ANNUAL REPORT

2020

Sustainable and Cooperative Management of Atlantic Coastal Fisheries

COMMISSIONERS

Our 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.

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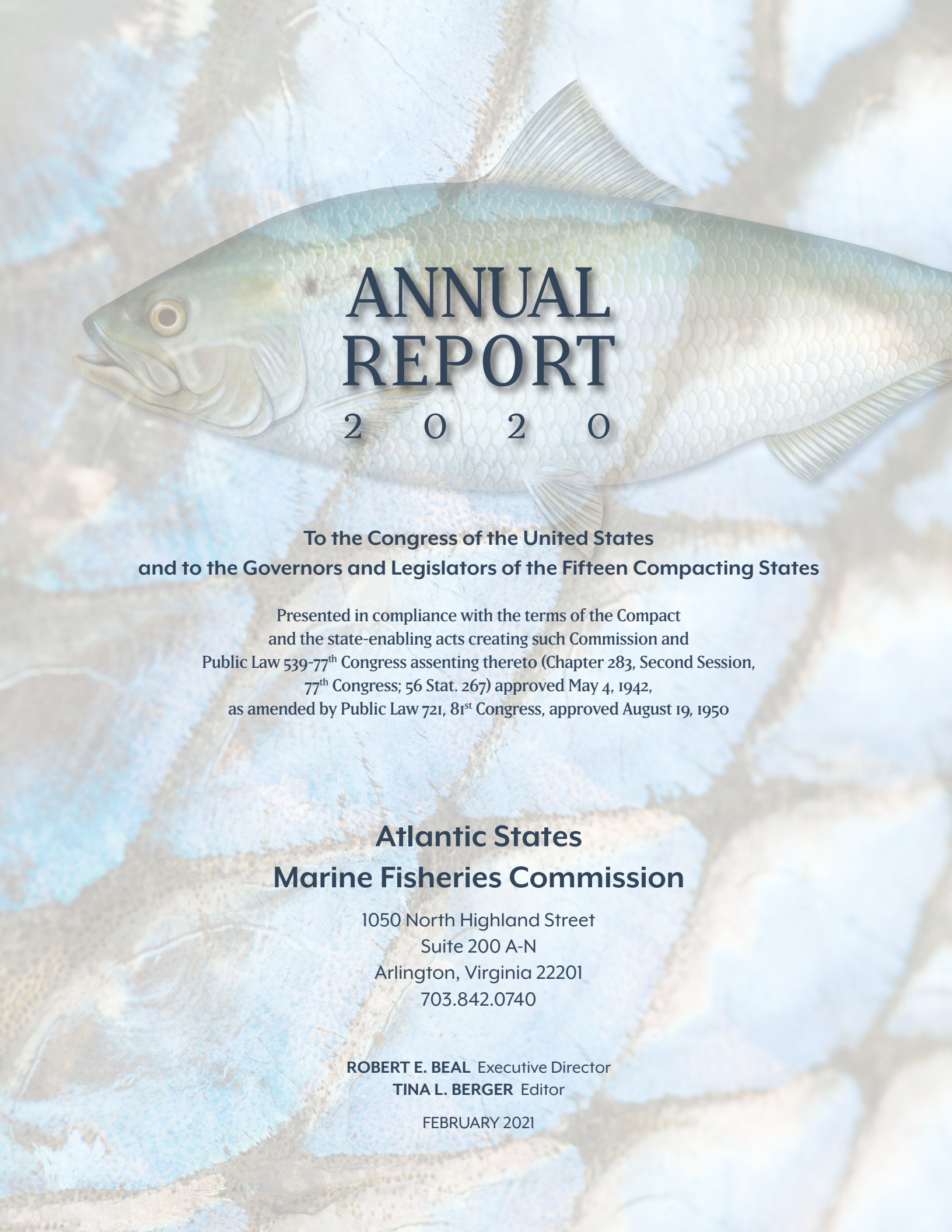

ANNUAL REPORT

2020

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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FEBRUARY 2021

INTRODUCTION

The Atlantic States Marine Fisheries Commission (Commission) is pleased to present our 2020 Annual Report. The report fulfills our obligation to inform Congress on the Commission's use of public funds, and provides stakeholders with an overview of activities and progress in carrying out our cooperative stewardship responsibilities for the marine, shell, and diadromous species under our care.

In the report, you will find a quick guide to stock status for the 27 species groups the Commission manages; a fisheries management section, focusing on species which had the most significant management or stock assessment activities in 2020; and sections highlighting major accomplishments in 2020 in the areas of fisheries science, habitat conservation, and fishery-dependent data collection and management. Please visit the Commission's website at *www.asmfc.org* for additional information on any of our programs or activities.

We remain grateful to Congress, the Administration, our Governors, and state legislators for their continued support of the Commission and its vision of Sustainable and Cooperative Management of Atlantic Coastal Fisheries.

The Commission was formed 79 years ago by the 15 Atlantic coastal 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 Commission's mission as stated in the Compact is 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.

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 serves as a 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. 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.

The task of managing finite marine resources continues to grow more complex with the consideration of changing ocean conditions, competing ocean uses, predator/prey interactions and marine mammal interactions, in addition to the more traditional considerations of stock maintenance, rebuilding, and allocation of fisheries resources. To support these activities at both the Commission and state level, the Commission has a budget of $16.6 million, which comes from a combination of state appropriations and federal grants, including the Atlantic Coastal Fisheries Cooperative Management Act.

In 2020, the Commission, through its own efforts and in coordination with the three Atlantic coast Regional Fishery Management Councils, maintained sustainable fisheries for a number of rebuilt species such as Gulf of Maine/Georges Bank American lobster, Atlantic cobia, Atlantic menhaden, black sea bass, scup, Spanish mackerel, spiny dogfish and summer flounder. Additionally, the Commission implemented measures to end overfishing for Atlantic herring (inshore Gulf of Maine), Atlantic striped bass, and bluefish. The Commission adopted the use of ecological reference points for Atlantic menhaden, updated management programs for Atlantic cobia, Atlantic croaker, and spot, and initiated a new amendment for Atlantic striped bass. Working with the Mid-Atlantic Fishery Management Council, the Commission also made significant progress on plan amendments for bluefish, summer flounder/scup/black sea bass, and on a black sea bass addendum, focusing on modifying state-by-state commercial allocations in response to changes in the distribution of the resource. While these are positive steps forward, environmental factors, which are out of our control, continue to affect resource productivity and distribution. Given this, the Commission and its member states will remain vigilant in preventing overfishing to aid stock rebuilding and provide depleted stocks, which are impacted by changing environmental conditions, the best chance of recovery should environmental conditions improve.

We remain grateful to Congress, the Administration, our Governors, and state legislators for their continued support of the Commission and its vision of *Sustainable and Cooperative Management of Atlantic Coastal Fisheries.* Many of our accomplishments would not have been possible without their trust and confidence. In addition, the technical support provided by NOAA Fisheries, U.S. Fish and Wildlife Service, and U.S. Geological Survey staff to the Commission and states is an invaluable component of our interstate fisheries management, science, and data collection activities.

REPORT FROM THE CHAIR

PAT KELIHER

As I look back over 2020 and try to characterize it in a word or phrase, I would have to say it has truly been an extraordinary year of firsts for the states, our federal partners, and stakeholders. It is the first time in over a hundred years that we as a nation and a global community have had to face a life-threatening pandemic that has yet to run its course. We have all had to change the way we live and work. State and federal agencies had to adapt their telecommuting policies to allow for full-time telecommuting. Large gatherings and celebrations have been postponed and in-person meetings have shifted to meetings via webinar. Notably, our 2020 Annual Meeting was the first time in the Commission's 79-year history we have not gathered in one of our member states to conduct important fisheries business and celebrate the contributions of the Captain David H. Hart Award recipient to the sustainable and cooperative management of Atlantic coastal fisheries. It is my hope we will all be able to come together again next October.

Closer to home, I've witnessed the devastating effect of the pandemic to our marine fisheries across all sectors, to our state budgets and revenue streams, and to our fishery-dependent and -independent monitoring activities. The commercial fishing industry, dealers, and processors, as well as for-hire businesses have suffered during the pandemic. Passage of the CARES Act offered some relief in the form of $300 million divided among all the states along the Atlantic, Gulf, and Pacific coasts.

Since April, the Commission has worked closely with its member states and NOAA Fisheries to coordinate development of state spend plans and, based on a state's preference, assist in the disbursement of funds to affected stakeholders. To date, spend plans have been approved for the majority of Atlantic coastal states and much-needed money is now in the hands of the fishing industry. While aid to fishermen through the CARES Act is a step in the right direction, available funds are not sufficient to meet all of the needs of our coastal fishing communities as they struggle to maintain their livelihoods and businesses. As Congress deliberates on additional assistance to help reduce the financial impacts of COVID-19, I will continue to work with my fellow Commissioners in urging our Congressional representatives to consider the impacts to fisheries and fishing communities as part of any pending legislation.

While many state fishery agencies have navigated budget cuts for several years, the pandemic and the lack of revenue streams will take an even deeper cut to our budgets. This, in turn, will further constrain our abilities to perform necessary fisheries management and monitoring activities. Luckily, my fellow state marine fishery agency directors are highly resourceful, finding ways to get the greatest bang for the buck by seeking efficiencies in the way they do business and prioritizing management and monitoring activities for species with the greatest need. Some relief has been provided in the form of additional funds from the Commission, since much of the Commission's meeting and travel budget have gone unspent this year.

The Commission's Executive Committee has never been more engaged, with weekly meetings that give us an opportunity to share our challenges and seek solutions. I have great faith in our ability to tackle the obstacles before us and come out the other side even stronger and more resilient.

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The pandemic also impacted critical marine fisheries data collection programs. Recreational harvest data was not collected for several months; the full impacts of which are still being calculated. Certainly, the lack of recreational harvest estimates for 2020 will hinder our ability to make informed decisions about fishery performance and setting management measures for 2021 and beyond. Several fishery-independent surveys were cancelled this year, which will create data gaps in some long-standing surveys and may have repercussions to stock assessments for years to come. Addressing the issues posed by these data gaps will take the concerted effort of scientists and technical staff. Given the talent level and the cumulative years of experience of our technical staff, I have no doubt that they will find workable solutions to these issues.

So let's talk about some of the positives that have resulted from our response to the pandemic. First and foremost, we have found that we are all stronger and more resilient than we believed ourselves to be. Staff at the Commission and within our state and federal agencies quickly shifted to fulltime telecommuting, barely missing a beat in continuing the important work that we do. Meetings, including the Commission's quarterly meetings, were moved to webinars. With three quarterly meeting webinars under our belt, I've been impressed with the ease with which we now meet via webinar. Don't get me wrong, it's no substitute for meeting in person, but we are productively using this technology to discuss issues and make management decisions. We can't use this pandemic as an excuse not to make important decisions or delay any actions.

During 2020, we accomplished some major tasks and initiated some significant management actions. We completed benchmark stock assessments for Atlantic cobia, American shad, and American lobster to guide our decision-making for these three species. In August, the Atlantic Menhaden Board approved the use of ecological reference points in the management of this important forage species. Over ten years in the making, this is an important first step towards ecosystem-based fisheries management, and I am particularly proud of the work of our state and federal scientists and the states' sustained commitment to make this a reality.

Recognizing the distribution and availability of fishery resources are shifting due to changes in water temperature and historic allocations may no longer reflect current conditions, the states and our partners with the Mid-Atlantic Fishery Management Council are considering changes to state-by-state commercial allocations for black sea bass. Also, with the Council, we are exploring new approaches to managing recreational fisheries for bluefish, summer flounder, scup, and black sea bass that seek to address access to the resource and create more stability in management measures from year to year.

Lastly, we initiated a new plan amendment for striped bass. It's been 17 years since we have considered major revisions to the striped bass management program and amending the plan will be a major undertaking.

