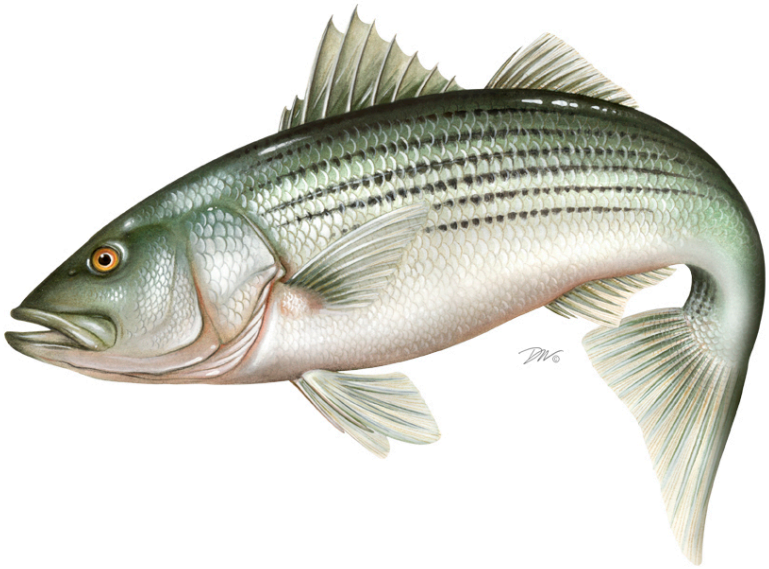
Atlantic States Marine Fisheries Commission

DRAFT ADDENDUM VI TO AMENDMENT 6 TO THE INTERSTATE FISHERY MANAGEMENT PLAN FOR ATLANTIC STRIPED BASS



August 2019

Sustainable and Cooperative Management of Atlantic Coastal Fisheries

Public Comment Process and Proposed Timeline

In May 2019, the Atlantic Striped Bass Management Board (Board) initiated the development of an addendum to Amendment 6 to the Interstate Fishery Management Plan for Atlantic Striped Bass to consider changes to coastwide commercial and recreational regulations to address overfishing. This Draft Addendum presents background on the Atlantic States Marine Fisheries Commission's (Commission) management of striped bass; the addendum process and timeline; and a statement of the problem. This document also provides management options for public consideration and comment.

The public is encouraged to submit comments regarding this document at any time during the public comment period. The final date comments will be accepted is **October 7, 2019 at 5:00 p.m.** Comments may be submitted at state public hearings or by mail, email, or fax. If you have any questions or would like to submit comment, please use the contact information below. Organizations planning to release an action alert in response to this Draft Addendum should contact Max Appelman at 703.842.0740.

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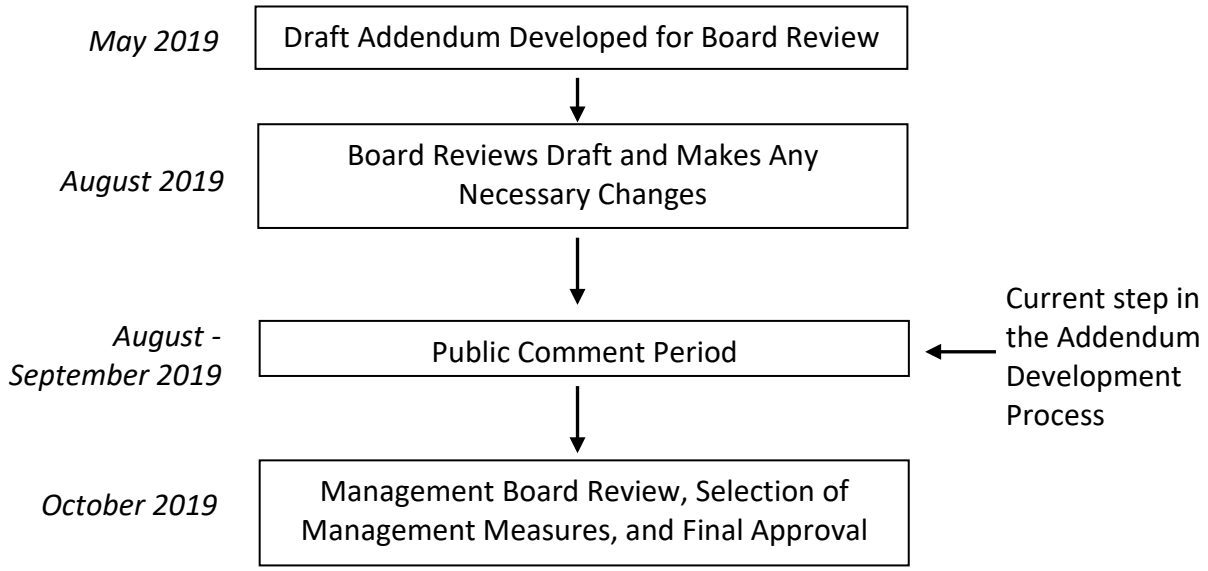

