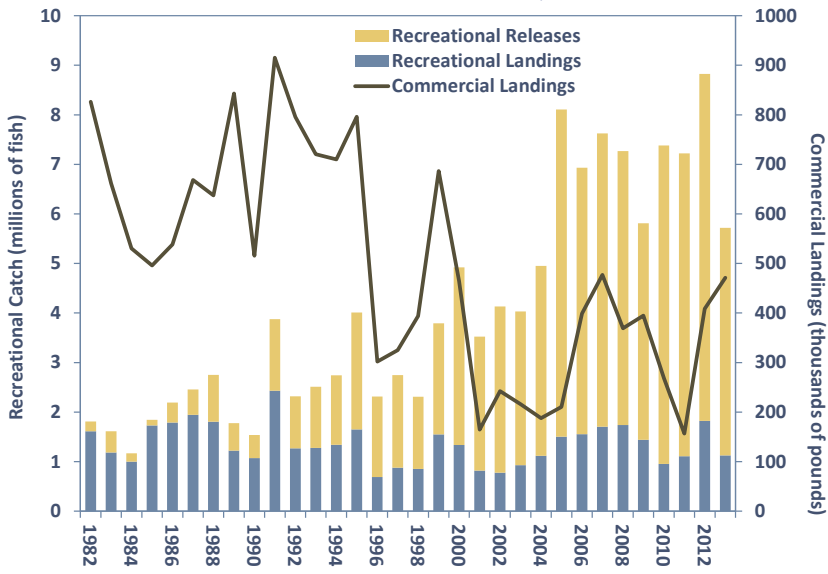
## SPOTTED SEATROUT

Spotted seatrout, a member of the drum family, are managed under the Commission's Omnibus Amendment for Spot, Spotted Seatrout, and Spanish Mackerel, which includes recommended measures to protect the spawning stock, as well as a required coastwide minimum size of 12".

Increased coastal development and the resulting loss of estuarine habitat, coupled with heavy fishing pressure, have affected spotted seatrout populations. The extent of the anthropogenic effect is unclear as there is no coastwide stock assessment for the species and local assessments vary by state. Spotted seatrout are also susceptible to inshore events such as winter freezes, excessive fresh water, hurricanes, and red tide conditions.

### Spotted Seatrout Recreational Catch & Commercial Landings

Source: NMFS Fisheries Statistics Division, 2014



Timeline of Management Actions: FMP ('85); Amendment 1 ('91); Omnibus Amendment ('11)

## SUMMER FLOUNDER

Summer flounder are one of the most sought after commercial and recreational fish along the Atlantic coast, with landings at approximately 19.6 million pounds in 2013. Since 1981, both commercial and recreational landings have had high and low periods. Commercial landings peaked at 38 million pounds in 1984 before declining to a low of 9.4 million pounds in 1990. Landings showed an increasing trend through 1995, but have varied without trend through 2010. For the past three years, commercial landings have been above 10 million pounds, with 2013 landings at 12.5 million pounds. Otter trawl is the principal commercial gear.

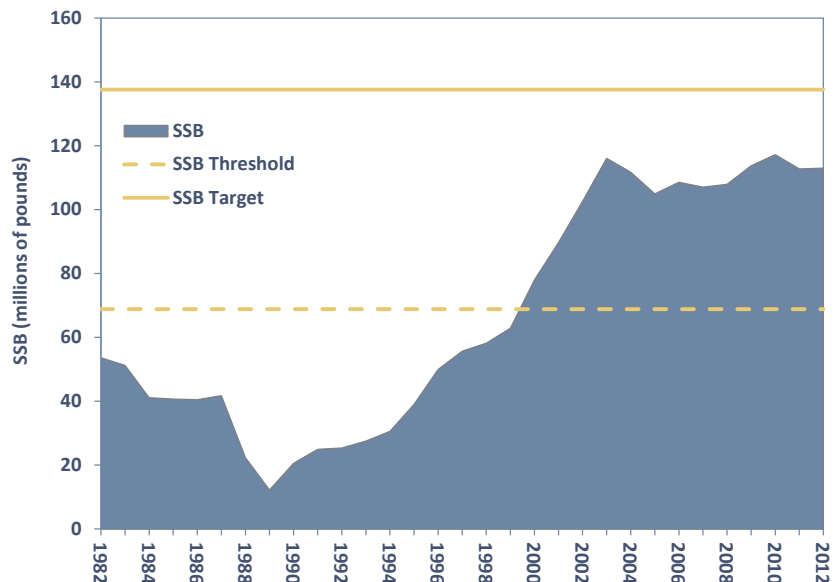
After reaching a low of 3.2 million pounds in 1989, recreational landings increased to 11.9 million pounds in 1997 and 16.5 million pounds in 2000. Since 2009, landings have averaged approximately 5 million pounds per year, with 7.1 million pounds landed in 2013.

Fortunately, seatrout have a life history trait that helps maintain population size – they have the ability to reproduce prolifically and have one of the longest spawning seasons among marine gamefish.

Over the past three decades, recreational catch has shown a strong upward trend, increasing from 1.8 million fish in 1982 to a record high of 5.7 million fish in 2013. The majority of this increase is due to expansion of the recreational releases, which now constitutes 80% of the total recreational catch. While commercial landings have been highly variable over the same time period (ranging between 917,000-164,000 pounds), they show an overall downward trend. This may be due to increased regulation and possible declines in abundance. Significant changes to regulations include the 1987 designation of spotted seatrout as a gamefish in South Carolina and the 1995 prohibition on the use of gillnets in Florida's coastal waters. Commercial landings in 2013 were approximately 471,100 pounds, with about 78% coming from North Carolina.

### Summer Flounder Spawning Stock Biomass (SSB)

Source: Northeast Fisheries Science Center Stock Assessment Summary, 2013



Timeline of Management Actions: FMP ('88); Amendment 1 ('91); Amendments 2-5 ('93); Amendment 6 ('94); Amendment 7 ('95); Amendments 8 & 9 ('96); Amendment 10 ('97); Amendment 11 ('98); Amendment 12 ('99); Amendment 13 ('03); Addenda VIII & XV ('04); Addenda XVI & XVII ('05); Addendum XVIII ('06); Addendum XIX ('07); Addendum XXV ('14)



## SPECIES HIGHLIGHTS

Jointly managed by the Commission and MAFMC for more than two decades, the summer flounder population was declared rebuilt in 2012. The latest benchmark stock assessment (2013) found the stock to be not overfished and not experiencing overfishing, with the SSB estimated at 125.97 million pounds, below the target of 137.55 million pounds. Taking these findings, 2013 landings, and the suspension of the RSA Program for 2015 into account, the Commission and MAFMC established a 21.94 million pound TAL for the 2015 fishing season, with an RHL of 7.38 million pounds and a commercial quota of 11.07 million pounds.

In 2014, the Summer Flounder, Scup and Black Sea Bass Management Board approved Addendum XXV to the Summer Flounder FMP. The Addendum implemented an adaptive regional management approach with the intent of providing more equity in recreational harvest opportunities along the coast. In early 2015, the Board will consider whether to continue the adaptive regional management approach in 2015 through Draft Addendum XXVI.



The Commission and MAFMC also initiated a comprehensive summer flounder amendment, which will consider modifications to the current management program's goals, objectives, and management strategies for summer flounder. The Board and Council will continue to develop the Amendment throughout 2015.

### TAUTOG

Prized for being "a delicious fish," tautog is highly popular among recreational fishermen, with 90% of the total harvest taken by anglers who catch them among hard structures such as rocky shorelines, piers, pilings, and natural and artificial reefs. The commercial

fishery is expanding in some states, such as New York, where there is demand for tautog in the live fish market.

A revised stock assessment update in 2012 indicates tautog continues to be overfished and experiencing overfishing. SSB remained at low levels for the last decade, with SSB estimated at 23.5 million pounds, 39% of the target SSB (59 million pounds). The three-year average fishing mortality (2007-2009) was estimated at 0.31, well above the FMP's fishing mortality target of 0.15. This led the Commission to implement Addendum VI to the Tautog FMP in 2012, which required a 39% coastwide reduction in exploitation from the 2008-2009 average in order to achieve the fishing mortality target of 0.15.