So, while it's been an incredibly challenging year, there is much we can be grateful for: the dedication of our hardworking staff to succeed from a distance; our sustained commitment to one another to seek outcomes that are in the best interest of the resource while striving for equity in our decisions; and the force of character and determination exhibited by our fishing industry and coastal communities to make the best of these challenging times. Thank you all for the support you have given Spud and me over the past year, and I look forward to working with you in the year ahead.

QUICK GUIDE TO STOCK STATUS

SPECIES		OVERFISHED	OVERFISHING	ASSESSMENT & MANAGEMENT OVERVIEW
	**American Eel**	**Depleted**	**Unknown**	Stock status based on 2017 stock assessment update. Measures implemented in 2013/2014 to reduce fishing mortality and prevent expansion of the fishery.
American Lobster 	**Gulf of Maine/ Georges Bank (GOM/GBK)**	**Not Depleted**	**N**	Stock status based on 2020 benchmark assessment; abundance and recruitment near record highs.
	Southern New England (SNE)	**Depleted**	**N**	Stock status based on 2020 benchmark assessment; abundance and recruitment lowest on record.
	**American Shad**	**Depleted**	**Unknown**	Stock status based on 2020 benchmark assessment. Species depleted on coastwide basis, with recovery limited by restricted access to spawning habitat. Amendment 3 established 2013 moratorium unless river-specific sustainability can be documented.
	**Atlantic Cobia**	**N**	**N**	Rebuilt. Stock status based on 2020 benchmark stock assessment.
	**Atlantic Croaker**	**Unknown**	**Unknown**	2020 TLA triggered management action for the Mid-Atlantic and South Atlantic regions; changes to recreational and commercial fishery regulations initiated.
	**Atlantic Herring**	**Y**	**N**	Stock status based on 2020 stock assessment update; total biomass, SSB, and recruitment remain at low levels. 2021-2023 quotas significantly reduced.
	**Atlantic Menhaden**	**N**	**N**	Rebuilt. Stock status based on 2020 assessment; use of ERPs approved by Board in August 2020.
	**Atlantic Striped Bass**	**Y**	**Y**	Stock status based on 2019 assessment update. Measures implemented in 2020 to achieve an 18% reduction in total removals and end overfishing.
	**Atlantic Sturgeon**	**Depleted**	**N**	Stock status based on 2017 benchmark assessment; slow recovery has been occurring since 1998 and total mortality is sustainable. 40+ year moratorium implemented in 1998; listed in 2012 under the ESA.
	**Black Drum**	**N**	**N**	Stock status based on 2015 benchmark assessment; biomass declining slowly, though estimated to be well above that necessary to produce MSY. Possession and size limits implemented to prevent expansion of fishery.
	**Black Sea Bass**	**N**	**N**	Stock status based on 2019 operational assessment; SSB estimated to be 2.4 times biomass target. Assessment update scheduled for 2021.
	**Bluefish**	**Y**	**N**	Stock status based on 2019 operational assessment; updated reference points resulted in overfishing status in 2018. Reduced commercial quota and more restrictive recreational measures implemented in 2020 in response to overfishing. Assessment update scheduled for 2021.
	**Coastal Sharks**	**Varies by species & species complex**		
	**Horseshoe Crab**	**Unknown**	**Unknown**	Stock status based on 2019 benchmark assessment; NE region and DE Bay stocks stable; NY region stock poor; and SE region stock good. Coastwide abundance has fluctuated, with many surveys decreasing after 1998 but increasing in recent years. ARM Framework used since 2013 to set harvest levels for horseshoe crabs of DE Bay origin.
	**Jonah Crab**	**Unknown**	**Unknown**	Efforts underway to conduct first range-wide assessment; measures implemented to prevent the harvest of immature crabs and cap fishery to limit expansion.

SPECIES		OVERFISHED	OVERFISHING	ASSESSMENT & MANAGEMENT OVERVIEW
	Northern Shrimp	Depleted	N	Stock status based on 2019 TLA; abundance, biomass, SSB, and recruitment at or near new time-series lows. Environmental conditions continue to be unfavorable to rebuilding. Fishing moratorium in place since 2014 to protect remaining spawning population.
Red Drum 	Northern Region	Unknown	N	Stock status based on 2018 benchmark assessment; sSPR above target and threshold SPRs. Model simulations underway to support next benchmark stock assessment.
	Southern Region	Unknown	N	
	River Herring	Depleted	Unknown	Stock status based on 2017 assessment update. Amendment 2 established 2012 moratorium unless river-specific sustainability can be documented.
	Scup	N	N	Rebuilt. Stock status based on 2017 assessment update; SSB estimated to be two times its target. Assessment update scheduled for 2021.
	Spanish Mackerel	N	N	Rebuilt. Stock based on 2012 stock assessment. SEDAR operational assessment scheduled for 2022.
	Spiny Dogfish	N	N	Stock status based on 2018 assessment. Despite biomass remaining above the threshold, declines in recent years have required a significant harvest reduction in 2019-2020 to ensure overfishing does not occur.
	Spot	Unknown	Unknown	2020 TLA triggered management action for the Mid-Atlantic and South Atlantic regions; changes to recreational and commercial fishery regulations initiated.
	Spotted Seatrout	Unknown	Unknown	No range-wide assessment. Omnibus Amendment includes measures to protect spawning stock & establishes 12" minimum size limit.
	Summer Flounder	N	N	Stock status based on 2019 assessment update. Recruitment below average since 2011, resulting in a declining stock trend. Assessment update scheduled for 2021.
Tautog 	MA-RI	N	N	Stock status based on 2016 assessment update. Amendment 1 established regional stock units and reference points, as well as a commercial tagging program. Assessment update scheduled for 2021. Board to evaluate 2021 assessment results and Risk and Uncertainty Policy analysis to determine future management actions.
	Long Island Sound	Y	Y	
	NJ-NY Bight	Y	Y	
	DE / MD / VA	Y	N	
	Weakfish	Depleted	N	Stock status based on 2019 assessment update. Species depleted since 2003; population experiencing high levels of natural mortality, preventing stock recovery. Since 2009, harvest limited to a one fish recreational creel limit and a 100 pound commercial bycatch limit.
Winter Flounder 	Gulf of Maine	Unknown	N	Stock status based on 2020 assessment update; abundance indices relatively flat over full time series with little change to size structure.
	Southern New England/ Mid-Atlantic	Y	N	Stock status based on 2020 assessment update; SSB at record lows despite sustained low levels of fishing mortality. Recruitment has declined sharply since 1980s and remains near time series low.

WHAT DOES A STATUS MEAN?

Rebuilt/Sustainable - Stock biomass is equal to or above the biomass level established by the FMP to ensure population sustainability. When between benchmark assessments, a stock can still be considered rebuilt/sustainable if it drops below the target but remains above the threshold.

Unknown - There is no accepted stock assessment to estimate stock status.

Depleted - Reflects low levels of abundance though it is unclear whether fishing mortality is the primary cause for reduced stock size

Overfished - Occurs when stock biomass falls below the threshold established by the FMP, impacting the stock's reproductive capacity to replace fish removed through harvest, and that decline is driven primarily by fishing mortality.

Overfishing - Removing fish from a population at a rate that exceeds the threshold established in the FMP, impacting the stock's reproductive capacity to replace fish removed through harvest.

Benchmark stock assessment - A full analysis and review of stock condition, focusing on the consideration of new data sources and newer or improved assessment models. This assessment is generally conducted every 3-5 years and undergoes a formal peer review by a panel of independent scientists who evaluate whether the data and the methods used to produce the assessment are scientifically sound and appropriate for management use.

Stock assessment update - Incorporates data from the most recent years into a peer-reviewed assessment model to determine current stock status (abundance and overfishing levels)

TABLE ACRONYMS

ERPs – ecological reference points
ESA – Endangered Species Act
MSY – maximum sustainable yield
SPRs – spawning potential ratio
SSB – spawning stock biomass
TLA – Traffic Light Analysis

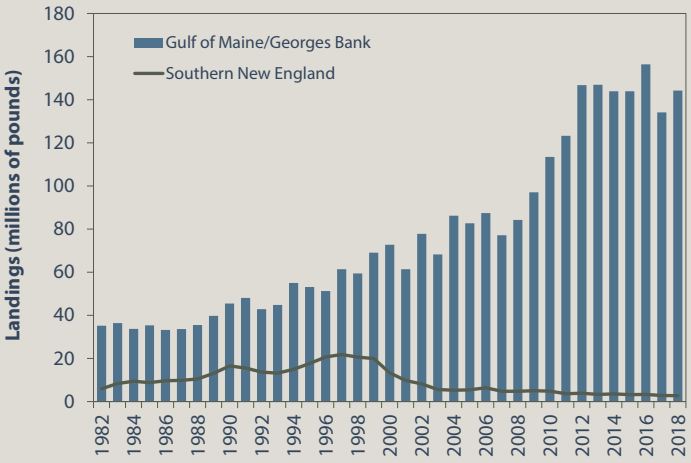
AMERICAN LOBSTER

The American lobster fishery is one of the most valuable fisheries along the Atlantic coast. In 2019, approximately 126 million pounds of lobster were landed coastwide, representing $630 million in ex-vessel value. The vast majority of these landings came from Gulf of Maine/Georges Bank (GOM/GBK), while there has been an overall decrease in the proportion of landings from Southern New England (SNE). Overall, total U.S. landings have steadily increased since the late 1990s.

In 2020, the American Lobster Management Board was presented the findings of the American Lobster Benchmark Stock Assessment and Peer Review Report. The report indicates record high stock abundance and recruitment for the GOM/GBK stock and record low abundance and recruitment for the SNE stock. The GOM/GBK stock is not overfished and not experiencing overfishing. Conversely, the SNE stock is significantly depleted with poor prospects of recovery. While the GOM/GBK stock status is favorable, there are indications of decreased larval settlement and young-of-year abundance in recent years that could lead to future declines in recruitment and landings. These indicators will continue to be closely monitored.

Given extensive research showing the connections between environmental conditions and American lobster life history and population dynamics, the 2020 assessment applied new methods to account for changing environment influences when assessing the lobster stocks. Environmental data time series included water temperatures at several fixed monitoring stations throughout the lobster's range, average water temperatures over large areas such as those sampled

American Lobster Landings by Stock Area
Source: ASMFC American Lobster Benchmark Stock Assessment, 2020



by fishery-independent surveys, oceanographic processes affecting the environment, and other environmental indicators such as lobster prey abundance. Environmental time series were analyzed for regime shifts, which indicate a significant difference in the lobster's environment and population dynamics from one time period to another. Regime shifts can change the stock's productivity, or capacity for recruitment, which also impacts the level of catch the stock can support. The assessment also quantified the effect of temperature on the catchability of lobster in surveys, and corrected trends in estimated abundance by accounting for these effects.

Model-estimated abundance time series were also analyzed for shifts that may be attributed to changing environmental conditions and new baselines for stock productivity. Regime shifts were detected for the GOM/GBK stock in 1996 and 2009 and one shift was detected for the SNE stock in 2003 (see figures next page). New reference points were developed to account for the changing regimes.

Gulf of Maine/Georges Bank

GOM/GBK stock abundance has increased since the late 1980s, and at an accelerated pace since 2008. The GOM/GBK stock shifted from a low abundance regime during the early 1980s through 1995 to a moderate abundance regime during 1996-2008, and shifted once again to a high abundance regime during 2009-2018. Current spawning stock abundance

and recruitment are near record highs. Exploitation (proportion of stock abundance removed by commercial fisheries) declined in the late 1980s and has remained relatively stable since. The GOM/GBK stock is in favorable condition based on the new reference points, with the stock considered not depleted nor experiencing overfishing.

Southern New England

SNE stock abundance increased from the early 1980s, peaked during the late 1990s, then declined steeply through the early 2000s to a record low in 2018. Additionally, recent recruitment estimates are the lowest on record. The assessment regime shift analysis indicates the SNE stock shifted from a high abundance regime during the early 1980s through 2002 to a low abundance regime during 2003-2018.