1.0 Introduction

Atlantic striped bass (*Morone saxatilis*) are managed through the Commission in state waters (0-3 miles) and through NOAA Fisheries in federal waters (3-200 miles). The management unit includes the coastal migratory stock between Maine and North Carolina. Atlantic striped bass are currently managed under Amendment 6 (2003a) to the Interstate Fishery Management Plan (FMP) and Addenda I–IV.

At its May 2019 meeting, the Board initiated the development of Draft Addendum VI to Amendment 6 to the Atlantic Striped Bass FMP to consider coastwide changes to commercial and recreational regulations to bring fishing mortality to the target level. The Board's action responds to results of the 2018 benchmark stock assessment for Atlantic striped bass which indicates the stock is overfished and experiencing overfishing.

2.0 Overview

2.1 Statement of the Problem

The 2018 benchmark stock assessment indicates the stock is overfished and experiencing overfishing relative to the updated reference points defined in the assessment. Female spawning stock biomass (SSB) was estimated at 68,476 metric tons (151 million pounds), which is below the SSB threshold of 91,436 metric tons (202 million pounds). Total fishing mortality (F) was estimated at 0.31, which is above the F threshold of 0.24. The benchmark assessment and its single-stock statistical catch-at-age model was endorsed by the Peer Review Panel and accepted by the Board for management use.

By accepting the assessment for management use, the reference point management triggers in Amendment 6 have been tripped. In response, the Board initiated the development of Draft Addendum VI to address overfishing status and consider measures to reduce F back to F target. Accordingly, Draft Addendum VI proposes alternative measures for the commercial and recreational fisheries aimed to reduce total removals by 18% compared to 2017 levels in order to achieve F target in 2020. Other management issues including (but not limited to) reference points and rebuilding the biomass, will be addressed in a subsequent management document.

Roughly 90% of annual Atlantic striped bass recreational catch is released alive, of which 9% are estimated to die as a result of being caught (referred to as "release mortality" or "dead releases"). Catch and release fishing has been perceived to have a minimal impact on the population, however a large component of annual striped bass mortality is attributed to release mortality – accounting for roughly 48% of total removals in 2017 (49% in 2018). The current recreational striped bass management program uses bag limits and size limits to limit the number of fish that are harvested. However, these measures are not designed to reduce fishing effort and subsequent release mortality. While the proposed measures herein result in lower overall removals, the majority of them also increase dead releases. In order to address dead releases, effort controls that are better designed to reduce the number of fishing trips that encounter striped bass should be considered (e.g., closed seasons).

2.2 Background

2.2.1 Status of the Stock

The 2018 benchmark stock assessment for Atlantic striped bass is the latest and best information available on the status of the coastwide striped bass stock for use in fisheries management. The assessment was completed and peer-reviewed at the 66th Northeast Regional Stock Assessment Workshop/Stock Assessment Review Committee (SAW/SARC) meeting in November 2018. The accepted model for use in striped bass stock assessment is a forward projecting statistical catch-at-age (SCA) model which uses catch-at-age data and fishery-dependent and -independent survey indices to produce annual estimates of female SSB, F, and recruitment.