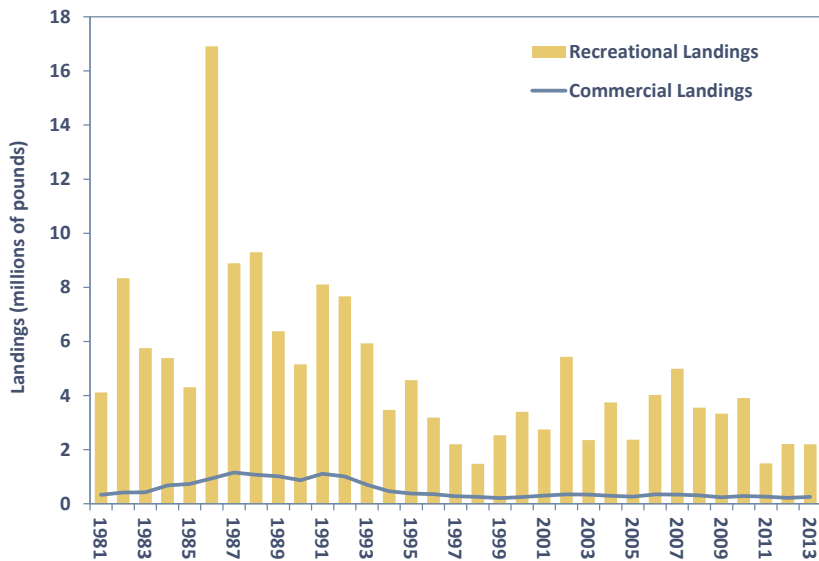
In 2013, total tautog harvest was 2.43 million pounds, similar to the 2.42 million pounds harvested in 2012. Recreational harvest ranged from a time series high of 16.9 million pounds in 1986 to a low of 1.5 million pounds in 1998. From 2004-2013, recreational harvest averaged 3.2 million pounds.

Commercial landings ranged from a high of 1.2 million pounds in 1987 to a low of approximately 208,800 pounds in 1999. Landings have averaged 282,000 pounds from 2004-2013, with 2013 landings estimated at 257,000 pounds.



## Tautog Commercial and Recreational Landings

Source: NMFS Fisheries Statistics Division, 2014



Timeline of Management Actions: FMP ('86); Addendum I ('97); Addendum II ('99); Addendum III ('02); Addenda IV & V ('07); Addendum VI ('11)

More than 50% of the 2013 commercial harvest was landed in Massachusetts and New York. Rod and reel are the predominant commercial gear, although floating fish traps, fish pots, and otter trawl harvest are also used.

The Commission completed a benchmark stock assessment and peer review late in 2014, which the Management Board will consider for management use in 2015. This assessment departs from past efforts because it explores new stock units at regional levels.

## WEAKFISH

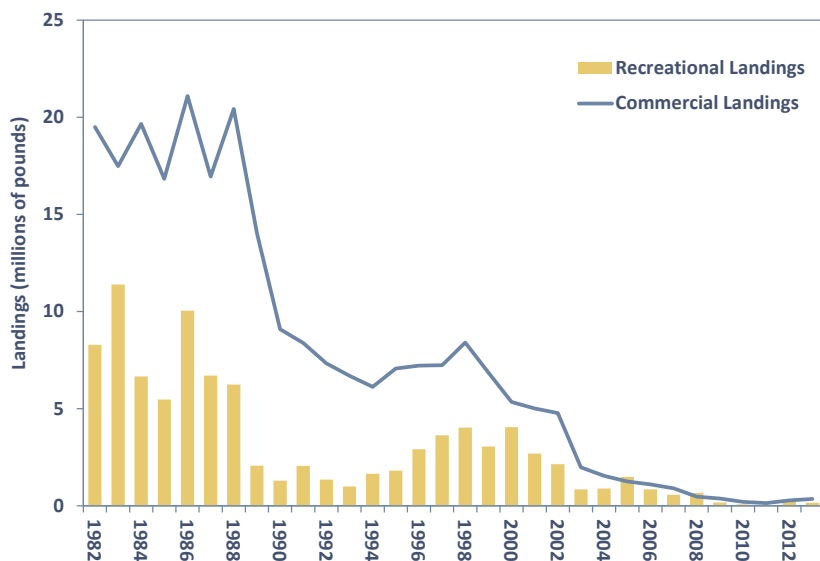
Weakfish have been one of the most important components of a mixed-stock fishery on the Atlantic coast since the 1800s. Beginning in 2000, however, weakfish biomass began to decline, reaching an all-time low of 2.9 million pounds in 2008 (compared to 30.8 million pounds in 1996). The 2009 benchmark stock assessment found that fishing mortality is not the cause of this decline, but that natural mortality has increased substantially since the late 1990s from such possible factors as predation, competition, and environmental stressors. As a consequence of current stock size, the assessment indicated that total fishery removals (at the time of the assessment) represented a significant proportion of the remaining biomass and were unsustainable. In 2009, in response to the depleted state of the weakfish stock, the Weakfish

Management Board approved Addendum IV to Amendment 4 to the Weakfish FMP, significantly reducing the commercial and recreational harvest of weakfish.

Given current high natural mortality levels, stock projections indicate that the stock is unlikely to recover rapidly. The spawning potential is estimated to be at 3% of

## Weakfish Recreational and Commercial Landings

Source: NMFS Fisheries Statistics Division, 2014



Timeline of Management Actions: FMP ('85); Amendment 1 ('91); Amendment 2 ('95); Amendment 3 ('96); Amendment 4 ('02); Addendum I ('05); Addenda II & III ('07); Addendum IV ('09)





# SPECIES HIGHLIGHTS

unfished levels, well below the target level of 30% established in Addendum IV. In order to rebuild the stock, total mortality will need to be reduced, although this is unlikely to occur until natural mortality decreases to previous levels.

Juvenile abundance surveys suggest that young-of-the-year weakfish continue to be in a productive pattern, although there is concern because these strong young-of-the-year indices do not translate into high adult biomass. Weakfish are currently undergoing a benchmark stock assessment which will be peer-reviewed in 2015.



GOM, and SNE/MA combined) dipped to 3.5 million pounds in 2010, but have increased to 6 million pounds in 2013. Landings have risen since 2010 due to doubling of quotas in 2011 and again in 2012 for the GOM stock, and the lifting of the SNE/MA moratorium in 2013 by NOAA Fisheries. Recreational landings peaked in 1982 at 16.4

million pounds and have since maintained a declining trend. In 2013, only 77,000 pounds of winter flounder were harvested – the lowest amount ever recorded for the recreational fishery.

## WINTER FLOUNDER

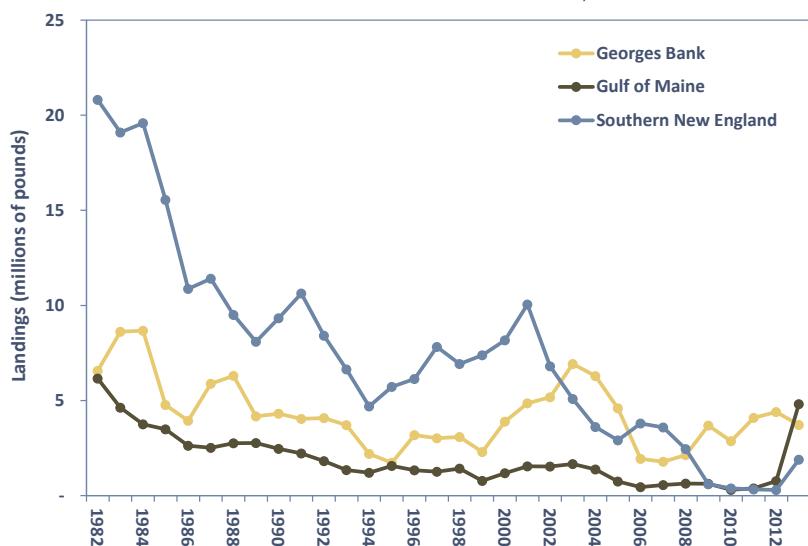
The winter flounder commercial fishery was once a highly productive industry with annual harvests up to 40.3 million pounds. Since the early 1980s, landings have steadily declined. Total commercial landings for all stocks (GBK,

Winter flounder are managed by the Commission in state waters and NEFMC in federal waters. A stock assessment update was completed in 2014 for GOM only. The update found overfishing was not occurring, while its overfished status could not be determined. Based on the 2011 benchmark assessment, the SNE/MA stock is overfished but not experiencing overfishing. The 2010 SSB estimate of 15.6 million pounds was below both the target (96 million pounds) and threshold (48 million pounds). Fishing mortality on the SNE/MA stock was estimated to be 0.051, well below the fishing mortality threshold of 0.29. The stock did not meet its rebuilding target in 2014, in part due to low recruitment. In 2014, NOAA Fisheries partially implemented Framework Adjustment 50 to revise the rebuilding end date to 2023. Heavy fishing pressure, habitat degradation, and low genetic variability hinder winter flounder recovery.