Declines in abundance are most pronounced in the inshore portion of the stock where environmental conditions have remained unfavorable to lobster since the late 1990s. The contraction of the SNE stock has continued since the last assessment (2015) and is now becoming apparent in the offshore portion as well, according to survey encounter rates. It is believed the offshore area of SNE depends on nearshore larval settlement followed by offshore migration as the source of newly recruited lobster.

Based on the new abundance threshold reference point, the SNE stock is significantly depleted, with average abundance from 2016-2018 estimated at 7 million lobster, well below the threshold of 20 million lobster. However, according to the exploitation reference points, the SNE stock is not experiencing overfishing, indicating that environmental conditions are contributing to depleted abundance.

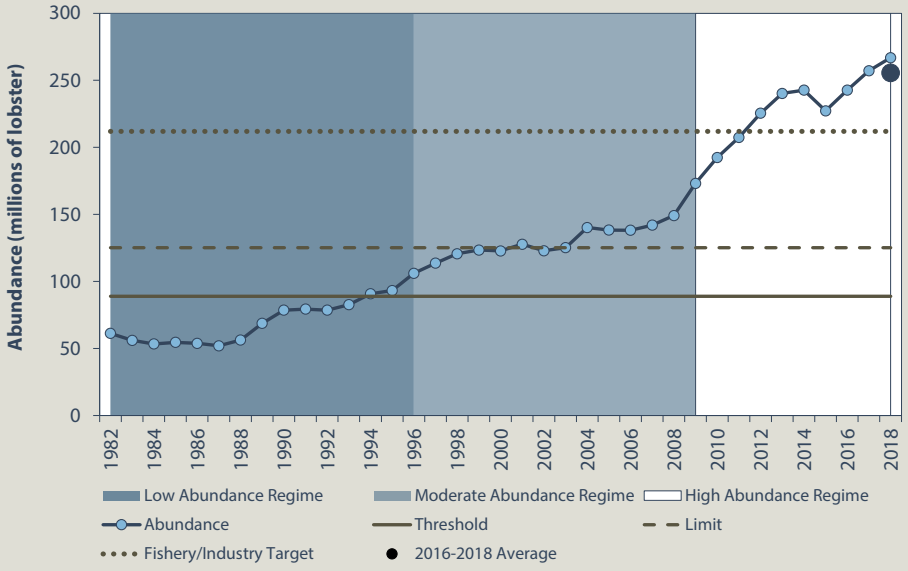
Peer Review Panel Recommendations

The Panel endorsed the stock assessment findings for management advice. In particular, the Panel recommended

Abundance for GOM/GBK Relative to Reference Points

Source: ASMFC American Lobster Benchmark Stock Assessment, 2020

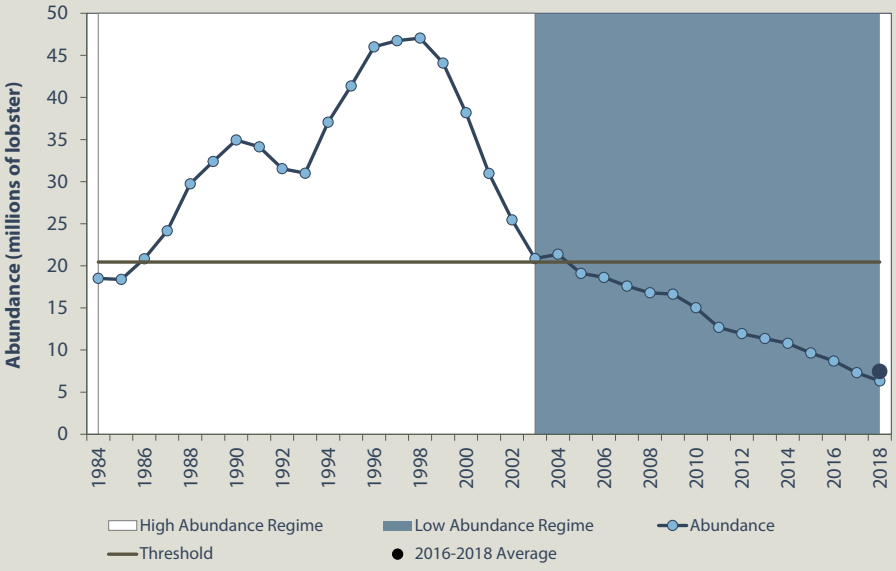
GOM/GBK stock abundance (blue line with circles) compared to the fishery/industry target (dotted brown line), abundance limit (dashed brown line), and abundance threshold (solid brown line) reference points based on detected low (dark blue period), moderate (light blue period), and high (white period) abundance regimes. The circle (upper right) is the three-year (2016-2018) average reference abundance.



Abundance for SNE Relative to Reference Points

Source: ASMFC American Lobster Benchmark Stock Assessment, 2020

SNE stock abundance (blue line with circles) compared to the abundance threshold (solid brown line) reference point based on detected low (dark blue period) and high (white period) abundance regimes. The circle is the three-year (2016-2018) average reference abundance.



significant management action be taken to provide the best chance of stabilizing or improving abundance and reproductive capacity of the SNE stock.

The Panel also recognized a major advancement in the assessment was the consideration of environmental and climatic drivers on stock dynamics. Given rapidly changing environmental conditions throughout the lobster's range, the Panel recommended changes to stock abundance and settlement indices be monitored through an annual data update process to allow for more timely reactions to any concerning trends in the interim between the next stock assessment. The Benchmark Stock Assessment and Peer Review Report, as well an overview of the assessment findings, can be found on the Commission website at *http://www.asmfc.org/species/american-lobster*, under Stock Assessment Reports.

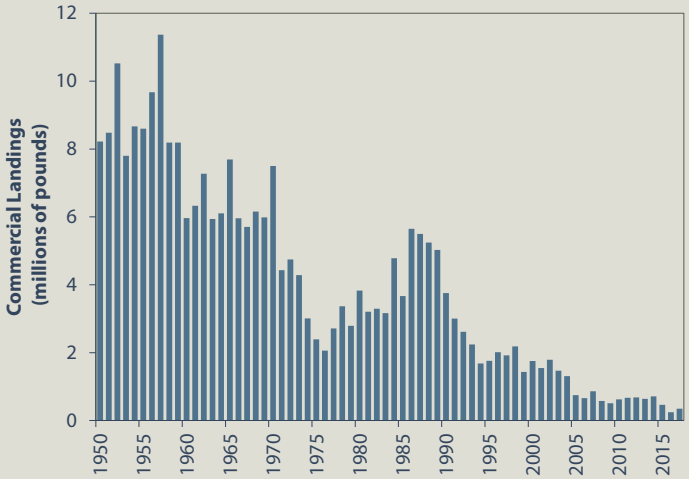
Following its review of the Benchmark Stock Assessment and Peer Review Report, the Board indicated its intent to continue development of Draft Addendum XXVII, with the goal of increasing the resiliency of the GOM/GBK stock by considering the standardization of management measures across LCMAs. This management action is intended to be proactive in response to the signs of reduced larval settlement and young-of-year abundance. The Board will also meet in early 2021 to consider initiating additional management changes in response to the findings of the assessment and peer review.

AMERICAN SHAD

Since the early 1800s, American shad have supported major commercial fisheries along the Atlantic and were one of the most valuable food fish of the U.S. Atlantic coast before World War II. The estimated East Coast catch in 1896 was 50 million pounds, but by the 1950s landings had declined to approximately 10 million pounds. Today, commercial landings are just a mere fraction of historic levels, with preliminary 2019 landings estimated at 275,000 pounds.

In 2020, the Shad and River Herring Management Board was presented the findings of the American Shad Stock Assessment and Peer Review Report. The 2020 benchmark stock assessment identified 104 separate river systems as potential individual stocks. American shad exhibit natal homing, returning to their river of birth to spawn, so stocks are river-specific, with each river system along the Atlantic coast having its own spawning stock. Similar to the results of the last assessment (2007), the 2020 benchmark stock assessment found the coastwide population to be depleted. For most system-specific stocks, the abundance status relative to historic levels is unknown, but was determined to be depleted in the Hudson River, and not overfished for the Albemarle Sound. The assessment also determined the total adult mortality status for eight systems; adult mortality was deemed sustainable for the

American Shad Commercial Landings
ASMFC American Shad Benchmark Stock Assessment, 2020



Summary of American Shad Stock & Habitat Conditions				
System	Historic Riverine Habitat Currently Unobstructed	Abundance Trends (2005-2017)	Adult Status*	
			Total Mortality Rate	Abundance
Merrymeeting Bay	50.02%	YOY: No trend Adults: No data	Unknown	Unknown
Merrimack	17.83%	YOY: No data Adults: Increasing trend	Unknown	Unknown
Pawcatuck	19.21%	YOY: No data Adults: Increasing trend	Unknown	Unknown
Connecticut	45.19%	YOY: No trend Adults: Conflicting trends between indices (1 increasing, 1 no trend)	Unsustainable	Unknown
Hudson	89.24%	YOY: No trend Adults: No trend	Sustainable	Depleted
Delaware	72.05%	YOY: No trends (2 indices) Adults: Conflicting trends between indices (1 increasing, 1 no trend)	Unsustainable	Unknown
Nanticoke	100%	YOY: Declining trend Adults: No trends (2 indices)	Unknown	Unknown
Susquehanna & Upper Chesapeake	4.38%	YOY: No trend Adults: No trends (2 indices)	Unknown	Unknown
Patuxent	100%	YOY: No data Adults: No trend	Unknown	Unknown
Potomac	90.02%	YOY: No trend Adults: No trends (2 indices)	Unsustainable	Unknown
Rappahannock	95.98%	YOY: Increasing trend Adults: No trends (2 indices)	Sustainable	Unknown
York	87.42%	YOY: Conflicting trends between indices (1 increasing, 2 no trends) Adults: No trend	Sustainable	Unknown
James	72.77%	YOY: No trend Adults: No trends (2 indices)	Unknown	Unknown
Albemarle Sound	58.92%	YOY: Increasing trend Adults: Conflicting trends between indices (2 no trends, 1 increasing)	Sustainable	Not overfished
Tar-Pamlico	75.68%	YOY: No data Adults: No trend	Unknown	Unknown
Neuse	90.05%	YOY: No data Adults: Conflicting trends between indices (1 increasing, 1 no trend)	Sustainable	Unknown
Cape Fear	46.59%	YOY: No data Adults: Increasing trends (2 indices)	Unknown	Unknown
Winyah Bay	73.13%	YOY: No data Adults: Conflicting trends (1 increasing, 2 no trend)	Unknown	Unknown
Santee-Cooper	20.95%	YOY: No data Adults: Conflicting trends between indices (1 increasing, 2 no trend)	Unknown	Unknown
ACE Basin	82.28%	YOY: No data Adults: No trend	Unknown	Unknown
Savannah	59.19%	YOY: No data Adults: No trends (2 indices)	Unknown	Unknown
Altamaha	82.24%	YOY: No data Adults: Conflicting trends between indices (1 increasing, 1 no trend)	Unknown	Unknown
St Johns	90.04%	YOY: No trend Adults: Increasing trend	Unknown	Unknown
Coastwide	55.42%	YOY: NA Adult: Conflicting trends between indices	Unknown	Depleted

* The status determinations identified in the table for total mortality and abundance are for adults only. System-specific data on juvenile American shad as they transition from young-of-the-year (YOY) to mature spawning adults are unavailable, which can impact overall status determinations.

Hudson, Rappahannock, York, Albemarle Sound, and Neuse stocks, but unsustainable for the Connecticut, Delaware, and Potomac. Adult mortality for the remaining systems is unknown.

The assessment indicated there may still not have been enough time for coastwide abundance to respond to the 2005 closure of the ocean intercept fishery, given various factors impeding rebuilding among systems. In fact, the assessment finds that shad rebuilding is limited by restricted access to spawning habitat. Current barriers partly or completely block 45% of historic shad spawning habitat (within the U.S.), which may equate to a loss of more than a third of spawning adults. Optimistic fish passage rates at these barriers only provide a modest increase (6%) in spawner abundance relative to no fish passage.