The results of the 2018 benchmark indicate that the Atlantic striped bass stock is overfished and overfishing is occurring. Female SSB in 2017 was estimated at 68,576 metric tons (151 million pounds), which is below the SSB threshold of 91,436 metric tons (202 million pounds) (Figure 1). Female SSB peaked in 2003 and has been declining since then; SSB has been below the threshold level since 2013. Total F in 2017 was estimated at 0.31, which is above the F threshold of 0.24 (Figure 2). Total F has been at or above the threshold in 13 of the last 15 years of the assessment (2003-2017). Recruitment in 2017 was estimated at 108.8 million age-1 fish, which is below the time series average of 140.9 million fish (Figure 1). Striped bass experienced a period of lower recruitment from 2005-2011 which contributed to the decline in female SSB that the stock has experienced since 2010. Recruitment was high in 2012, 2015, and 2016 (corresponding to strong 2011, 2014, and 2015 year classes), but estimates of age-1 striped bass were below average in 2013, 2014, and 2017.

The reference points currently used for management are based on female SSB levels during the 1995 reference year. The 1995 reference year is used as the female SSB threshold because many stock characteristics (e.g., an expanded age structure) were reached by this year and the stock was declared rebuilt. The female SSB target is 125% of SSB threshold. To estimate the associated F reference points, population projections are made using a constant F and changing the value until the female SSB threshold and target are achieved. For the 2018 benchmark, the reference point definitions remained the same, but the values have been updated. The 2018 benchmark was the first assessment for striped bass to use the improved Marine Recreational Information Program (MRIP) survey methods to estimate recreational fishery catches. The new MRIP removals estimates are on average 2.3 times higher than recreational removals used in previous stock assessments, resulting in higher estimates of female SSB and, therefore, higher estimates for the SSB reference points.

2.2.2 History of the Fishery Management Plan

The first Interstate FMP for Atlantic Striped Bass was approved in 1981 in response to declining juvenile recruitment and landings occurring along the coast from Maine through North Carolina. The FMP and subsequent amendments and addenda focused on addressing the depleted spawning stock and recruitment failure. Despite these management efforts, the Atlantic striped bass stock continued to decline prompting many states (beginning with

Maryland in 1985) to impose a complete harvest moratorium for several years. State fisheries reopened in 1990 under Amendment 4 which aimed to rebuild the resource rather than maximize yield. The stock was ultimately declared rebuilt in 1995 and as a result, Amendment 5 to the Atlantic Striped Bbass FMP was adopted which relaxed both recreational and commercial regulations along the coast.

The Atlantic striped bass stock is currently managed under Amendment 6 and its subsequent addenda, the most recent being Addendum IV which implemented new commercial and recreational regulations beginning with the 2015 season (ASMFC 2014). The addendum was initiated in response to the findings of the 2013 benchmark stock assessment which triggered management action; female SSB was below the target for two consecutive years and F was above the target in at least one of those years (ASMFC 2003a). Although the stock was not overfished, a steady decline in female SSB had occurred since the mid-2000s. The addendum established new F reference points (target and threshold) and a suite of regulatory measures aimed to bring F back down to the new F target. All states/jurisdictions (hereafter states) were required to implement regulations to achieve a 25% reduction from 2013 removals in the ocean fishery, and Chesapeake Bay fisheries implemented regulations to achieve a 20.5% reduction from 2012 removals. To achieve this, the ocean commercial quota was reduced by 25% and the Chesapeake Bay commercial quota was set at 2012 harvest, less 20.5%. For the recreational fishery, states implemented a 1 fish bag limit with a minimum size of 28 inches in the ocean fishery, and Chesapeake Bay jurisdictions submitted implementation plans to achieve the required reductions. Several states also had conservation equivalency proposals approved which allowed them to adopt different management programs while still achieving the required reductions.