For the 2014 fishing year, the Winter Flounder Management Board maintained commercial and recreational regulations for state waters, with the exception of extending the SNE/MA recreational season from March 1-December 31.

Winter Flounder Commercial Landings by Management Area

Source: Northeast Fisheries Science Center, 2014



Timeline of Management Actions: FMP & Addendum I ('92); Addendum II ('98); Amendment 1 ('05); Addendum I ('09); Addendum II ('12); Addendum III ('13)

# FISHERIES SCIENCE TO SUPPORT MANAGEMENT

## FISHERY-INDEPENDENT DATA COLLECTION

Fishery-independent monitoring provides insight into the status of fish stocks without the biases inherent to commercial and recreational fisheries catch information. The data collected through monitoring programs are a critical component to the Commission's stock assessment and fisheries management processes. The Commission coordinates two primary Atlantic coast fishery-independent data collection programs – the South Atlantic component of the Southeast Area Monitoring and Assessment Program (SEAMAP) and the Northeast Area Monitoring and Assessment Program (NEAMAP).

### *SEAMAP*

SEAMAP is a cooperative program among state and federal agencies and universities to facilitate the collection, management, and dissemination of fishery-independent data in the Southeastern U.S. and Caribbean. Since 1982, SEAMAP has conducted long-term standardized surveys that have become the backbone of fisheries and habitat management for its three regions – the South Atlantic, Gulf

of Mexico, and Caribbean. In 2014, SEAMAP-South Atlantic surveys continued to collect data on the distribution and abundance of a variety of important commercial and recreational species (e.g., red drum, Spanish mackerel, striped bass) from North Carolina to Florida.

In 2014, SEAMAP-South Atlantic continued development of a web-based application to integrate and share information among the several fishery-independent surveys under the SEAMAP umbrella and the fishery managers that use SEAMAP data. The compilation of datasets will be useful for the management of several commercially and recreationally important fish species that migrate between the states' coastal waters and estuaries. With these data, fisheries scientists and managers can determine annual abundance trends, set fishing regulations, and evaluate management strategies.

Additionally, SEAMAP-South Atlantic continued to support bottom mapping and fish habitat characterization activities, which gathers seabed mapping data for managers to use when considering establishment of Marine Protected Areas and other fish habitat conservation areas.

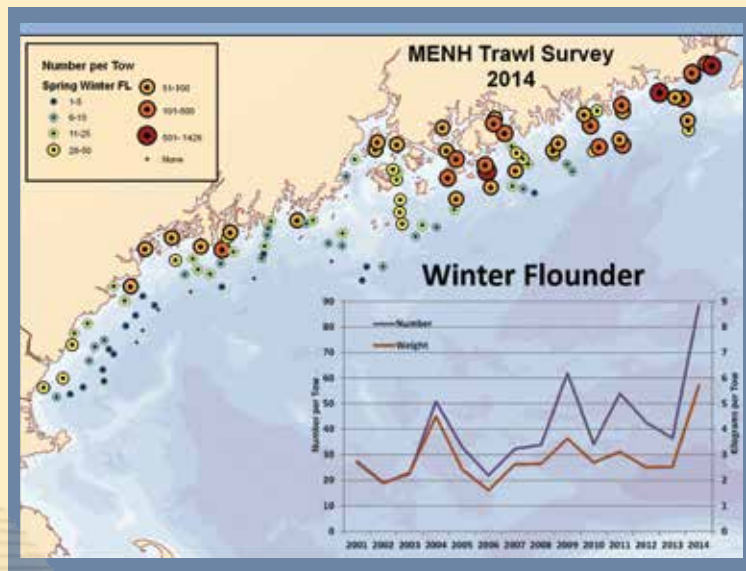


# FISHERIES SCIENCE TO SUPPORT MANAGEMENT

## NEAMAP

NEAMAP is a cooperative state/federal fishery-independent research and data collection program for the coastal waters from Maine to North Carolina. Its mission is to facilitate the collection and dissemination of fishery-independent information obtained in the Northeast for use by state and federal fisheries management agencies, the fishing industry (commercial and recreational), researchers, and others requesting such information. The intent of NEAMAP is not to change existing programs, but to coordinate and standardize procedures and improve data quality and accessibility. The program, which was initiated in 1997 and became operational in 2006, was developed to respond to the lack of adequate survey coverage and coordination in the coastal waters of the Mid-Atlantic Bight. Its primary tool to fill the gap in coverage has been the SNE/MA Nearshore Trawl Survey. The SNE/MA Nearshore Survey is conducted in the SNE/MA regions and has completed spring and fall surveys from 2007 to present. The survey samples inshore waters from Cape Hatteras, North Carolina, northward to Martha's Vineyard, Massachusetts. NEAMAP also includes the Maine-New Hampshire Inshore Trawl Survey and the Massachusetts Inshore Trawl Survey. Survey data are used to complement data from the NOAA Fisheries Northeast Fisheries Science Center (NEFSC) Trawl Survey, which samples in deeper, offshore waters of the Mid-Atlantic and New England.

In 2014, the SNE/MA Nearshore Trawl Survey conducted tows at 150 locations in depths ranging from 3-25 fathoms. To date, over 7 million individual fish and invertebrates, representing over 175 different species, have been collected by the survey. In 2014, the Maine-New Hampshire Inshore Trawl Spring and Fall Surveys, which have been in operation since 2000, conducted over 200 tows in five regions along the Maine/New Hampshire coast in depths ranging from five to 56 fathoms. The Massachusetts Inshore Trawl Survey,



which has conducted spring and fall surveys since 1978, surveyed 200 stations in five geographic regions at depths ranging from 0-180 feet in 2014. Data collected by both the Maine/New Hampshire and Massachusetts Surveys included information on length, sex and maturity, age, and food habitats on dozens of fish and crustacean species, as well as ocean bottom temperatures. Data from all three surveys

- catch numbers, and individual fish and invertebrate lengths, weights, ages, and diets - have been and are being used in stock assessments to describe trends in fish stock sizes and health. These data are vital to improving our ability to track annual changes in population sizes and age structures.

Starting in 2015, NOAA Fisheries will provide funding to support the SNE/MA Nearshore Trawl Survey, which had previously been funded through the MAFMC's RSA Program, and the Maine-New Hampshire Trawl Survey, which is now partially funded by NOAA Fisheries' Northeast Cooperative Research Program.

## RESEARCH INITIATIVES

The Commission conducted several fisheries research initiatives in 2014 to address high priority issues for the Atlantic states and their stakeholders. Information gathered from research initiatives provides the scientific basis for Commission stock assessments and is fundamental to advising fisheries managers on the health of fish and shellfish populations.

### Climate Change

Climate change can have significant impacts on the behavior and geographic distribution of fishery resources. With warming waters, the availability of habitat for fish stocks may change and species may need to shift their range

to seek out more suitable conditions. With stocks that are on the move, there is a need to reassess current management plans and fishery allocations. However, it is important to first fully evaluate the environmental and regulatory drivers that control stock distributions before revising management strategies.