The table found on the previous page provides an overview of American shad stock and habitat conditions by river system, including historic riverine habitat that is currently unobstructed, abundance trends for both young-of-the-year (YOY) and adults, as well as total mortality and abundance status for the adult component of the stock.

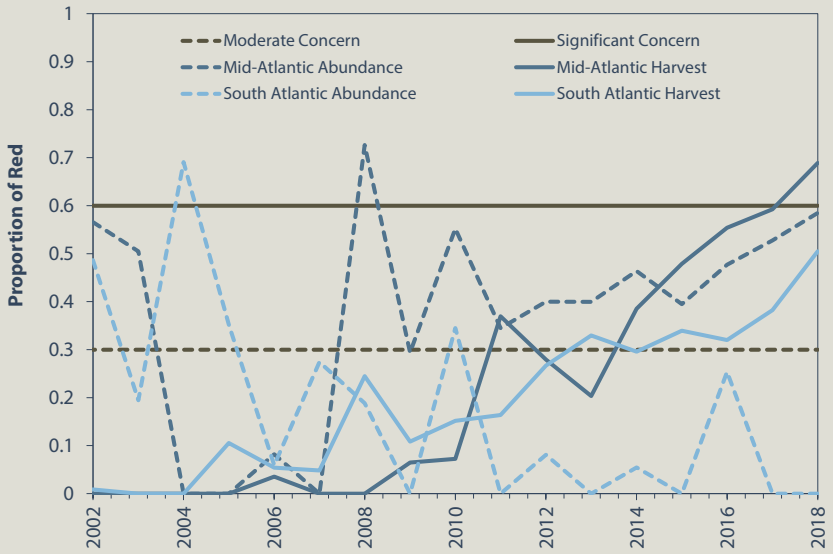
The decline of American shad abundance is not unique; abundance declines of several other diadromous species have been observed in the North Atlantic basin. Multiple factors are likely responsible for abundance declines such as historic overfishing, inadequate fish passage at dams, predation, pollution, water withdrawals, channelization of rivers, changing ocean conditions, and climate change. With available data it is not possible to separate out impacts of each factor to evaluate their relative contributions to abundance decline. Thus, the recovery of American shad will need to address multiple factors including improved monitoring, anthropogenic habitat alterations, predation by non-native predators, and exploitation by fisheries. The Benchmark Stock Assessment and Peer Review Report, as well an overview of the assessment findings, can be found on the Commission website at *http://www.asmfc.org/species/shad-river-herring*, under Stock Assessment Reports.

Since 2013, in an effort to support the recovery of depleted and declining stocks, state fisheries have been prohibited unless a state or jurisdiction develops and implements a Board-approved sustainable fishery management plan (SFMP). The SFMP must clearly demonstrate the state's or jurisdiction's American shad commercial and/or recreational fishery will not diminish the potential future stock reproduction and recruitment. To date, Maine, Massachusetts, Connecticut, the Delaware River Basin, the Potomac River Fisheries Commission, North Carolina, South Carolina, Georgia and Florida all have approved SFMPs for American shad. All other states and jurisdictions maintain catch-and-release recreational fisheries. The Board will also meet in early 2021 to consider potential management changes in response to the findings of the assessment and peer review.

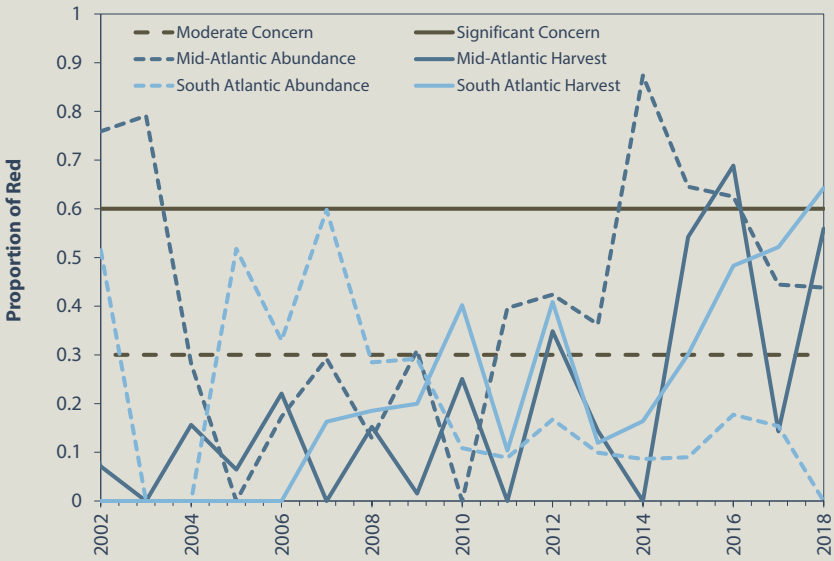
ATLANTIC CROAKER AND SPOT

Atlantic croaker and spot support recreational and commercial fisheries throughout the Mid- and South Atlantic and function as important forage species in those regions. Both species exhibit annual variation in landings due in part to the prevailing environmental conditions at spawning and nursery sites. Croaker and spot juveniles also remain a major component of the bycatch (or inadvertent catch of undersized

Atlantic Croaker Abundance and Harvest Relative to Levels of Concern
Source: ASMFC Atlantic Croaker Traffic Light Analysis Report, 2020



Spot Abundance and Harvest Relative to Levels of Concern
Source: ASMFC Spot Traffic Light Analysis Report, 2020



or unwanted fish) associated with seine, trawl, and pound net fisheries in Chesapeake Bay and North Carolina, as well as the South Atlantic shrimp trawl fishery.

The Traffic Light Approach (TLA) has been used since 2014 to annually monitor harvest and abundance trends in both species. The TLA is a statistically-robust way to incorporate multiple fishery data sources into a single, easily understood metric to provide management advice. The TLA assigns a color (red, yellow, or green) to characterize relative levels of indicators that reflect the condition of the fish population (abundance characteristic) or fishery (harvest characteristic) based on the long-term mean. For example, if the harvest or abundance increases relative to the long-term mean, then the proportion of green in a year will increase. If the proportion of red increases, indicating that a characteristic is below the long-term mean, and it exceeds defined concern levels (30% or 60%) for too many years, management action is triggered.

In 2020, the South Atlantic State/Federal Fisheries Management Board approved Addenda to the respective species Fishery Management Plans for Atlantic Croaker and Spot. The Addenda modify the TLA to more accurately reflect population trends by incorporating additional fishery-independent indices, age information, use of regional characteristics (Mid- and South Atlantic), and changes to the management-triggering mechanism. The new Addenda refined the management-triggering mechanisms such that if the level of concern is exceeded in one region for both harvest and abundance, then the management response will apply to both Mid- and South Atlantic regions. Management response is initiated when the concern levels are exceeded for three of the four most recent years for Atlantic croaker, and two of the three most recent years for spot. The Addenda also define commercial and recreational management responses when red proportions exceed each concern level. Finally, the Addenda establish the processes for evaluating fisheries while management measures are in place and determining when measures may be removed.

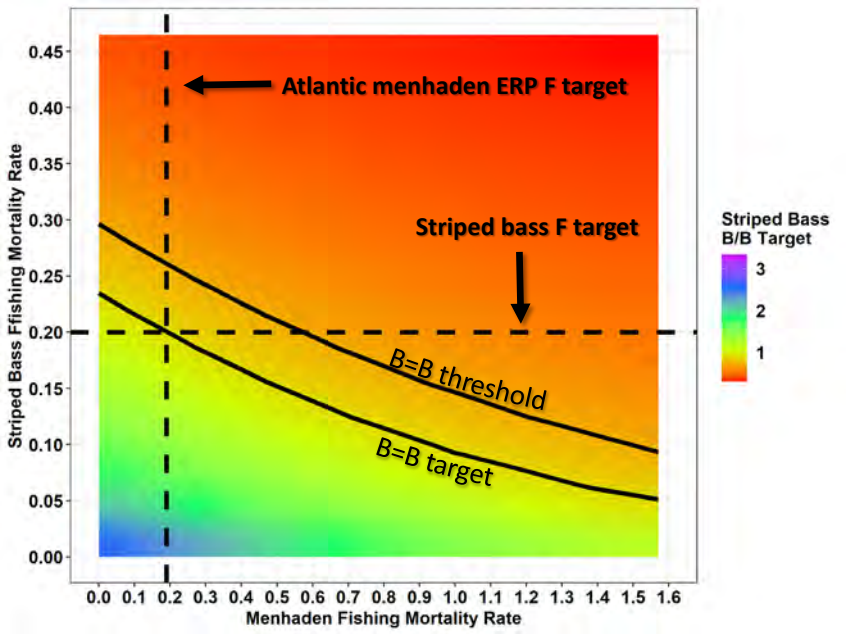
Based on the 2020 TLA analyses, Atlantic croaker and spot both exceeded the level of moderate concern due to a continued declining trend of harvest along the coast and decreased adult abundance in the Mid-Atlantic, triggering changes to both the commercial and recreational management regulations. Both spot and croaker red proportions have exceeded this level of concern for the majority of the past five years (see figures on previous page).

ATLANTIC MENHADEN

Atlantic menhaden are a small, oily, schooling fish of historical, economic, and ecological importance. Like Atlantic herring, Atlantic menhaden play an important role in the marine ecosystem as prey species for fish, marine mammals, and sea birds, as well as supporting bait and reduction fisheries.
In 2020, the Atlantic Menhaden Management Board took an important step towards ecosystem-based management by adopting ecological reference points (ERPs) for Atlantic menhaden that account for the species' role as an important forage fish. The Board's action was based on the results of the Atlantic menhaden single-species and ERP benchmark assessments. The ERP assessment developed a suite of potential models and recommended using the Northwest Atlantic Coastal Shelf Model of Intermediate Complexity for Ecosystems (NWACS-MICE) model in combination with the single-species model (Beaufort Assessment Model or BAM) to develop Atlantic menhaden ERPs by evaluating trade-offs between menhaden harvest and predator biomass.

NWACS-MICE was chosen for the ERP assessment because it was the only model that incorporated the effects of menhaden harvest on predator populations (in addition to impacts of predators on menhaden biomass) and could be updated in

Rainbow Plot of Striped Bass Biomass as a Function of Striped Bass and Menhaden Fishing Mortality Rate
Source: Atlantic Menhaden & Ecological Reference Points Benchmark Stock Assessments, 2020



The colors on the plot indicate where striped bass biomass will end up relative to its target under different levels of fishing mortality on striped bass and menhaden. Reds and oranges indicate striped bass biomass will be less than its target, and greens, blues and purples indicate striped bass biomass will be greater than its target. The solid black lines show combinations of fishing mortality which will result in striped bass biomass being at its threshold or its target.

The dashed lines indicate the menhaden ERP target fishing mortality rate (vertical) and the striped bass fishing mortality target (horizontal). Striped bass biomass is at the biomass target where they intersect, indicating that if we fish striped bass at its target and fish menhaden at its ERP target, striped bass biomass in the long term will end up its biomass target.

a timeframe that is informative for management. The model focused on four key predator species (striped bass, bluefish, weakfish, and spiny dogfish) and three key prey species (Atlantic menhaden, Atlantic herring, and bay anchovy). These species were chosen because diet data indicate they are top predators of Atlantic menhaden or are key alternate prey species for those predators, and datasets were available to describe their population dynamics. An important conclusion from the ERP assessment is that ERP definitions and values, including the appropriate harvest level for menhaden, depend on the management objectives for the ecosystem (i.e., management objectives for both Atlantic menhaden and its predators).

After reviewing the results of the assessment as well as additional analyses that were conducted to explore the ERPs' sensitivity to a range of ecosystem scenarios (different assumptions about fishing mortality for other key predator and prey species) and Atlantic herring biomass, the Board adopted ERPs for Atlantic menhaden which focus on its relationship with Atlantic striped bass. The ERP values are based on the maximum fishing mortality rate of menhaden that sustains Atlantic striped bass at its biomass target or threshold. Atlantic striped bass was chosen as the focal species for the ERP definitions because it was the most sensitive predator fish species to Atlantic menhaden harvest in the model. So it is assumed that an ERP target and threshold that sustains striped bass would likely provide sufficient forage for other predators under current ecosystem conditions.