The U.S. Exclusive Economic Zone (EEZ; 3-200 miles) has been closed to the harvest, possession and targeting of striped bass since 1990, with the exception of a defined route to and from Block Island in Rhode Island which allows for the transit of vessels in possession of striped bass legally harvested in adjacent state waters. A recommendation was made in Amendment 6 to re-open federal waters to commercial and recreational fisheries. However, NOAA Fisheries concluded opening the EEZ to striped bass fishing was not warranted at that time. Following the completion of the 2018 benchmark stock assessment, NOAA Fisheries, in consultation with the Commission, is directed to review the federal moratorium on Atlantic striped bass, and to consider lifting the ban on striped bass fishing in the Federal Block Island Transit Zone (Consolidated Appropriations Act, 2018).

2.2.3 Status of the Fishery

Atlantic striped bass is arguably the most iconic finfish on the Atlantic coast and has supported valuable fisheries for centuries. The current fishery is predominantly recreational with the sector accounting for roughly 90% of total harvest by weight since 2004 (commercial and recreational harvest, combined; Table 1). In 2017, total striped bass removals (harvest and dead discards/release mortality from both sectors) were estimated at 7.06 million fish, 90% of which was attributed to the recreational sector (Table 2; Figure 3). In 2018, total removals were estimated at 5.8 million fish, with 88% attributed to the recreational sector.

Commercial Fishery Status

The commercial fishery is managed via a state-specific quota system based on average landings during the 1970s, resulting in relatively stable landings since 2004. From 2004 to 2014, coastwide commercial landings averaged 6.8 million pounds (1 million fish) annually (Table 1; Table 2). From 2015-2018, commercial landings have decreased to an average of 4.8 million pounds (611,000 fish) due to implementation of Addendum IV and a reduction in the commercial quota. In 2017, commercial landings were estimated at 4.8 million pounds (592,670 fish). In 2018, commercial landings were estimated at 4.7 million pounds (622,451 fish). Commercial dead discards (the portion of commercially caught striped bass that are released and assumed to die) account for approximately 13% of total commercial removals in numbers of fish since 2004. In 2017, commercial removals (landings plus dead discards) accounted for 10% of total removals (commercial plus recreational) in numbers of fish, and 12% of total removals in 2018.

The majority of commercial striped bass landings come from Chesapeake Bay; roughly 60% by weight annually since 1990, and 80% in numbers of fish. The differences between landings in weight and in numbers of fish is primarily attributed to availability of smaller fish and lower size limits in Chesapeake Bay relative to the ocean fishery.

Unlike the commercial fishery in Chesapeake Bay, the ocean fishery regularly underutilizes the quota. The ocean quota underage is mainly attributed to designated game fish status in several states including Maine, New Hampshire, Connecticut, and New Jersey which collectively share about 10% of the commercial quota in the ocean region. Furthermore, the underage has increased in recent years since migratory striped bass have not been available to the ocean fishery in North Carolina resulting in zero harvest since 2012 (North Carolina holds 13% of the ocean quota).

Recreational Fishery Status

The Atlantic striped bass recreational fishery is managed via bag limits and minimum size limits in order to constrain fishing mortality. Approximately 90% of recreational catch is released alive (Figure 4) – either due to angler preference (i.e., catch and release fishing) or regulation (e.g., undersized, or the angler already caught the bag limit). The assessment assumes, based on previous studies, that 9% of the fish that are released alive die as a result of being caught.