In 2014, the Commission’s Management and Science Committee (MSC) investigated whether climate change and warming coastal water temperatures are causing shifts in the geographic distributions of several stocks. The MSC collaborated with scientists at NEFSC to determine the state of knowledge for select focal species and to demonstrate distribution shifts for stocks where it is occurring. The scientific component of the collaborative work determined if the center of biomass along the Mid-Atlantic and Southern New England coast changed over time for four species - black sea bass, scup, summer flounder, and winter flounder - using NEFSC fishery-independent trawl survey data. If a species demonstrated a change in the center of biomass, the shifts were then attributed to changes in temperature, fishing pressure, stock rebuilding, or a combination of factors. Results of the investigation found

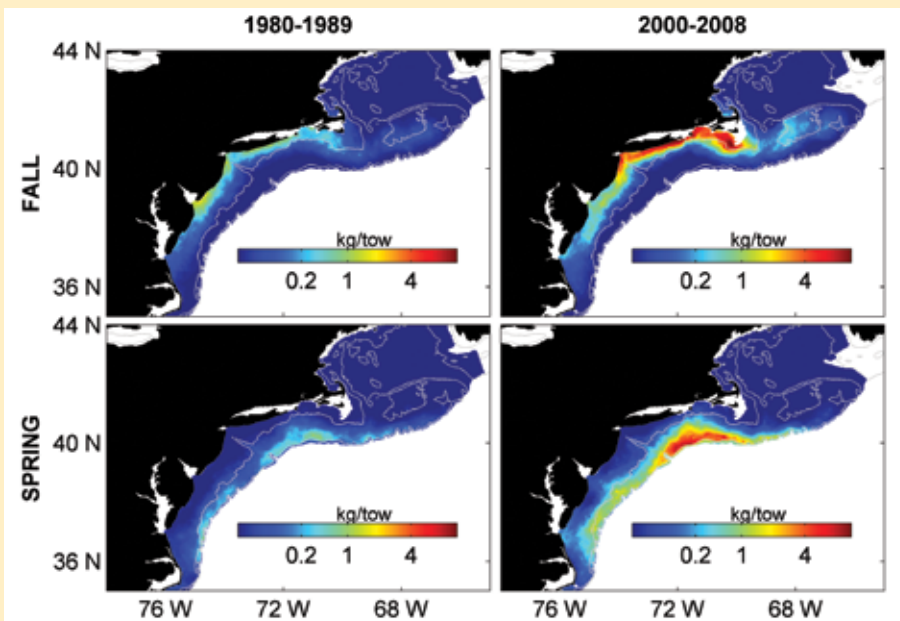


black sea bass, scup, and summer flounder exhibited a significant shift in distribution while the winter flounder stock did not. The poleward shift for black sea bass and scup in the spring season was attributed to increasing water temperatures. However, the poleward shift of summer flounder was largely attributed to the stock’s increase in total abundance and expansion of size structure. This is most likely due to a decrease in fishing pressure since length structure and abundance are largely controlled by fishing. The summer flounder center of biomass will most likely continue to move north with the increase in the abundance of older fish and continued warming.

Based on species redistributions, MSC also explored possible options to adjust state-by-state allocations. It ultimately selected, based on Commissioner input, a historical/current reallocation scenario. This option would use the historical allocation for 50% of the quota and reallocate the remaining 50% of quota based on the current distribution of biomass, with built-in flexibility to set specific alternative percentages for each species. The historical/current reallocation option would address distributional changes for a stock that is expanding in range, increasing in abundance, or both.

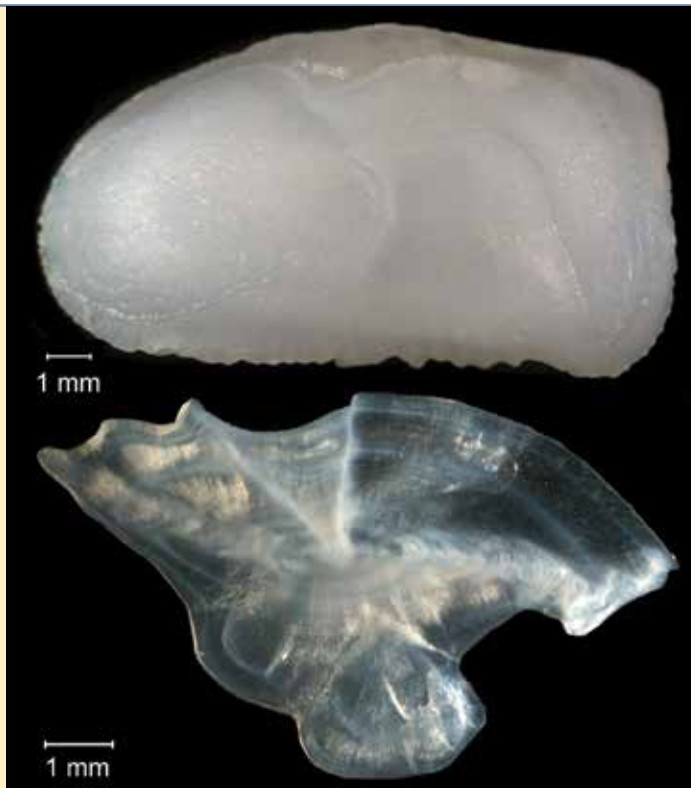
#### A Comparison of Changes in Summer Flounder Biomass and Distribution

Red denotes areas of higher biomass, while dark blue areas reflect areas of no biomass. Source: R. Bell, NEFSC.





# FISHERIES SCIENCE TO SUPPORT MANAGEMENT



climate and fisheries, including a new fish stock climate vulnerability tool being developed by NOAA Fisheries (<http://www.st.nmfs.noaa.gov/ecosystems/climate/activities/assessing-vulnerability-of-fish-stocks>).

## **Northern Shrimp**

The 31<sup>st</sup> Gulf of Maine Northern Shrimp Trawl Survey was conducted in 2014 by the NEFSC in cooperation with the Commission's Northern Shrimp Technical Committee. A total of 84 stations were sampled in the offshore waters of the Gulf, with information on shrimp numbers, sizes, gender, and maturity collected to provide data for annual stock assessments and related analyses. The survey is a valuable tool for consistently evaluating the shrimp stock's condition. Results show shrimp abundance and biomass have declined steadily since 2008, with 2013 and 2014 catches at the lowest levels ever recorded in the survey's history. A notable decline in shrimp sizes across life stages and genders was also detected in the 2014 survey.

## **Red Drum**

The Commission identified red drum as a priority species in need of additional research because the status of the adult portion of the population is not well known. With federally dedicated research funds, state scientists from North Carolina, South Carolina, and Georgia conduct

There is interest among the states into exploring additional options, but in-depth work with the black sea bass, scup, and summer flounder technical committees will be needed to determine the most appropriate data sets to use and to establish specific reallocation structures.

In anticipation of future climate impacts to fish stocks, the Commission is adding evaluations of climate-induced distribution shifts to upcoming stock assessments, including the American lobster, red drum, and black sea bass assessments to be completed in the next few years. The Commission is also incorporating the latest science and analytical tools to evaluate climate impacts to fish habitat through its Habitat Program and the Atlantic Coastal Fish Habitat Partnership. The Commission will continue to track developing scientific tools and management issues related to



bottom longline surveys to provide a fishery-independent index of adult red drum abundance. Many red drum encountered in the survey are tagged to provide information on survival rates, migratory behavior, and stock identification. Information is also collected on the presence of hatchery-origin fish in the offshore adult population, as well as sex ratios, maturity, and age structure of the population. All of the information is critical for evaluating the status of the red drum population, especially the adult portion, and developing a successful red drum management program.

## Fish Ageing

Fish age and growth information are key components of stock assessments that improve our understanding of species' population dynamics. With age samples being collected, processed, and read by scientists at several institutions every year, it is important to ensure all ageing labs follow consistent protocols. In 2014, the Commission facilitated fish ageing consistency and data sharing among different Atlantic coast laboratories through the development of standardized ageing protocols, the exchange of ageing samples, and two fish ageing workshops for summer flounder and scup. Results from the ageing workshops will be included in the next coastwide assessment of each species. Workshop results and ageing protocols can also be found on the Commission website at [www.asmfc.org/fisheries-science/research](http://www.asmfc.org/fisheries-science/research). Atlantic menhaden age exchange workshops are planned for 2015.