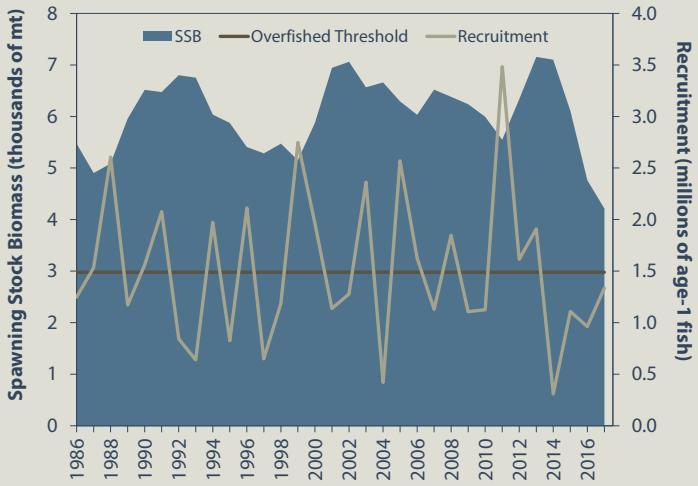
Although the ERP fishing mortality rate target and threshold were lower than the single-species target and threshold previously used in management, the more conservative total allowable catch (TAC) the Board had set in prior years resulted in a fishing mortality rate in 2017 that was below both the ERP target and threshold, indicating the stock was not experiencing overfishing. Fecundity (a measure of reproductive capacity) in 2017 was above both the ERP target and threshold, indicating the stock was not overfished.

In addition to adopting ERPs, the Board approved a TAC of 194,400 metric tons (mt) for the 2021 and 2022 fishing seasons, which represents a 10% reduction from the 2018-2020 TAC level. Based on projections, the TAC is estimated to have a 58.5% and 52.5% probability of exceeding the ERP fishing mortality target in the first and second year, respectively. The TAC will be made available to the states based on the state-by-state allocation established by Amendment 3.

ATLANTIC COBIA

Avidly pursued by recreational anglers as ready biters and fierce fighters, Atlantic migratory group cobia (Atlantic cobia) support recreational fisheries throughout the South Atlantic and up into the Mid-Atlantic region. In 2020, the South Atlantic State/Federal Fisheries Management Board was presented the findings of the 2020 Atlantic Cobia Benchmark Stock Assessment, which had been conducted and peer-reviewed through the SouthEast Data,

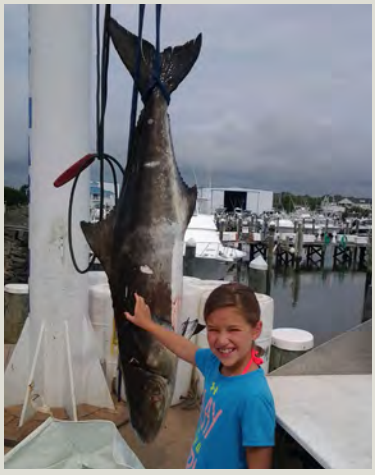
Atlantic Cobia Spawning Stock Biomass (SSB) & Recruitment
Source: SEDAR 58 - Atlantic Cobia Benchmark Stock Asserssment, 2020



Assessment and Review (SEDAR) process. The assessment indicated that spawning stock biomass (SSB) has been above the overfished threshold throughout the timeframe (1986-2017), indicating the coastwide stock is not overfished. SSB has experienced several large increases following years of high recruitment, the most recent following the 2011 recruitment peak, with the largest SSB in the time series occurring in 2013. These peaks in SSB have been followed by declines when recruitment moves back towards its average. While SSB has undergone a steep decline since the 2013 peak, SSB remains above the overfished threshold.

The assessment used re-calibrated recreational catch data from the Marine Recreational Information Program (MRIP). Landings of Atlantic cobia have generally increased since the 1980s, primarily driven by the recreational fishery which accounts for about 96% of the total landings. Fishing mortality showed some increase in the most recent years, but did not approach the overfishing threshold indicating the coastwide stock has not undergone overfishing during the assessment timeframe.

In 2020, the Board approved Addendum I to Amendment 1 in response to the re-calibration of recreational catch data, changing the allocation of the resource between the recreational and commercial fisheries from 92% and 8%, respectively to and 96% and 4%, respectively. In considering the new allocation percentages, the Board took into account the increase in the recreational catch and the harvest levels of the commercial fishery in recent years. The new commercial allocation allows the fishery to operate at its current level with some room for landings to increase as the stock range expands further north, while preventing closures to the recreational seasons. The Addendum also modifies the calculation of the commercial trigger, which determines when an in-season coastwide commercial closure occurs.



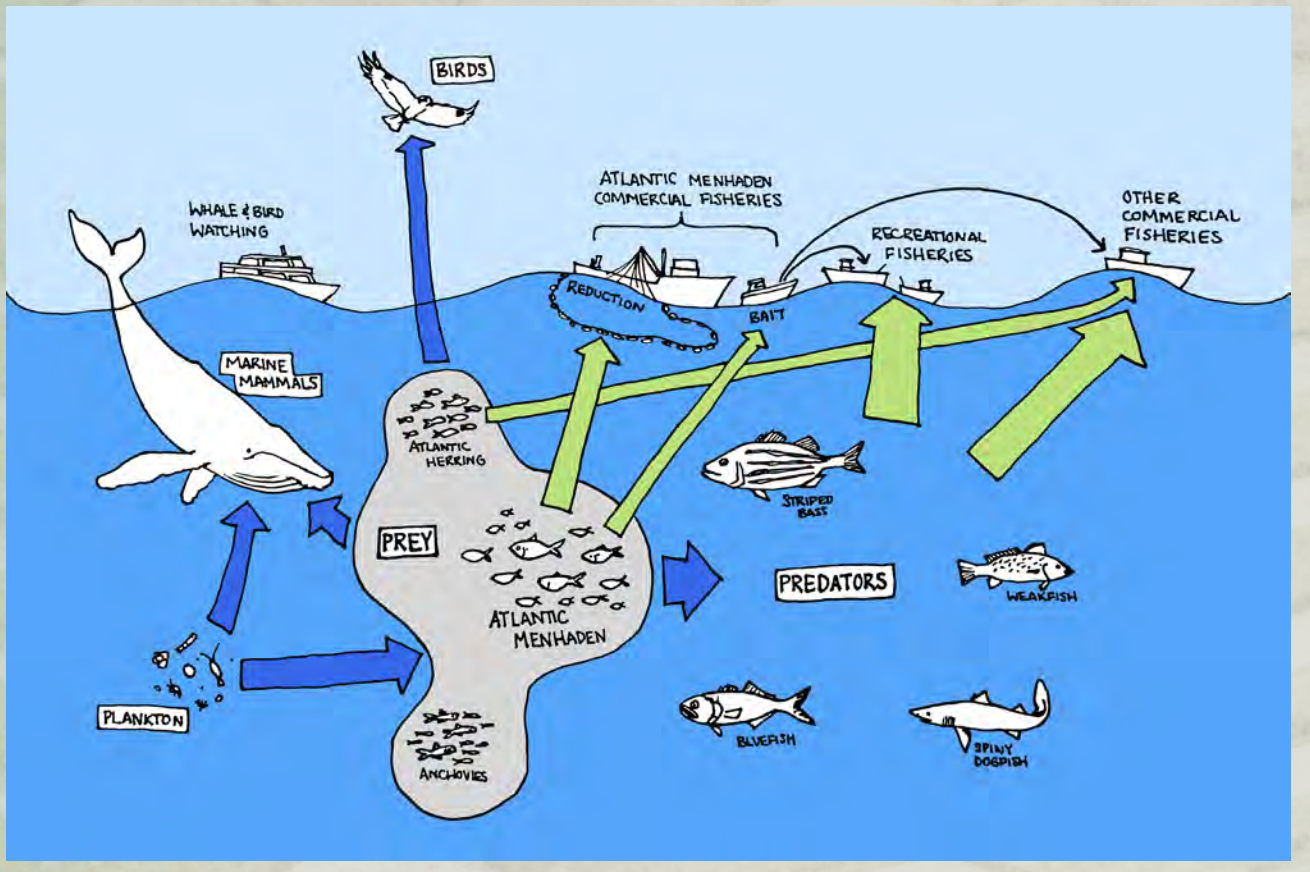
Management of sustainable fisheries relies on accurate and timely scientific advice. The Commission strives to produce sound, actionable science through a technically rigorous, independently peer-reviewed stock assessment process. Assessments are developed using a broad suite of fishery-independent surveys and fishery-dependent monitoring, as well as research products developed by a network of fisheries scientists at state, federal and academic institutions along the coast. The Commission's scientific goals include the development of innovative scientific research and methodology, and enhancement of the states' stock assessment capabilities. Achieving the goals ensures sound science is available as the foundation for the Commission's evaluation of stock status and adaptive fisheries management actions.

ECOSYSTEM MODELS AND ASSESSMENTS

Ecosystem interactions, such as predator-prey relationships, are important for understanding the population dynamics of fishery resources managed by the Commission. The ERP Work Group, comprised of state, federal, and university scientists, is responsible for evaluating relationships among species using multispecies predator-prey models. The Work Group recently completed the development of an ecosystem model to provide ERPs for Atlantic menhaden. The ERPs are based on the feeding needs of menhaden's primary predators (e.g., striped bass, weakfish, bluefish, spiny dogfish). In 2020, the ecosystem model was used to set menhaden fishery harvest levels that leave enough menhaden in the ocean to support predators. The Commission's implementation of ERPs in a fishery management plan is pioneering, one of only a handful of applied ecosystem approaches to fisheries management in the United States.

RESEARCH INITIATIVES

The Commission worked on new fisheries research initiatives in 2020 to address high priority issues for the Atlantic states and their fisheries stakeholders. Information gathered from the



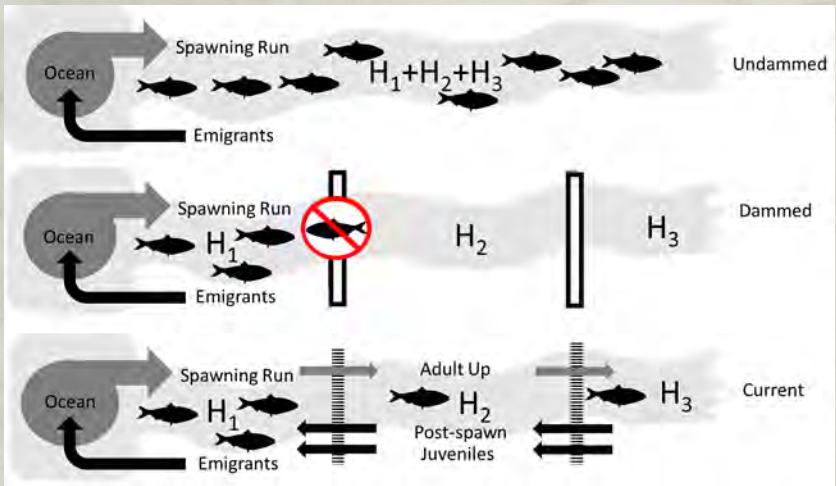
Atlantic menhaden serve a critical role in converting primary production from small invertebrates (like plankton) into fish protein. In turn, Atlantic menhaden along with other forage fish, such as Atlantic herring and anchovies, are an important food source for a number of animals including whales, birds, and various predatory fish, such as Atlantic striped bass, weakfish, bluefish and spiny dogfish. Additionally, menhaden directly support bait and reduction fisheries and indirectly support, through its role as prey, ecotourism activities, like a bird and whale watching and recreational fishing. Image (c) Sarah Murray, ASMFC.

initiatives improved the scientific basis for Commission stock assessments and is fundamental to advising fisheries managers on the health of fish and crustacean populations.