Total recreational removals (harvested fish plus released fish that died as a result of being caught) increased from a low of 2.7 million pounds (434,665 fish) in 1984 to a high of 75.8 million pounds (7.6 million fish) in 2013. Total removals decreased to an average of 53.5 million pounds (5.8 million fish) since the implementation of Addendum IV in 2015. In 2017, recreational removals were estimated at 53.7 million pounds (6.4 million fish). Of those removals, 37.9 million pounds (2.9 million fish) were harvested (Table 3). In 2017, 38.0 million striped bass (equivalent to 176 million pounds) were released alive resulting in an estimated 3.4 million dead releases (15.8 million pounds), which accounted for 48% of total striped bass removals in numbers of fish (Table 4). In 2018, 49% of total removals were attributed to dead

releases (2.8 million fish or 12.3 million pounds). Recreational dead releases make up a large portion of total removals because most of the catch is released.

A large proportion of recreational harvest comes from Chesapeake Bay. From 2004-2014, 33% of recreational harvest in numbers of fish came from Chesapeake Bay. From 2015-2018, that percentage increased to 45%, likely as a result of the strong 2011, 2014, and 2015 year classes moving through the fishery.

2.2.4 Performance of Addendum IV and the Effects of Changes in Effort and the Availability of Strong Year Classes

In 2016, following the first full year under Addendum IV measures, the Striped Bass Plan Review Team compared observed removals in 2015 to the reference period (2013 for the ocean fishery and 2012 for Chesapeake Bay) to evaluate whether the reductions needed to bring F back down to the target had been achieved. The results indicated the overall reduction was nearly the same as the predicted reduction on a coastwide level. The observed commercial reduction was very close to the predicted reductions, but the observed recreational reduction in the ocean and Chesapeake Bay fisheries diverged significantly from the predicted values. Recreational fisheries in the ocean saw a greater reduction than what was predicted, while recreational fisheries in Chesapeake Bay experienced an increase in harvest relative to the reference period. Upon further review, the Technical Committee (TC) identified changes in effort and changes in the size, age structure, and the distribution of the 2011 year class in the ocean relative to the Chesapeake Bay as the most significant variables contributing to the large differences in the observed harvest compared to that predicted by the TC during the development of Addendum IV (ASMFC 2016). At that time, the 2011 year class was the largest recruitment event since the early 2000s. Those fish continued to grow and migrate to the ocean, becoming increasingly available to ocean fisheries and leading to significant increases in removals in 2016 and 2017 under the same management program[1]. It should also be noted that decreased effort in the ocean fishery in 2018 resulted in roughly an 18% reduction in total removals relative to 2017 (and a 5% reduction from 2015 levels) under the same management measures. The decrease in effort was observed across all recreational fisheries, not just effort directed at striped bass. These annual fluctuations in catch (and in fishing mortality) under constant regulations highlight the effect of changes in effort and strong year classes on future catch, and the degree of uncertainty associated with bag and size limit analyses.

It is difficult to account for changes in effort and the impacts of emerging year classes in bag limit and size limit analyses, and harvest reduction calculations. The 2011, 2014, and 2015 year classes (corresponding to the 2012, 2015, and 2016 recruitment estimates) have all been above average with the 2015 year class being the largest recruitment event since 2004. It is expected that the availability of the 2014 and 2015 year classes in 2020 will be similar to what was

[1] A stock assessment update in 2016 also indicated that Addendum IV successfully reduced F below the target in 2015. As a result, the Board initiated Draft Addendum V to consider relaxing coastwide measures to bring F back up to the target level. However, the Board withdrew Draft Addendum V from consideration after preliminary MRIP estimates revealed that 2016 removals increased without changing regulations.

observed for the 2011-year class in 2016 and 2017. These strong year classes become available to the Chesapeake Bay fishery first and become more readily available to the ocean fishery as they grow and begin to migrate to the ocean. While strong year classes are a positive sign for the population, the abundance of undersized striped bass often leads to anglers catching and releasing a larger number of fish, thus driving up the number of recreational releases. When considering management changes, it is important to consider the impact such changes could have on strong year classes and to account for the emergence of strong year classes to the extent possible in supporting analyses.