## Horseshoe Crab Trawl Survey

Since 2002, the Horseshoe Crab Trawl Survey, conducted by Virginia Tech University's Horseshoe Crab Research Center, has been the only fishery-independent survey designed to sample horseshoe crab populations in Atlantic coastal waters. The survey's data have been a critical component of the Commission's coastwide stock assessment and the ARM Framework, which incorporates both shorebird and horseshoe crab abundance levels to set optimized horseshoe crab harvest levels for the Delaware Bay area. Both the 2013 and 2014 fishing year specifications were determined using the ARM Framework.

Due to funding shortfalls, the Horseshoe Crab Trawl Survey was not conducted in 2013 or 2014. The loss of the survey and its data present challenges for use of the ARM Framework, which depends on the adult abundance indices derived from the Horseshoe Crab Trawl Survey data. The



Commission continues to seek long-term funding for this important survey.

## COOPERATIVE TAGGING

Tag and recapture data are valuable inputs to the stock assessments of several Commission-managed species, including Atlantic striped bass, red drum, Atlantic sturgeon, weakfish, spiny dogfish, and coastal sharks. The Interstate Tagging Committee (ITC) was created in 1999 to improve the quality and utility of fish tagging data through the development and promotion of protocols for effective tagging programs. ITC maintains a Cooperative Tagging Website and Registry,

providing information on coastwide tagging programs. Anglers can search the database by fish species, tag type, and tag color in order to identify recovered tags. Recent ITC activities include certification of state tagging programs in Massachusetts, Virginia, and South Carolina, and development of online tagging videos to guide anglers on proper tagging techniques. The cooperative tagging website can be found at [www.fishtag.info](http://www.fishtag.info).

Since the early 1980s, the Commission has been a partner to the Cooperative Winter Tagging Program led by USFWS. The Program organizes annual field tagging of Atlantic striped bass, Atlantic sturgeon, spiny dogfish, and other species that aggregate each winter in the coastal waters off Virginia and North Carolina. In 2014, for only the second time in over 20 years, state and federal funds were not available for a trawling vessel to catch, tag, and release striped bass. To help fill the sampling gap, scientists and captains aboard recreational charter vessels caught, tagged, and released approximately 1,000 striped bass. Information from recaptured fish with tags provides scientists with data to better understand fish survival and growth, habitat preferences, seasonal movements and migrations, and stock boundaries.

# FISHERIES SCIENCE TO SUPPORT MANAGEMENT

## MULTISPECIES MODELS AND ASSESSMENTS

The Commission recognizes the importance of ecological interactions, such as predator-prey relationships, in understanding the population dynamics of fishery resources. The Commission's Multispecies Technical Committee (MSTC), a group of state, federal, and university scientists, is responsible for evaluating relationships among species via a multispecies analytical framework that utilizes a suite of predator-prey models.

The MSTC periodically performs updates to the models and works with the Commission's Assessment Science Committee to consider and evaluate alternative single-species stock assessment models that incorporate ecosystem factors. In addition, a new Ecological Reference Points Work Group continues to develop several alternative multispecies models and ecosystem-based approaches that may be used to develop ecological reference points for Atlantic menhaden. The reference points would be based on the forage needs of menhaden's primary predators (e.g., Atlantic striped bass, weakfish, bluefish). In 2014, the committees updated the traditional multispecies model and provided new multispecies models to complement the results of the 2015 Atlantic menhaden benchmark stock assessment.

## WEAKFISH MODELING

The Commission established a collaborative project to develop improved statistical models for characterizing

the status of the Atlantic coast weakfish population. The project is also supported by the Virginia Marine Resources Commission, and is led by a team at Virginia Tech. The work focuses on building new modeling methods that may influence population projections for fisheries management decision-making. It also includes exploration of a user friendly modeling application. New models will allow the Commission's Weakfish Technical Committee to explore trends in recruitment and spawning stock size in a new statistical catch-at-age model. The Virginia Tech team will conduct the model development work, in collaboration with other lead analysts on the Weakfish Technical Committee. Results will also be provided to the MSTC to be considered for use in the ecological modeling framework.

## STOCK ASSESSMENT PEER REVIEW

The Commission's species management boards rely on the scientific and technical information provided by independent peer reviews of stock assessments to evaluate stock status and develop fisheries regulations using the best available science. In 2014, four stock assessments were evaluated through peer review processes. The northern shrimp assessment review was conducted through the Northeast Regional Stock Assessment Review Committee. The Atlantic menhaden stock assessment was evaluated through the SouthEast Data and Assessment Review process. The tautog and black drum stock assessments were reviewed through the Commission's external peer review process. Each of these assessments will be presented to the respective species management boards in early 2015.



## STOCK ASSESSMENT TRAINING

The Commission organizes stock assessment training courses to provide instruction to fisheries professionals on the most progressive fisheries analysis methods available for use in stock assessments. Courses are provided each year to meet the specific training needs identified as critical to supporting coastwide assessments, and to provide managers with a better understanding of assessment outcomes. The courses are designed to provide state scientists with hands-on experience in developing stock assessments, using fishery-independent and -dependent data in a variety of analytical methods and models.

The Commission has created a dedicated page on Fisheries Science 101 at [www.asmf.org/fisheries-science/fisheries-science-101](http://www.asmf.org/fisheries-science/fisheries-science-101). The webpage explains the basic concepts of fisheries science to give stakeholders a better understanding of the types of information scientists provide to fisheries managers. It also includes links to stock assessment seminars, such as “Understanding the Science Behind Northern Shrimp Management.” Additional seminars will be posted as they become available.

## HABITAT PROTECTION, RESTORATION, AND ENHANCEMENT

The Commission recognizes that protection, restoration, and enhancement of fish habitats are essential to promoting the sustainability of fisheries along the Atlantic

coast. The Habitat Program’s goal is to identify, enhance, and cooperatively manage vital fish habitat for conservation, restoration, and protection, and to support cooperative management of fisheries activities. The Program successfully performed this role through several activities in 2014.



In 2014, the Habitat Program released Volumes I & II of the *Habitat Hotline Atlantic*. Volume I focused on fish habitat policy and regulation along the Atlantic coast. It included articles on regional approaches to shellfish and marine fisheries management, oyster reef restoration, and ocean data portals, Volume II highlighted state habitat-related initiatives and provided an update from the Atlantic Coastal Fish Habitat Partnership (ACFHP).

The Habitat Program also began work on the next installment of the Habitat Management Series, which will present an

overview of nearshore and estuarine aquaculture practices and their effects on coastal fish habitats. The installment, to be published in 2015, will provide a coastwide exploration of the growing nearshore aquaculture industry’s positive and negative impacts as the need for fish habitat restoration and spatial planning becomes critical.

As part of its responsibility to provide the most up-to-date information on the habitat needs and ecosystem functions of Commission-managed species, the Habitat Program continues to update the habitat sections of the Commission FMPs. In 2014, the Commission adopted new habitat sections to the American Lobster and Red Drum FMPs.

# FISHERIES SCIENCE TO SUPPORT MANAGEMENT

In 2014, the Habitat Committee initiated the development of a sciaenid habitat source document, similar to the *Atlantic Coast Diadromous Fish Habitat* published in 2009. Information from the source document will be used to develop new habitat sections for the Commission-managed sciaenid species, such as Atlantic croaker, black drum, and weakfish.

In addition, the Habitat Program continues to collaborate with federal partners to increase consistency in fish habitat conservation. For example, as an ongoing effort, the Habitat Program is working with NOAA Fisheries and USFWS to review and update the Habitat Areas of Particular Concern designations for species managed by the Commission and/or regional fishery management councils.

## ***Atlantic Coastal Fish Habitat Partnership***

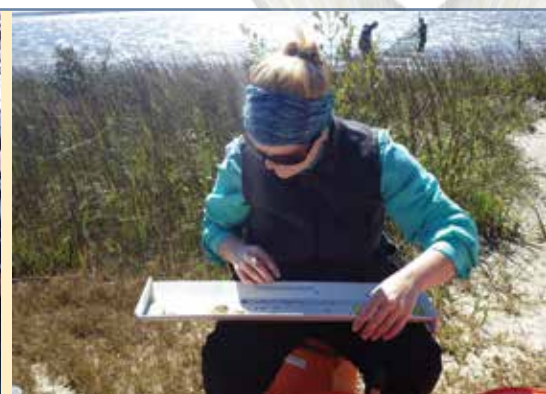
Beginning in 2006, the Commission contributed to the establishment and growth of ACFHP, an assembly of state, federal, tribal, and non-governmental groups whose mission is to conserve habitat for Atlantic coast diadromous, estuarine-dependent, and coastal fish species. The Partnership addresses habitat threats with a broad and coordinated approach, leveraging resources from many agencies, organizations, and corporations to make a difference for fish habitat. ACFHP operates under the purview of the National Fish Habitat Partnership (NFHP).