AMERICAN SHAD AND RIVER HERRING

Dams and River Habitat Modeling

Dams and their effects on riverine habitat access and fish survival have long been recognized as primary contributors to diadromous species population declines since the 1800s. Dams continue to be a factor limiting rebuilding of current populations. For example, existing dams completely or partially restrict access to 45% of historic American shad spawning habitat in Atlantic rivers. Efforts have been made to provide fish passage at dams through the construction and operation of fishways. However, fishways have largely been ineffective at passing American shad to historical spawning habitat. The fishways have their own sub-lethal and lethal effects, such as increased energy needed to navigate the fishway, and increased vulnerability to predators. Despite the suspected effects of dams on population rebuilding, quantifying the effects on a large geographic scale has not been done previously for shad.



The habitat assessment and simulation model to estimate spawner potential under 3 different scenarios (from top to bottom): (1) historic, undammed spawning habitat, (2) spawning habitat with no fish passage at dams, and (3) spawning habitat with an optimistic estimate of "current" fish passage at barriers. Image © Mike Bailey.

As part of the 2020 American shad benchmark stock assessment, the abundance of shad stocks along the U.S. Atlantic coast was estimated under three spawning habitat access scenarios (see figure above). The assessment found that existing dams with no passage reduce the shad population's potential by approximately half (52%) compared to the expected population with unrestricted access to historical spawning habitat. Surprisingly, optimistic fish passage rates at all existing dams only provide a modest increase (6%) in potential population size. The new dam and habitat modeling information provides important context to fishery managers. The results indicate the effects of anthropogenic/human activities other than fishing on American shad stocks that can be used to prioritize recovery actions such as habitat restoration.

Genetics and Bycatch

Directed fishing of three alosine species managed by the Commission — American shad, alewife, and blueback herring — has been greatly reduced from historical levels. Significant resources have been invested in restoring these once abundant species, with mixed results. Coastwide abundances of all three species are depleted relative to historical abundance. Fishing mortality occurs when alosine stocks mix during ocean migrations and are captured as bycatch in fisheries targeting other species. Estimation of total bycatch levels has improved in recent years. However, evaluation of bycatch mortality on individual river stocks along the coast is currently not possible due to lack of information for assigning bycaught fish to their stock of origin. Stocks may be disproportionately affected by bycatch mortality. For such stocks, population recovery is impeded, genetic diversity is reduced, and there is a greater risk of losing individual river populations.

Collecting genetic tissue samples was identified as a high priority for improving assessments of American shad and river herring stocks. However, the infrastructure to store and analyze genetic samples is limited among state fisheries agencies. The Commission collaborated with scientists at the U. S. Geological Survey (USGS) to develop a centralized genetic repository. State and federal resource agencies collect tissue samples from existing monitoring programs and send to USGS to be stored and processed. The samples will be analyzed to improve our understanding of shad and river herring population structure along the coast and to assign bycatch in ocean fisheries to alosines' riverine stock of origin.

ATLANTIC STRIPED BASS

A long-term research question in the assessment and management of coastal striped bass is how to determine the rates of migration and residency for striped bass originating from major nursery areas in Chesapeake Bay, Delaware Bay, and the Hudson River. Atlantic striped bass are currently

managed as a single coastwide stock because of the lack of data on age- and sex-specific migration from these primary nursery areas. An assessment model that captures the stock-specific population dynamics of the coastal population would provide better management advice and reduce the risk of overexploiting each stock.

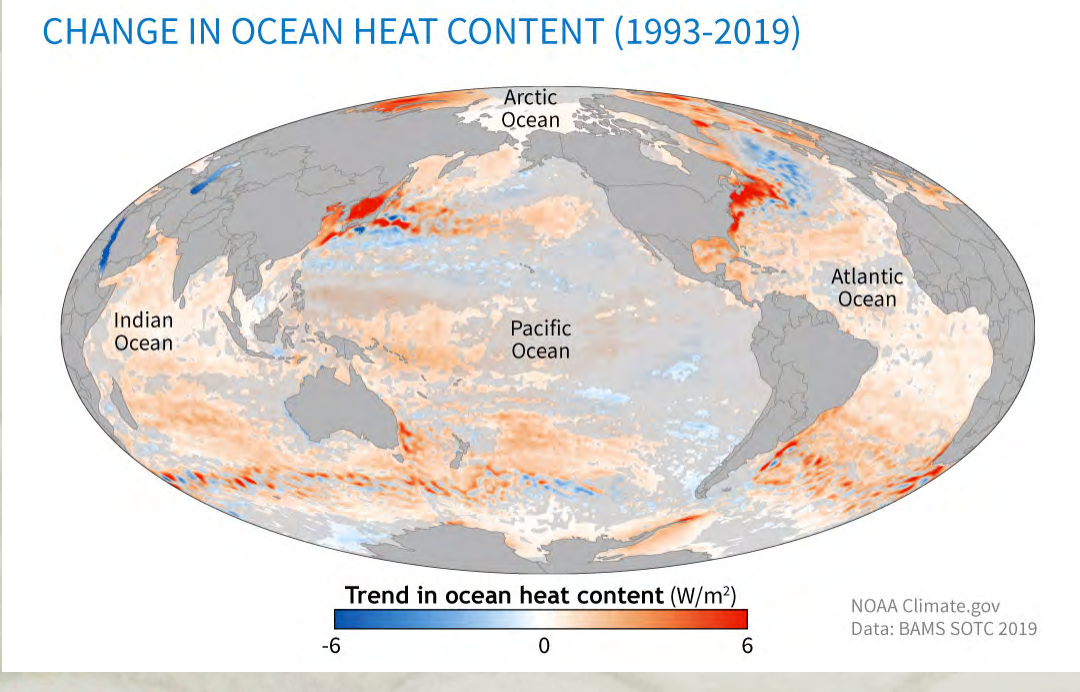
In 2020, the Commission supported striped bass hook and line tagging trips in partnership with the U.S. Fish and Wildlife Service, Maryland Department of Natural Resources, Virginia Marine Resources Commission, and North Carolina Division of Marine Fisheries. The Commission and additional state partners from Massachusetts to North Carolina have conducted striped bass tagging programs for over 20 years. Recapture results are used in stock assessment models to evaluate the migratory patterns and relative contributions of major coastal estuaries to the coastal population.

FISH AGEING

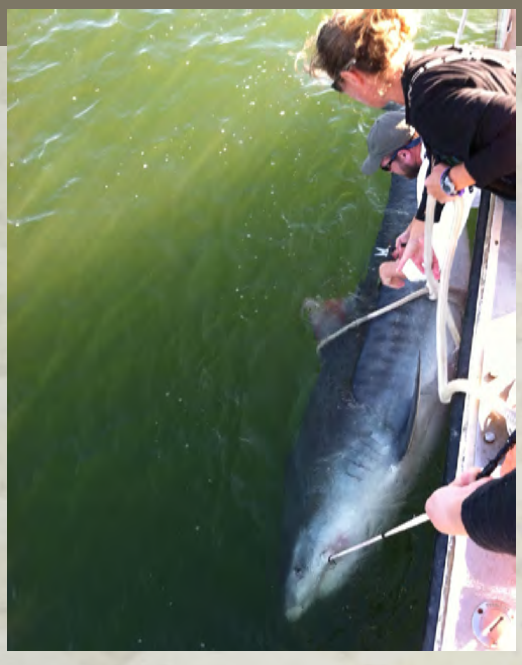
Fish age and growth information are key components of stock assessments that improve our understanding of species' population dynamics. With age samples being collected, processed, and read by scientists at several institutions every year, it is important to ensure all ageing labs follow consistent protocols. In 2020, the Commission facilitated an exchange of tautog ageing samples. In partnership with the Gulf States Marine Fisheries Commission (GSMFC), the Commission completed *A Practical Handbook for Determining the Ages of Gulf of Mexico and Atlantic Coast Fishes.* The handbook provides guidance on ageing best practices for a number of species, and serves as a resource for labs and scientists new to ageing to improve consistency among age data providers. The handbook builds upon GSMFC's earlier versions, which focused on Gulf of Mexico species, to now include Atlantic coast species as well. Workshop results, ageing protocols, and the ageing handbook can be found on the Commission website at *www.asmfc.org/fisheries-science/research.*

ADAPTING TO CHANGING OCEAN CONDITIONS

Changing ocean conditions 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 shift their range to find more



suitable conditions. For 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.



To respond to the effects of changing ocean conditions on fish and crustacean stocks, the Commission adopted policies on how to adaptively manage stocks affected by changing ocean conditions. Policies included evaluations of shifts in species distributions and productivity in new stock assessments. In 2020, a new American lobster stock assessment used a regime shift analysis to detect changes in oceanic and biological conditions caused by climate change. Commission staff also participated in Right Whale Take Reduction Team (TRT) deliberations. The TRT addressed issues regarding the changing distributions and migratory patterns of northern right whales and their planktonic prey, both linked to climate change and warming waters. The Commission is also incorporating the latest science and analytical tools to evaluate the impacts of changing ocean conditions on fish habitat through its Habitat Program and the Atlantic Coastal Fish Habitat Partnership (ACFHP). The Commission will continue to participate in the development of new scientific tools and management strategies related to changing ocean conditions and fisheries, including fish stock vulnerability tools developed by NOAA Fisheries (*www.st.nmfs.noaa.gov/ecosystems/climate/activities/assessing-vulnerability-of-fish-stocks*).

FISHERY-INDEPENDENT DATA COLLECTION

Fishery-independent surveys provide signals and trends regarding the status of fish stocks, without the biases inherent to commercial and recreational fisheries catch information. Data collection by numerous survey programs is a fundamental component of the Commission's stock assessment and fisheries management processes. The Commission coordinates two regional fishery-independent data collection programs on the Atlantic coast — 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 carry out the collection, management, and dissemination of fishery-independent data in the South Atlantic. Since 1982, SEAMAP has conducted long-term standardized surveys that provide the scientific basis for fisheries and habitat management in the region. SEAMAP conducts surveys and disseminates data in close collaboration with NOAA Fisheries' Southeast Fisheries Science Center and Regional Office.

In 2020, SEAMAP-South Atlantic surveys (trawl, longline, and trap) continued to collect data on the distribution and abundance of a variety of important commercial and recreational species from North Carolina to Florida (e.g., red drum, Spanish mackerel, snapper, grouper, shrimp). However, COVID-19 safety regulations significantly impacted field survey operations, resulting in reduced sampling and, in some cases, cancelled surveys. Data collected from all SEAMAP-South Atlantic surveys provide long-term population metrics such as abundance trends, feeding habits, and population age structure for use in state, interstate, and federal stock assessments of fish and crustaceans. SEAMAP survey data are readily available online at *www.seamap.org*. Fisheries scientists, managers, and the public can search the SEAMAP database to examine population trends, set annual fishing regulations, and evaluate management strategies for numerous commercial and recreational species that migrate between the states' coastal waters and estuaries. SEAMAP is collaborating with Axiom Data Science and the Southeast Coastal Ocean Observing Regional Association (SECOORA) to transfer SEAMAP data to the SECOORA data portal. The change

will support linkages between SEAMAP data and the wealth of environmental and oceanographic data housed in the portal. Additionally, maps of SEAMAP and other South Atlantic fishery-independent data are available through an extensive geographic information system at *http://ocean.floridamarine.org/safmc_atlas/.*

NEAMAP

NEAMAP is a cooperative state/federal fishery-independent research and data collection program for coastal waters from Maine to North Carolina. Its mission is to carry out the collection and distribution of fishery-independent data obtained in the Northeast for use by state and federal fishery management agencies, commercial fishermen and recreational anglers, and researchers. Since 2007, the Mid-Atlantic Nearshore Trawl Survey has completed spring and fall surveys, sampling inshore waters from Cape Hatteras, North Carolina northward to Martha's Vineyard, Massachusetts. In addition, NEAMAP includes the Massachusetts Inshore Trawl Survey and the Maine-New Hampshire Inshore Trawl Survey. Survey data are used to complement data from NOAA Fisheries' NEFSC Trawl Survey, that samples in deeper, offshore waters of the Mid-Atlantic and New England. In 2020, field sampling was impacted by COVID-19 safety regulations, resulting in adjustments to survey operations and, in some cases, cancelled surveys.