2.2.5 Socioeconomic Impacts

Overall, there are many potential socioeconomic impacts that could result from striped bass harvest reductions. In general, the reduction in striped bass removals is likely to translate into a short-term negative impact on the regional economy and jobs associated with the fishing industry for this species. However, the positive long-term economic impacts stemming from stock recovery and subsequent catch increases in successive years will likely outweigh the short-term impacts.

The impacts associated with the reduction in removals will be different for the commercial and recreational sectors, primarily because the two sectors do not contribute equally to the local economy. A recent 2019 report from Southwick Associates[2] indicates 97% of total economic contribution associated with striped bass fishing came from the recreational sector in 2016. According to the report, total revenues in the commercial sector (from Maine to North Carolina) were $19.8 million that year, while total expenditures in the recreational sector amounted to $6.3 billion. The contribution of the commercial sector to the region's gross domestic product (GDP) when attempting to account for all industries involved in harvesting, processing, distributing, and retailing striped bass to consumers, was $103.2 million and supported 2,664 regional jobs. In comparison, the contribution of the recreational sector to the region's GDP was $7.7 billion and supported 104,867 jobs. Importantly, the report acknowledges that it is not intended to be used to set fishery regulations, but rather to demonstrate the economic significance of striped bass to local economies. It should also be noted that these numbers are an average for the entire region and actual economic impacts are expected to vary by state.

The dollar values above refer to economic impacts, not to the economic value (or net economic benefit for society) associated with the recreational and commercial fisheries. While data required to quantify these measures are not currently available, the effects of changes to the striped bass management program approved through this addendum can be qualified as follows: for the recreational sector, increased minimum size limits or other restrictions can lead to decreased availability of legal sized striped bass which can lead to increased effort and an increase in dead releases. Conversely, increased fishing restrictions could result in a reduction in number of recreational trips which could translate into a reduction in angler welfare. For the

[2] While this is a useful source of updated information, it is not peer-reviewed and, therefore, the methods behind the report's figures should be consider accordingly.

commercial sector, a reduction in quota will likely reduce profits and may increase the consumer price of striped bass. However, as in the case of the economic impacts (and assuming increased restrictions do not permanently deter stakeholders from the striped bass fishery), these effects are expected to be outweighed by the positive effects on anglers', harvesters', and consumers' welfare associated with stock recovery in successive years.

2.2.6 Management Program Equivalency

The use of management program equivalency (hereafter referred to as "conservation equivalency") is an integral component of the Commission's Interstate Fisheries Management Program, particularly for Atlantic striped bass. Conservation equivalency allows states flexibility to develop alternative regulations that address specific state or regional differences while still achieving the goals and objectives of the FMP. Under Amendment 6 to the Striped Bass FMP, a state may submit a proposal for a change to its regulatory program for any mandatory compliance measure. It is the responsibility of the state to demonstrate the proposed management program is equivalent to the measures selected through this addendum. All conservation equivalency proposals are subject to TC review and Board approval.

Several states currently use conservation equivalency. For example, the use of closed seasons have been used as an effective tool to implement smaller size limits or increased bag limits while still achieving the same quantified level of conservation. Note the PDT did not develop closed season options for the ocean or Chesapeake Bay regions because the impacts are expected to vary by state and fishery. While closed seasons could be very effective in regions and seasons when striped bass is the only viable fishing choice, closed seasons may have little or no impact in fisheries that operate as catch and release, or in areas where other species are available for harvest. For example, Atlantic mackerel and bluefish are commonly caught with striped bass, so trips that target those species may still catch striped bass and contribute to striped bass release mortality even if striped bass are not targeted or retained.

States should consult the Commission's Conservation Equivalency Technical Guidance Document before considering the development and submission of conservation equivalency proposals. If this document is approved for public comment, the TC will develop criteria for conservation equivalency with this addendum.

3.0 Proposed Management Options

The striped bass ocean fishery is defined as all fisheries operating in coastal and estuarine areas of the U.S. Atlantic coast from Maine through North Carolina, excluding the Chesapeake Bay and Albemarle Sound-Roanoke River (A-R) management areas. The Chesapeake Bay fishery is defined as all fisheries operating within Chesapeake Bay. This document does not propose changes to the A-R management program.