2014 was the fifth year of ACFHP's successful partnership with USFWS in funding on-the-ground fish habitat conservation projects. Two new projects were funded this year. The first, led by NOAA's New Hampshire Coastal Program, is Oyster Reef Restoration in Great Bay Estuary, Rockingham County, New Hampshire. The second, led by the North Carolina Coastal Federation, is Oyster Reef and Salt Marsh Restoration in Stump Sound, North Carolina. For more information on these and other ACFHP-USFWS funded projects, please visit [www.atlanticfishhabitat.org/projects/fundedprojects/](http://www.atlanticfishhabitat.org/projects/fundedprojects/).

In cooperation with its state partners, and with funding from NOAA Fisheries, ACFHP moved towards implementing an on-the-ground project to expand conservation mooring technology, currently in place in coastal Massachusetts, to new locations along the Atlantic coast. Conservation mooring is a system designed to avoid contact with the seafloor and reduce physical damage to the submerged aquatic vegetation that provides valuable habitat for young fish. The system uses an elastic connection, akin to a bungee cord, to connect the surface buoy with the anchoring device. This eliminates any chain sweep that physically damages or eliminates vegetation growing on the seafloor.

ACFHP also officially endorsed several project proposals in recent years: a dam removal and riverine habitat restoration



project in New Hampshire; a dam removal project in Connecticut; a salt marsh and tidal creek restoration project in North Carolina; and a culvert replacement and shoreline restoration project in South Carolina. In the absence of funding or other resources, endorsement is an opportunity to gain support from ACFHP for completed, current, or proposed projects. To learn more about ACFHP endorsed projects and proposals, please visit [www.atlanticfishhabitat.org/projects/endorsedprojects/](http://www.atlanticfishhabitat.org/projects/endorsedprojects/).

In collaboration with its neighboring Fish Habitat Partnerships (FHPs) - the Eastern Brook Trout Joint Venture (EBTJV) and the Southeast Aquatic Resources Partnership (SARP) - ACFHP took steps to promote a more cohesive implementation of the National Fish Habitat Action Plan, which helps direct the work of protecting, restoring, and enhancing fish habitats across their collective 26 partner states. Through this Whitewater to Bluewater Project among ACFHP, EBTJV, and SARP, the three FHPs are taking a more coordinated approach towards implementing their strategic plans, habitat assessments, and outreach activities. The three partnerships developed a Whitewater to Bluewater fish passage template for use in soliciting local partners' support of passage restoration projects that are consistent with the FHPs' collaborative efforts.

In addition to collaborating with its neighboring FHPs, ACFHP has embarked on a national cooperative initiative with nine other FHPs that are helping to protect, restore, and enhance fish habitats in coastal marine environments - the Pacific Marine and Estuarine FHP, the California Fish Passage Forum, the Hawaii FHP, the Kenai Peninsula FHP, the Mat-Su Basin Salmon Habitat Partnership, the Southeast Alaska FHP (candidate FHP), the Southwest Alaska Salmon Habitat Partnership, the Western Native

Trout Initiative, and SARP. Initial products include quarterly newsletters and a symposium at the Restore America's Estuaries 7th National Summit highlighting all the activities the FHPs are undertaking.

With the funding support of the North Atlantic Landscape Cooperative, ACFHP and its partners have continued to work with Downstream Strategies, LLC to complete fish habitat assessments through *Development of a Decision Support Tool to Assess Aquatic Habitats and Threats in North Atlantic Watersheds and Estuaries*. Through the project, data will be assembled and conditions analyzed to understand distribution, habitat, and threats to inland, estuarine, and coastal aquatic species across the North Atlantic region. Stakeholders will be engaged during all stages of the project to ensure results are useful to managers of aquatic resources and habitats. The focus of the project is a flexible modeling process that has been widely adopted by aquatic and fisheries experts across the country. Based on multiple models of individual species or species groups, ACFHP and project partners can create species distribution maps, and identify and quantify threats and stressors to each species. Further, a multi-criteria decision support tool can be created that integrates the components of each model to provide an interactive and user-friendly mapping program for resource managers to visualize, rank, and manipulate inputs in order to prioritize areas for conservation action. More information on the project and the North Atlantic Landscape Conservation Cooperative can be found at [www.northatlanticlcc.org/](http://www.northatlanticlcc.org/).

# AWARDS OF EXCELLENCE

*During 2014, the Commission had the privilege of presenting awards to several deserving individuals who have directly contributed to furthering the Commission's Vision of Sustainably Managing Atlantic Coastal Fisheries.*

## CAPTAIN DAVID H. HART AWARD

The Atlantic States Marine Fisheries Commission presented Mr. Patrick Augustine, fisheries advocate and long-serving ASMFC Commissioner (now retired) from New York, the Captain David H. Hart Award, its highest annual award, at the Commission's 73<sup>rd</sup> Annual Meeting in Mystic, Connecticut.

For nearly two decades, Mr. Augustine has passionately committed his time and energy to the betterment of Atlantic coast fisheries at all levels of fisheries management – state, interstate, regional, and federal. Over the past 16 years, he served at the pleasure of four consecutive Governors to represent New York's fishing constituents on the Commission. Over that time, he actively participated on 15 of the Commission's 17 species management boards, and provided leadership as Chair on six of those boards. He also played an important role in elevating the status of ASMFC Legislators and Governor Appointees as equal participants on species management boards, as well as recognizing the outstanding efforts of contributors to our process as a long-standing member of the Awards Committee.

Mr. Augustine served for three consecutive terms as a member of MAFMC, participating on over a dozen committees on issues ranging from demersal and coastal migratory species, RSA Program, ecosystem/ocean planning, Magnuson Stevens reauthorization, bycatch and limited access, and highly migratory species. He also represented the Council as an Advisory Committee member



to the U.S. Section for the International Commission for the Conservation of Atlantic Tunas. The Council adopted a formal resolution acknowledging his numerous and outstanding accomplishments upon his retirement from the Council in August 2011.

In New York, he has led and been a member of a number of his state's fishing and marine resource

organizations, including the New York Sportfishing Federation, Huntington Anglers Club, New York Bight Regional Ocean Science Council, South Shore Estuary Reserve Council, Long Island Sound Estuary Citizens Advisory Committee, Long Island Coastal Advisory Committee, Sea Grant Programs Advisor, and the New York State Boating Advisory Council. And yet, given all these responsibilities, he still found time to offer his expertise as a speaker at numerous fishing clubs and special interest groups, and provide valuable input at the Marine Resources Advisory Council.

Throughout it all, Mr. Augustine brought to all his interactions his quick wit and good humor, dedication to fully understanding all the issues brought before him, and commitment to seeking balance among the competing demands of all resource users within fisheries management arena. To the latter point, he was often found talking directly to anglers when forming his position on an issue before the Commission. He is well known for having no reservations about taking those facts up directly at

Commission meetings, or going straight to his Governor, Congress, or other elected officials when advocating for a given management action. This approach kept him wholly connected to New York anglers and grounded his positions in real-world facts as few others could. Because of his knowledge and relationships, Mr. Augustine has been at the forefront of resolving countless issues over the years, not only at the Commission, but in his role as a Council member and countless fishing and conservation organizations.

The Commission instituted the Captain David H. Hart Award in 1991 to recognize individuals who have made outstanding efforts to improve Atlantic coast marine fisheries. The award is named for one of the Commission's longest serving members, who dedicated himself to the advancement and protection of marine fishery resources.