Data collected by all three surveys include information on length, sex and maturity, age, and food habits for dozens of fish and crustacean species, as well as ocean bottom temperatures. Data are used in stock assessments and are vital to improving our ability to track annual changes in population sizes and demographics. For further information about NEAMAP and its partner surveys, please visit www.neamap.net.

In January 2020, the NEAMAP Survey Technical Committee conducted a Maturity Staging Workshop hosted by the Virginia Institute of Marine Science. The Workshop provided training to NEAMAP partner scientists on classifying maturity stages for key Northwest Atlantic species.

HABITAT PROTECTION, RESTORATION, AND ENHANCEMENT

The Commission recognizes protection, restoration, and enhancement of fish habitats are essential to promoting the sustainability of fisheries along the Atlantic coast. The Habitat Committee's charge is to identify, enhance, and cooperatively manage vital fish habitat for conservation, restoration, and protection, and to support cooperative management of fisheries activities.

The Habitat Committee released its annual *Habitat Hotline Atlantic* newsletter. The newsletter focused on fish and habitat assessments. Articles highlighted the Northeast Regional Habitat Assessment, co-led by the Mid-Atlantic and New England Fishery Management Councils, and the Fish Habitat Conservation Area Mapping and Prioritization project led by the Atlantic Coastal Fish Habitat Partnership.

Aquaculture: Effects on Fish Habitat along the Atlantic Coast was published by the Habitat Committee in 2020. It is the 16th Habitat Management Series publication by the Commission. The Habitat Committee continued to work on two additional products: a Habitat Management Series publication focusing on the impacts to fish habitat of ocean acoustics, such as seafloor seismic testing and cargo vessels in transit, and a document designating Fish Habitats of Concern for Commission-managed species.

ATLANTIC COASTAL FISH HABITAT PARTNERSHIP (ACFHP)

As an ACFHP partner, the Commission addresses habitat threats with a broad and coordinated approach, leveraging resources from many agencies, organizations, and corporations to make a difference for Atlantic fish habitat. ACFHP operates under the purview of the National Fish Habitat Partnership.

On the Ground Projects

ACFHP partnered with the U.S. Fish and Wildlife Service (USFWS) to fund four new on-the-ground restoration projects in 2020. The Magothy River Shoreline Restoration project will restore 500 linear feet of shoreline in Maryland, reducing a chronic erosion problem and establishing native tidal wetlands. The County Line Dam Removal on the Paulins Kill in New Jersey will build upon the previous success of the Columbia Dam Removal, removing the second barrier to

fish passage on the system. Once the Paulina Dam barrier is addressed, a total of 45 river miles will be accessible to migratory fish on this Delaware River tributary. The Oyster Reef Restoration Project in Mosquito Lagoon, Florida will restore 420 linear feet of habitat and 53 linear feet of oyster reef in an area experiencing erosion from boat wakes. Finally, the Town of Plymouth, Massachusetts will use both USFWS and NOAA funding for the Town Brook Stream Restoration: Jenney Brook Grist Mill project. The fish passage project will replace a 60-foot Alaskan Steep Pass with a more effective 420-foot bypass channel complete with resting pools for diadromous fish access to 269 acres of spawning habitat.

In 2020, ACFHP also received funding from the NOAA Office of Habitat Conservation and the NOAA Recreational Fisheries Initiative to construct a one-acre oyster reef in the Eastern Branch of the Lynnhaven River, Virginia. Enhancing Recreational Fishing Opportunities in the Lynnhaven River through Habitat Restoration will work with recreational fishers to site the reef, as well as promote the benefits of healthy fish habitat at the annual Virginia Rod and Reef Slam fishing tournament. Finally, the FishAmerica Foundation just awarded funding to the Florida Fish and Wildlife Foundation through ACFHP to plant seagrass in Moore's Creek, Florida, an important nursery habitat for a wide variety of fish and invertebrate species. For more information on all ACFHP-funded projects, please visit: *http://www.atlanticfishhabitat.org/on-the-ground-projects/.*

Science and Data Projects

ACFHP completed its assessment of fish habitat through geographic information system mapping and analysis. Through funding from the NOAA Fisheries Southeast Regional Office and Greater Atlantic Regional Fisheries Office, the entire Atlantic coast was analyzed for fish habitats best suited for restoration or protection. Resulting maps are supporting ACFHP and its partners in identifying where best to invest future habitat restoration efforts. To access the maps, final report, and user guides, visit: *https://www.atlanticfishhabitat.org/science-and-data-projects/.*

ACFHP Partners

ACFHP welcomed Ducks Unlimited as its newest partner and Steering Committee member, joining 35 other partner organizations and agencies actively working to conserve fish habitat along the Atlantic coast.

Support ACFHP

There are many ways you can support ACFHP, including donating directly, indirectly via AmazonSmile, and by purchasing RepYourWaters outdoor apparel. To learn more, visit *http://www.atlanticfishhabitat.org/donate/.*

DEPENDABLE AND TIMELY FISHERIES STATISTICS

EFFECTIVE MANAGEMENT depends on quality fishery-dependent data (e.g., information collected from recreational and commercial fisheries, such as landings, effort, or discards) and fishery-independent data (e.g., information collected through monitoring programs and research surveys) to inform stock assessments and fisheries management decisions. However, just as fisheries management responsibilities are divided among agencies, so too are fisheries data collection efforts. Developed by different agencies with different data needs, these fisheries data collection programs are historically inconsistent in their temporal and spatial coverage, the data elements they collect, and in the codes used to enter and store the data.

The Atlantic Coastal Cooperative Statistics Program (ACCSP) was established to ensure consistency across Atlantic coast fishery-dependent data collection efforts through:

- Developing and implementing coastwide data standards
- Providing electronic applications that improve partner data collection
- Integrating and sharing partner data via a coastwide repository
- Facilitating fisheries data access while protecting confidentiality
- Supporting further technological innovation

A cooperative state-federal partnership, the Program is composed of representatives from natural resource management agencies coastwide, including the Commission, the three Atlantic fishery management councils, the 15 Atlantic states, the Potomac River Fisheries Commission, the D.C. Fisheries and Wildlife Division, NOAA Fisheries, and the U.S. Fish & Wildlife Service.

IMPROVING DATA COLLECTION AND INTEGRATION ACROSS JURISDICTIONS

MODERNIZING SAFIS

An important component of ACCSP is its Standard Atlantic Fisheries Information System (SAFIS). A web- and mobile-based fisheries data collection system, SAFIS allows dealers and commercial and for-hire harvesters to enter their catch, effort, and landings data. These data can be accessed by the Program Partners for use in quota monitoring and in-season management.

Since 2018, ACCSP has been working collaboratively on a major redesign of SAFIS to create more dynamic and flexible software applications. The objective of this effort is to meet partner needs for better, more accurate data available in real-time, while reducing the overall reporting burden on fishermen and dealers. The redesign process began by gathering partner input on suggested improvements and needs, followed by the development of a general systems specification document that outlined the proposed database design. This in turn evolved into the development and incorporation of new data structures into more adaptable software interfaces that are capable of adjusting reports to various parameters, including partners, permits, species, and gears. Throughout 2020, ACCSP implemented behind-the-scenes migration to a single processing pathway designed for use with online, mobile, and file upload to ensure consistent record handling and facilitate future enhancements. ACCSP also completed redesign of the web-based SAFIS eTRIPS/online interface.

ADAPTING SOFTWARE TO PARTNER NEEDS

ACCSP continues to make modifications to existing software in response to partners' evolving needs. In 2020, these modifications included expanding and aligning data collection tools to meet the data collection needs of multiple partner initiatives and improved ease of use for the industry.

- eTRIPS/mobile and eTRIPS/online (data collection for vessels and harvesters)
  - Created standard questions that can be customized and added to applications by the partners. This enhancement allows the flexibility to tailor data collection, in terms of questions asked and implementation timeline, for specific programs at the state or federal partner level.
  - The combination of flexibility in data collection for the partners and the expansion of the favorites tool (users can create personalized pulldown lists and populated responses) allows the software to gather more information without significantly increasing the burden on industry.
  - Specific projects that took advantage of this new feature include Southeast For-Hire Electronic Reporting, ASMFC American Lobster FMP Addendum XXVI, and NOAA Fisheries Division of Highly Migratory Species (HMS). These initiatives span 10 agencies and nearly 10,000 permits.
- In a major first step to achieving the Atlantic coast vision of reducing the need for duplicative reporting, ACCSP made adjustments to its eTRIPS/mobile application to dynamically include questions for federal multi-permitted vessels. Users now see questions from the Greater Atlantic Regional Fisheries

Office, the Southeast Regional Office and HMS as appropriate based on permit and species caught to fulfill the reporting requirements for all agencies with a single report.

In 2021, ACCSP will be focusing on mobile and online dealer reporting tools to make similar enhancements that will increase flexibility for our partners and usability for the industry.

RECREATIONAL FISHERIES

ACCSP is also continuing to improve standards and implementation of regional recreational fisheries data collection. The cooperative approach among ACCSP, the Atlantic states, and NOAA Fisheries' Marine Recreational Information Program (MRIP) is helping move the entire coast to a consistent recreational data collection design with unified catch and effort estimates across state and federal jurisdictions.

APAIS IMPROVEMENTS

Since 2016, ACCSP has coordinated state conduct of the Access Point Angler Intercept Survey (APAIS), the dockside intercept component of MRIP, from Maine to Georgia. It has helped foster collaborative survey improvements to attain more angler intercepts, including better site selection/pressure estimation, building rapport with local fishermen, and modifications to the vessel directory.

ACCSP introduced a tablet-based version of the APAIS in 2019 to move the survey to electronic data collection. Identified as a Program priority, electronic data collection and transmission reduced ACCSP's processing time from weeks to days. The tablet application also features built-in logic that hinders introduction of errors during data entry minimizing data editing. This provides state partners with additional time to perform data checks before the data are submitted to NOAA Fisheries at the end of each month. During 2020, the tablet software was improved for ease of data entry. Due to its success along the Atlantic, ACCSP's experience and the tablet application have been shared with the Gulf States Marine Fisheries Commission for modification and use in 2021.

The collaborative efforts are paying off. This year and moving forward, MRIP provided additional funds to increase APAIS catch sampling. These funds were strategically allocated across states to increase assignments to interview fishermen based on season length and species diversity. These increases will help provide catch information that is more representative of recreational fishing trips on the Atlantic coast.

During 2020, the coronavirus pandemic significantly impacted the ability of states to perform in-person interviews. ACCSP played an important role in monitoring the states' cessation and re-initiation of field sampling and coordinating survey activities with appropriate safety considerations.

FOR-HIRE DATA COLLECTION

Effort information from the for-hire sector continues to be gathered via the For-Hire Telephone Survey (FHTS). Previously conducted by NOAA Fisheries, the administration of the FHTS was transitioned to state conduct in 2020, with ACCSP providing coordination and data processing for the FHTS on the Atlantic coast. This transition provides the states more direct contact with its for-hire captains, improving their working relationships with the industry.

During 2020, ACCSP refined the Computer Assisted Telephone Interviewing system (CATI) to support state conduct of FHTS interviews, including the Large Pelagic Telephone Survey add-on. Calls were made by state staff from Maine to Georgia, and responses from each call are recorded directly into the ACCSP database with reports to review calls completed each week.

Over the past few years, there has been growing interest in the use of electronic logbooks to collect trip data from the for-hire sector. In 2018, MAFMC mandated electronic trip reporting for for-hire vessels with MAFMC species permits. A similar rule for the South Atlantic and Gulf of Mexico Fishery Management Councils begins in January 2021. ACCSP was selected by GARFO and the Southeast For-Hire Integrated Electronic Reporting system as the repository for the for-hire reports.