The proposed recreational management options herein were developed using MRIP catch and harvest estimates. To account for year class strength, the Plan Development Team (PDT) used catch-at-length data from 2016 and 2017 to characterize the catch in 2020. The PDT also assumed the same level of non-compliance observed in 2016 and 2017 will occur in 2020,

including undersized fish harvested legally through conservation equivalency. States may voluntarily implement management programs that are more conservative than those required herein. As noted, several states currently implement conservation equivalency programs in order to have management measures that meet the needs of their state's fishery (see *Appendix 1* for a summary of striped bass regulations by state and fishing sector in 2017).

Projecting Harvest Reductions to Achieve the Fishing Mortality Target

The PDT used the same forward projecting methodology that was used in the 2018 benchmark assessment to estimate the removals needed to achieve F target (0.20) in 2020 with a 50% probability. The projections account for the uncertainty in the stock assessment estimates of striped bass abundance and recruitment, and so for a given level of removals in 2020, there is some uncertainty about the F rate that results. A 50% probability of achieving F target means that in 2020, the projected F rate will be centered around F target, with a 95% chance that F will be between 0.17 and 0.23. There is also a 95% chance that F will be below F threshold in 2020, meaning that striped bass will not be experiencing overfishing even if F is above F target. Importantly, there is a 99.8% chance of F being lower than F in 2017 (F_{2017} = 0.31) (Figure 5).

The projections were made using final 2018 landings and dead discard estimates, and average removals from 2016-2018 were used as a proxy for 2019 to account for interannual variability in removals. Results indicate an 18% reduction from 2017 total removals is needed to achieve F target in 2020. If the stock continues to be fished at F target, female spawning stock biomass is projected to be above the SSB threshold by 2023 and be at 93% of the SSB target in 2027 (Figure 6). Additional reductions may be needed to achieve the female SSB target within the timeframe required by the Amendment 6 management triggers (i.e., the stock rebuilding schedule cannot exceed 10 years).

3.1 Proposed Management Scenarios

The following section outlines three management scenarios (including status quo) that are designed to reduce total removals by 18% relative to 2017 levels in order to reduce F to the target in 2020. These scenarios, which are mutually exclusive, include (1) status quo; (2) an 18% reduction in total removals where the desired percent reductions are applied equally (proportionally) to both the commercial and recreational sectors; and (3) an 18% reduction in total removals where the commercial sector takes a smaller percent reduction than the recreational sector.

***Note for all commercial fishery quota options**: quotas are allocated on a fishing year basis. In the event a jurisdiction exceeds its allocation, any overage of its annual quota will be deducted from the state's allowable quota in the following year. None of the scenarios propose changes to existing commercial size limits or the quota transfer provision.*

***Note for all recreational fishery options:** the options herein are designed to reduce harvest and total removals; they are not designed to address effort, and in effect, release mortality. The proposed measures are projected to increase releases because effort is assumed to be constant (i.e., the same level of fishing trips encountering striped bass in 2016 and 2017 will occur in*

2020). Accordingly, to offset the expected increase in releases, larger reductions in harvest are needed in order to achieve the desired overall reduction in total removals. To reduce both harvest and release mortality, additional effort controls should be considered to reduce the number of fishing trips that encounter striped bass. Additionally, the long term conservation benefits of implementing slot limits (i.e., protecting larger, older fish) may not be realized if effort is concentrated on fish within the slot limit, thus reducing the number of fish that survive to grow out of the slot. While the PDT expects fish larger than the slot limit will be protected, concentrating effort within the slot limit may reduce the number of fish that are able to grow out of the slot thus potentially reducing the population of larger, older fish over time.