## ANNUAL AWARD OF EXCELLENCE

### *Management and Policy Contributions*



**MICHAEL LUISI**  
*Maryland Department of  
Natural Resources,  
Fisheries Service*

Mr. Luisi has made significant contributions to the successful management of summer flounder and black sea bass fisheries throughout the Northeast and Mid-Atlantic. Active at the management level at both the Commission and MAFMC, he worked closely with staff, technical representatives, industry, and state and federal colleagues to develop and implement regional management approaches for both species. These approaches have allowed the states to maintain recreational black sea bass and summer flounder fisheries when existing policies would have resulted in severely curtailed or non-existent fisheries. For black sea bass, that meant moving away from coastwide management toward a regional approach more suitable to their life history. For summer flounder, it meant moving away from

conservation equivalency and the informal sharing of fish that were not otherwise harvested by other states into a more formal regional approach. These approaches have helped minimize the risk of overharvest while still providing headboats, charter boats, and anglers opportunities to fish. Mr. Luisi's efforts have benefited not only Maryland, but all states with summer flounder and black sea bass fisheries. Through his actions, Mr. Luisi has truly embodied the Commission's Mission "To promote the better utilization of the fisheries...of the Atlantic seaboard by the development of a joint program for the promotion and protection of such fisheries."

### *Scientific, Technical and Advisory Contributions*



**PAUL CARUSO**  
*Massachusetts Division  
of Marine Fisheries*

Mr. Caruso has devoted nearly three decades to advancing the field of fisheries biology and stock assessments. He has been a tireless contributor to state, regional and coastwide fisheries management activities through his state tagging and fishery-dependent sampling projects, and his participation and chairmanship of numerous Commission and MAFMC technical committees. In Massachusetts, Mr. Caruso has used his encyclopedic knowledge of fisheries to address a multitude of projects and species issues from oversight of the state's Marine Recreational Information Program project, to the conduct of tagging programs for striped bass and summer flounder, to his extensive outreach efforts to the recreational fishing community. Regionally and coastwide, Mr. Caruso's expertise and leadership have guided the development of numerous addenda and amendments for species such as striped bass, tautog, bluefish, black sea bass, summer flounder, and scup. He has helped advance stock assessments and the data upon which they are based through his work on cooperative tag and recapture programs, fish ageing protocols and sampling efforts, and improved biological monitoring requirements.



# AWARDS OF EXCELLENCE

Throughout his entire career, Mr. Caruso has approached his work with enthusiasm and good humor, quickly embracing and accomplishing tasks. His goal has always been to supply managers with the information they need to properly manage fisheries. Mr. Caruso's accomplishments are many and his efforts have been impactful to the countless fisheries biologists and staff he has mentored by sheer example.



**DR. ROBERT J. LATOUR**  
*Virginia Institute  
of Marine Science*

Dr. Latour has made outstanding contributions to the science underpinning the management activities of the Commission. He has contributed to numerous benchmark stock assessments and stock assessment updates, and focused much of his research

program and student mentorship on addressing specific research needs of various Mid-Atlantic fisheries. These latter efforts have led to a variety of important peer-reviewed manuscripts focused on improving striped bass tagging models; fish diet composition and community ecology; Atlantic menhaden feeding ecology; and disease epidemiology in Chesapeake Bay striped bass. Collectively, Dr. Latour's work has helped to further the ongoing efforts of various Commission technical committees and the longer term knowledge base used to aid our understanding of fisheries dynamics.

For the last 15 years, Dr. Latour has maintained an active role on Commission technical committees for Atlantic menhaden, striped bass tagging, multispecies assessment, and assessment science. He is co-principle investigator of the Chesapeake Bay Multispecies Monitoring and Assessment Program and NEAMAP. These two relatively new data collection platforms are dedicated to improving the assessments of many Commission managed fisheries, including otherwise data-scarce assessments such as black drum and Atlantic sturgeon. The emergence of these new data sources is a testament to Dr. Latour's hard work and dedication to improving fisheries management along the Atlantic coast. A highly respected scientist, Dr. Latour's expertise is sought as an external peer reviewer

and as a member of the Mid-Atlantic Council's Science and Statistical Committee. In all that he does, Dr. Latour provides exemplary scientific expertise and sage advice in an effort to elevate the scientific rigor of our stock assessments and the information upon which fisheries management decisions are based.

**CHERI PATTERSON**  
*New Hampshire Fish and Game Department*

Ms. Patterson has dedicated her 35 year career to not only improving the collection and use of fishery-dependent and independent data along the Atlantic coast, but also to the conservation and protection of diadromous fish habitat. She began her career working for the New Hampshire Fish & Game Department as a member of the scientific crew for the GOM Northern Shrimp Survey. Today, this survey represents one of the longest running cooperative state/



federal research surveys along the Atlantic coast, and forms the basis for the assessment and management of the northern shrimp resource. She played an integral role in the development of Amendment 2 to the Northern Shrimp Plan and has been a longstanding and engaged member of the Commission's Shad & River Herring Technical Committee and Management & Science Committee. Ms. Patterson has also been a passionate

participant in the ACCSP at all levels of the Program since its inception in the mid-1990s and currently serves as Chair of the ACCSP Coordinating Council. She was the driving force in developing and implementing ACCSP-compliant lobster harvester and dealer reporting systems in New Hampshire.

In recent years, Ms. Patterson has become increasingly involved in diadromous fish monitoring and habitat restoration, participating on the Commission's Habitat Committee and Fish Passage Committee, as well as the Steering Committee for the ACFHP. A notable crowning achievement in Ms. Patterson's work on diadromous fish restoration came with her leadership in overseeing the removal of two head of tide dams in rivers of New Hampshire's Great Bay Estuary.

## Law Enforcement Contributions

### OPERATION LOOKOUT MEMBERS

*Captain John Croft and Special Investigator Jimmy Simpson, Virginia Marine Police; Special Agents Sarah Block, Tracey Woodruff and Steven Niemi, NOAA Office of Law Enforcement; and Trial Attorney James Nelson, U.S. Department of Justice*

Members of the joint state/federal law enforcement team of *Operation Lookout* investigated and documented the poach-ing of striped bass in the exclusive economic zone off the coast of Virginia. In order to obtain the proper evidence and documentation, *Operation Lookout* conducted high risk undercover operations in an extremely dangerous environment.

Their undercover efforts, led to the indictment of five individuals with several charges applied to each individual. It is fitting that the Commission recognize the sacrifice and due diligence of the members of *Operation Lookout*

in protecting migratory striped bass populations for the benefit of all fishermen along the Atlantic coast. Special Agent Sara Block accepted the award on behalf of *Operation Lookout*.



The Commission established the Annual Awards of Excellence in 1998 to recognize the important contributions of individuals to the success of the organization. The awards are given in the areas of law enforcement, legislation, management and policy, and scientific, technical & advisory contributions. Each year, the Commission honors the very best contributions in those areas.



# FINANCIAL REPORT

The Commission's finances were audited by the firm Jones and McIntyre, PLLC. Following is a financial snapshot of the Commission for the years ended June 30, 2014 and 2013. Detailed financial statements are available from the Commission office.

## ATLANTIC STATES MARINE FISHERIES COMMISSION CONDENSED STATEMENT OF FINANCIAL POSITION INFORMATION FOR THE YEARS ENDED JUNE 30, 2014 AND 2013

### ASSETS

	2014	2013
<b>CURRENT ASSETS:</b>		
Cash and Investments	\$ 751,506	\$ 1,213,474
Grants and accounts receivable	506,897	621,273
Prepaid expenses	24,701	28,071
Total Current Assets	<u>\$ 1,283,104</u>	<u>\$ 1,862,818</u>
<b>Property and Equipment, Net</b>	<u>\$ 3,933,076</u>	<u>\$ 4,071,488</u>
<b>TOTAL ASSETS</b>	<u><u>\$ 5,216,180</u></u>	<u><u>\$ 5,934,306</u></u>

### LIABILITIES AND NET ASSETS

<b>CURRENT LIABILITIES:</b>		
Accounts payable and accrued expenses	\$ 585,647	\$ 1,228,062
Deferred revenue and contract advances	161,804	172,043
Current maturities of long term debt	206,532	208,841
Total Current Liabilities	<u>\$ 953,983</u>	<u>\$ 1,608,946</u>
<b>OTHER LIABILITIES:</b>		
Long term debt	\$ 979,014	\$ 1,385,694
Obligation under interest rate swap	70,040	94,089
Total Other Liabilities	<u>\$ 1,049,054</u>	<u>\$ 1,479,783</u>
<b>TOTAL LIABILITIES</b>	<u>\$ 2,003,037</u>	<u>\$ 3,088,729</u>
<b>UNRESTRICTED NET ASSETS</b>	<u>3,213,143</u>	<u>2,845,577</u>
<b>TOTAL LIABILITIES AND NET ASSETS</b>	<u><u>\$ 5,216,180</u></u>	<u><u>\$ 5,934,306</u></u>