Currently, for-hire logbook data are incorporated into MRIP effort estimations along with data collected from the FHTS, although stakeholders have expressed interest in using the logbook data to generate MRIP catch estimates as well. ACCSP has begun working on a plan to integrate for-hire data collection from three sources - APAIS, FHTS, and logbooks - for both state and federal vessels on the Atlantic coast. The Committee made significant progress on data standards in 2020, aiming to submit a final version for review in 2021.

FACILITATING DATA ACCESS AND USE

ACCSP increases the utility of partner data by:

- Integrating all of the commercial data received into one set of codes for variables such as species, gear, and fishing area, making it possible to combine datasets from different sources for larger scale analyses
- Sharing the most complete set of fishery-dependent data for the entire Atlantic coast data through the online ACCSP Data Warehouse that facilitates data access while also preserving confidentiality
- Presenting recreational data supplied by MRIP via the Data Warehouse

ENSURING DATA SECURITY

The success of ACCSP depends on the trust of our partners and stakeholders as stewards of their data. In 2020, the commitment to data security was formalized through completion of a multi-year effort to achieve Federal Information Security Management Act compliance.

ENHANCING THE DATA WAREHOUSE USER EXPERIENCE

ACCSP continues to make modifications to the Public and Login Data Warehouse in order to enhance user experience. The Public Data Warehouse is available directly from the ACCSP website, *www.accsp.org*, while the Login Data Warehouse requires a username and the submission and approval of non-disclosure agreements to access confidential data. In 2020, staff focused on implementing updates to respond to partner feedback and usage statistics to determine how to best serve users in the future.

2020 USER STATISTICS

ACCSP DATA WAREHOUSE

475 LOGINS BY USERS...
of the ACCSP Login Data Warehouse

5.7 MILLION PAGE VIEWS

Public Warehouse:	5,711,162
Login Warehouse:	15,756

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21.3 MILLION ROWS OF DATA

Public Warehouse:	71,361
Login Warehouse:	21,270,587

8,627 PAGE VIEWS

Public Data Warehouse:
ACCSP Warehouse Codes

2,988 PAGE VIEWS

Login Data Warehouse:
SAFIS Landings

DATA ACCESSIBILITY AND CONFIDENTIALITY

CONTRIBUTION TO STOCK ASSESSMENTS AND PEER REVIEWS

ACCSP continues to compile Atlantic coast data for *Fisheries of the United States* and the online federal commercial data query system. The data are also used in many stock assessments and data intensive activities. In 2020, ACCSP's data team participated in the following stock assessments and management activities (addendums, amendments, and FMP reviews) for species including:

- American Eel
- Atlantic Croaker
- Atlantic Herring
- Atlantic Menhaden
- Black Drum
- Black Sea Bass
- Coastal Sharks
- Cobia
- Dolphin/Wahoo
- Golden Tilefish
- Penaeid Shrimp
- Red Drum
- Red Snapper
- Scamp & Yellowmouth Grouper
- Scup & Summer Flounder
- Shad & River Herring
- Spanish Mackerel
- Spiny Dogfish
- Snowy Grouper
- Spot
- Striped Bass
- Summer Flounder
- Tautog
- Weakfish
- Winter Flounder

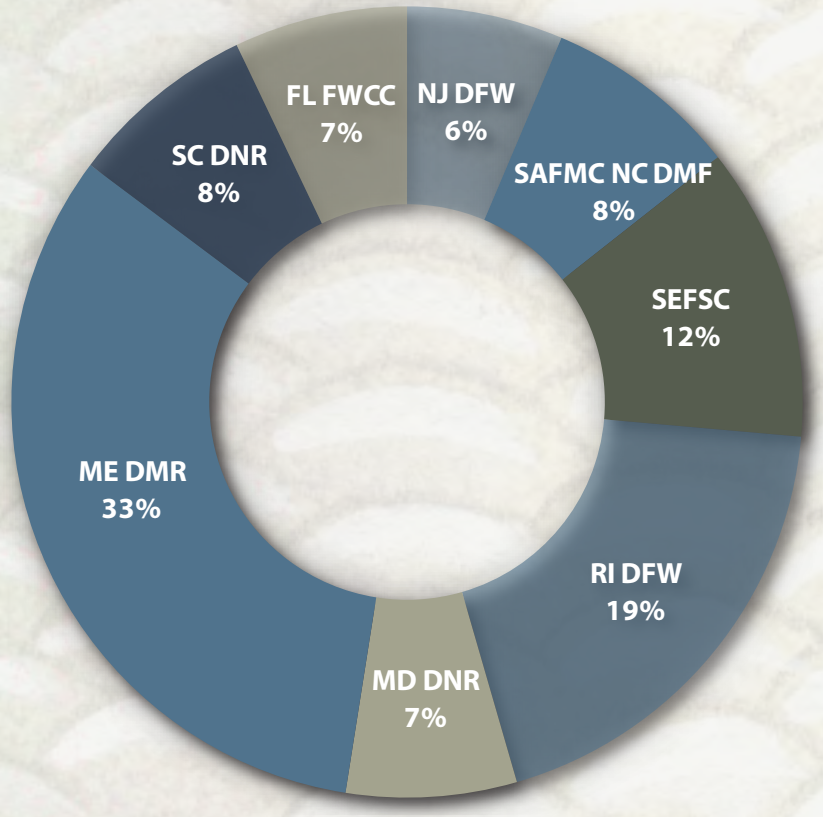
CUSTOM DATA REQUESTS

ACCSP's data team also fulfills custom data requests from a variety of stakeholders including non-governmental organizations, students, and international bodies. The number of requests continues to grow; the team completed over 110 custom data requests in 2020.

In 2020, the Data Team provided data for projects on windfarm lease areas, port statistics to support Working Waterfronts for the NOAA Office for Coastal Management, and lobster landings to facilitate Canadian fisheries management from Pêches et Océans Canada. They also supplied data for NOAA to develop a survey frame for the COVID-19 Impact Assessment Survey.

ENCOURAGING FURTHER INNOVATION

ACCSP issues a request for proposals annually to fund program partner projects based on their potential to achieve collaboratively derived Program goals. This encourages further innovation in fishery-dependent data collection and management. In FY2020, roughly $1.5 million was distributed to partners (see figure below). Details of each project can be found at *https:// www.accsp.org/what-we-do/partner-project-funding.*



ACCSP PARTNER FUNDING FY2020

The Commission's FY2021 budget is $17.5 million. The base funding ($733,444) is provided by the member states' annual 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 is received through federal cooperative agreements funded by line-item appropriations in the NOAA budget to implement the Atlantic Coastal Fisheries Cooperative Management Act (ACFCMA) and the ACCSP, as well as provide oversight and management for state conduct of APAIS, the survey component of MRIP. 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 majority of the Commission's budget goes directly to support the fisheries management, monitoring and science activities of the states.

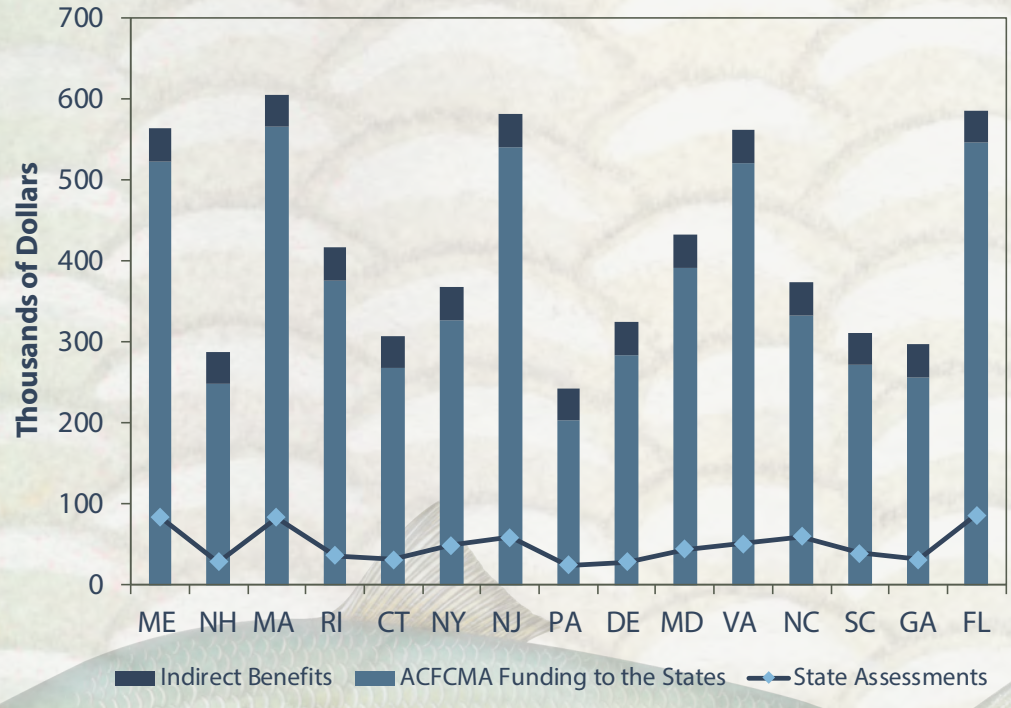
The USFWS also provides funding to the Commission through its Federal Aid in Sport Fish Restoration Program (Wallop/Breaux).

The following two pages provide a financial snapshot of the Commission's assets and expenses for the years ended June 30, 2020 and 2019.

2021 RETURN ON STATE INVESTMENTS TO THE COMMISSION

Source: FY20 ASMFC Appropriations and FY19 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.



ATLANTIC STATES MARINE FISHERIES COMMISSION
CONDENSED STATEMENT OF FINANCIAL POSITION INFORMATION
FOR THE YEARS ENDED JUNE 30, 2020 AND 2019

ASSETS

	2020	2019
CURRENT ASSETS:		
Cash and cash equivalents	$ 894,814	$ 208,992
Grants and accounts receivable	2,085,093	2,509,718
Prepaid expenses	69,038	83,052
Total Current Assets	3,048,945	2,801,762
Investments	864,227	853,922
Property and Equipment, Net	3,164,701	3,293,088
TOTAL ASSETS	$ 7,077,873	$ 6,948,772

LIABILITIES AND NET ASSETS

CURRENT LIABILITIES:		
Accounts payable and accrued expenses	$ 1,947,839	$ 1,585,020
Deferred revenue and contract advances	253,380	235,147
Current maturities of long term debt	71,152	180,000
Total Current Liabilities	2,272,371	2,000,167
OTHER LIABILITIES:		
Long term debt	—	71,152
Obligation under interest rate swap	258	1,283
Total Other Liabilities	258	72,435
TOTAL LIABILITIES	2,272,629	2,072,602
NET ASSETS WITHOUT DONOR RESTRICTIONS	4,805,244	4,876,170
TOTAL LIABILITIES AND NET ASSETS	$ 7,077,873	$ 6,948,772

ATLANTIC STATES MARINE FISHERIES COMMISSION
CONDENSED STATEMENT OF ACTIVITIES INFORMATION
FOR THE YEARS ENDED JUNE 30, 2020 AND 2019

	2020	2019
REVENUE:		
Contract reimbursements	$ 13,384,391	$ 13,709,042
Contributions from member states	733,443	733,446
Other	33,925	28,961
Total Revenue	14,151,759	14,471,449
EXPENSES:		
Salaries and fringe benefits	6,019,798	6,113,359
Subcontracts	6,565,180	6,728,520
Travel	776,934	1,064,201
Other	861,798	972,798
Total Expenses	14,223,710	14,878,878
OTHER INCOME (EXPENSES):		
Interest rate swap obligation adjustment	1,025	413
Gain (loss) on disposal of property	—	—
Total Other Income (Expenses)	1,025	413
CHANGE IN NET ASSETS	(70,926)	(407,016)
NET ASSETS, BEGINNING OF YEAR	4,876,170	5,283,186
NET ASSETS, END OF YEAR	$ 4,805,244	$ 4,876,170

STAFF

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Deke Tompkins, *Legislative Executive Assistant*

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ACKNOWLEDGEMENTS

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

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Maine lobsterman © ASMFC

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Atlantic croaker caught as part of the commercial trawl mixed fishery © Steve Doctor, MD DNR

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