**ATLANTIC STATES MARINE FISHERIES COMMISSION  
CONDENSED STATEMENT OF ACTIVITIES INFORMATION  
FOR THE YEARS ENDED JUNE 30, 2014 AND 2013**

	2014	2013
<b>REVENUE:</b>		
Contract reimbursements	\$ 5,720,578	\$ 6,266,019
Contributions from member states	633,579	603,421
Other	49,633	40,543
<b>Total Revenue</b>	<u>\$ 6,403,790</u>	<u>\$ 6,909,983</u>
<b>EXPENSES:</b>		
Salaries and fringe benefits	\$ 3,312,581	\$ 3,248,704
Subcontracts	1,036,827	1,880,834
Travel	921,172	880,017
Other	765,644	734,891
<b>Total Expenses</b>	<u>\$ 6,036,224</u>	<u>\$ 6,744,446</u>
<b>CHANGE IN NET ASSETS</b>	\$ 367,566	\$ 165,537
<b>NET ASSETS, BEGINNING OF YEAR</b>	<u>2,845,577</u>	<u>2,680,040</u>
<b>NET ASSETS, END OF YEAR</b>	<u>\$ 3,213,143</u>	<u>\$ 2,845,577</u>



# COMMISSION STAFF



**ROBERT E. BEAL**  
*Executive Director*  
*Deke Tompkins*  
*Legislative Executive*  
*Assistant*

**TINA L. BERGER**  
*Director of*  
*Communications*

**LAURA C. LEACH**  
*Director of Finance*  
*and Administration*

*Cecilia Butler*  
*Human Resources*  
*Administrator*

*Jayran Farzanegan*  
*Accounting Manager*

*Lisa Hartman*  
*Staff Assistant*

*Amy Hirrlinger*  
*Fisheries Specialist I*

*Ed Martino, Ph.D.*  
*Information Systems*  
*Manager*

*Cynthia Robertson*  
*Meetings Assistant*

**PATRICK CAMPFIELD**  
*Fisheries Science Director*

*Katie Drew, Ph.D.*  
*Senior Stock Assessment*  
*Scientist*

*Lisa Havel, Ph.D.*  
*ACFHP Coordinator*

*Jeff J. Kipp*  
*Stock Assessment Scientist*

*Shanna L. Madsen*  
*Fisheries Science*  
*Coordinator*

*Genny M. Nessslage, Ph.D.*  
*Senior Stock Assessment*  
*Scientist*

**TONI KERNS**  
*Director, Interstate Fisheries*  
*Management Program*

*Marin Hawk*  
*Fishery Management Plan*  
*Coordinator*

*Kirby Rootes-Murdy*  
*Fishery Management Plan*  
*Coordinator*

*Kate Taylor*  
*Senior Fishery Management*  
*Plan Coordinator*

*Michael Waine*  
*Fishery Management Plan*  
*Coordinator*

*Melissa Yuen*  
*Fishery Management Plan*  
*Coordinator*

# ACKNOWLEDGEMENTS

*We would like to thank the following people and agencies for the use of their photographs throughout this report.*

## **Cover and Title Pages**

- "Make Way, Coming Through," Atlantic striped bass at Montauk Point, New York  
© [www.jimlevisonphoto.com](http://www.jimlevisonphoto.com)

## **Fish illustrations throughout Full Report**

- ASMFC fish illustrations by Dawn Witherington, <http://www.drawnbydawn.com/>

## **Page 12**

- American eel © [www.jayflemingphotography.com](http://www.jayflemingphotography.com)

## **Page 14 (from right to left)**

- Commercially-caught American lobster © ASMFC
- Jonah crab © MA DMF

## **Page 17**

- Atlantic menhaden © Brian Gratwicke

## **Page 18**

- ASMFC FMP Coordinator, Mike Waine, and young angler display an Atlantic striped bass  
© Mike Waine, ASMFC

## **Page 21 (from right to left)**

- Atlantic sturgeon captured as part of the SEAMAP Winter Cooperative Tagging Cruise © ASMFC
- Black drum © Mike Waine, ASMFC
- Young angler with black sea bass © Steve Witthuhn

## **Page 23**

- Bluefish © Captain John McMurray, [www.nycflyfishing.com](http://www.nycflyfishing.com)

## **Page 24 (from top)**

- Spawning horseshoe crab © Kevin Kalasz, DE DNREC

## **Page 25**

- Northern shrimp being counted, measured, and sexed as part of the GOM Northern Shrimp Cruise  
© Elaine Brewer, MA DMF

## **Page 26**

- Juvenile red drum © Chris Kalinowsky, GA DNR

## **Page 27**

- Scup being counted, measured and sexed as part of the CT DEEP fishery-dependent survey © CT DEEP

## **Page 28**

- Thomas White with an American shad  
© Geoff White, ACCSP

## **Page 29**

- Girls with a Spanish mackerel (left) and bluefish (right)  
© Captain Walter Bateman, [www.carolinaguide.com](http://www.carolinaguide.com)

## **Page 30**

- Top left: Spiny dogfish captured as part of the SEAMAP Winter Cooperative Tagging Cruise © ASMFC
- Bottom left: Spiny dogfish captured as part of NEAMAP SNE/MA Trawl Survey © NEAMAP
- Right: Spiny dogfish captured off of Morehead City, NC as part of a feeding study © Chuck Bangley, East Carolina University

## **Page 32**

- Young angler with spotted seatrout  
© Captain Walter Bateman, [www.carolinaguide.com](http://www.carolinaguide.com)

## **Page 34 (from top to bottom)**

- Summer flounder © Open Boat Miss Montauk
- Tautog © Chip Lynch, NOAA Fisheries

## **Page 35**

- Former ASMFC staff, Jessie Thomas-Blate with a weakfish captured as part of the SEAMAP Winter Cooperative Tagging Cruise © ASMFC

## **Page 36**

- Winter flounder in eelgrass in Fishers Island, New York © Cornell Cooperative Extension of Suffolk County, [www.seagrassli.org](http://www.seagrassli.org)

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- Fish sampling and data collection as part of the SEAMAP Coastal Survey (left) and SEAMAP Hook and Line Tagging Cruise (right) © Pearse Webster, SC DNR and Tom Crews, USFWS, respectively

## **Page 38**

- Graph of survey coverage and sampled winter flounder by number and weight as part of the Maine/New Hampshire Inshore Trawl Survey  
© Maine/New Hampshire Inshore Trawl Survey

## **Page 39**

- Black sea bass captured as part of NEAMAP SNE/MA Trawl Survey © NEAMAP

## **Page 40 (from top to bottom)**

- Red drum otolith or ear bone (top) and otolith cross section (bottom) used to determine fish age  
© FL FWCC
- Red drum captured as part of the Bottom Longline Survey © Bryan Frazier, SC DNR

## **Page 41**

- Horseshoe crabs on the beach  
© Larry DeLancey, SC DNR

## **Page 42 (from left to right)**

- Weakfish © Captain John McMurray, [www.nycflyfishing.com](http://www.nycflyfishing.com)
- Trawl gear being towed © RI DEM
- Atlantic striped bass being measured as part of SEAMAP Hook and Line Tagging Cruise © ASMFC

## **Page 43**

- Atlantic striped bass being weighed as part of SEAMAP Hook and Line Tagging Cruise © ASMFC

## **Page 44**

- Reef fish and coral habitat, Florida Keys National Marine Sanctuary © NOAA National Ocean Service

## **Page 45**

- Habitat restoration and fish sampling © Friends of the Guana Tolomato Matanzas Estuarine Research Reserve, Ponte Vedra Beach, FL

## **Page 49 (from left to right)**

- Conservation officer with confiscated Atlantic sturgeon © RI DEM
- Conservation officers checking American lobster traps © NYS DEC



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