When providing input on this document, please first identify your preferred management scenario (Option 1, 2, or 3) and then select your preferred management measures within that scenario. All three scenarios present management options for each fishery and management area combination (recreational measures for the ocean and Chesapeake Bay fisheries and commercial quotas for the ocean and Chesapeake Bay fisheries). All recreational options assume the same fishing seasons as in 2017, unless otherwise noted. All commercial quota options assume the same commercial size limits as in 2017.

Adopted options (other than status quo) would supersede Addendum IV, Sections 3.1 and 3.2, and replace corresponding sections in Amendment 6.

Option 1: Status Quo

The language of Addendum IV, Sections 3.1 and 3.2 would remain in place. In essence, if Option 1 is selected, Atlantic striped bass fisheries will continue to operate under the provisions of Addendum IV. It should be noted this option does not meet the projected reductions needed from 2017 levels to achieve F target in 2020.

Ocean Recreational Fishery

All coastal fisheries (excluding Chesapeake Bay and the Albemarle Sound-Roanoke River) will be constrained by a one fish bag limit and 28-inch minimum size limit. Any jurisdiction submitting a proposal for conservation equivalency must demonstrate through quantitative analysis that its proposal achieves at least a 25% reduction in harvest (including estimated dead discards) from its ocean recreational fishery. All conservation equivalency proposals are subject to Technical Committee review and Board approval.

Note: the Chesapeake Bay spring trophy fishery is part of the coastal fishery for management purposes.

Chesapeake Bay Management Area Recreational Fishery (Maryland, Potomac River Fisheries Commission and Virginia)

The Chesapeake Bay jurisdictions will submit a management program that achieves at least a 20.5% reduction from 2012 harvest (including estimated dead discards) in the Chesapeake Bay recreational fishery for Technical Committee review and Board approval.

The Chesapeake Bay fisheries reductions were based on 2012 harvest because the Bay-wide quota had already been reduced by 14% in 2013, in keeping with the Bay commitment to raise or lower quotas, with definitive changes in the exploitable stock biomass as approved by the FMP. The commercial Chesapeake Bay fisheries' quota reduction meant harvesters were provided 14% less tags or pounds of harvestable quota in 2013, as compared to 2012 and the 2013 recreational summer and fall quotas were reduced by 14% compared to 2012.

Ocean Commercial Fishery

The table below indicates each states commercial quota in pounds. These quotas reflect a 25% reduction from the previous Amendment 6 quotas.

State	Status Quo Addendum IV Quota (Pounds)	2017 Harvest For Reference
Maine*	188	-
New Hampshire*	4,313	-
Massachusetts	869,813	823,409
Rhode Island^	182,719	175,312
Connecticut**	17,813	-
New York	795,795	701,216
New Jersey**^	241,313	-
Delaware	145,085	141,800
Maryland^	98,670	80,457
Virginia	138,640	133,874
North Carolina	360,360	-
Coastal Total	**2,854,706**	**2,056,068**

* Commercial harvest/sale prohibited, with no re-allocation of quota to the recreational fishery.
** Commercial harvest/sale prohibited, with re-allocation of quota to the recreational fishery.
^ Addendum IV quota reduced through conservation equivalency for RI (181,572 lbs), NJ (215,912 lbs), and MD (90,727 lbs)

Chesapeake Bay Management Area Commercial Fishery (Maryland, Potomac River Fisheries Commission and Virginia)

The Chesapeake Bay jurisdictions will submit a management program that achieves at least a 20.5% reduction from 2012 harvest in the Chesapeake Bay commercial fishery for Technical Committee review and Board approval. A 20.5% reduction from 2012 harvest results in a Chesapeake Bay commercial quota of 3,120,247 pounds.

Option 2: Equal Percent Reductions

An 18% reduction in total removals relative to 2017 levels to reduce F to the target in 2020 where the desired percent reduction is applied equally (proportionally) to both the commercial and recreational sectors; both sectors would take an 18% reduction from 2017 levels. Under all sub-options, states have the flexibility to develop alternative regulations through conservation equivalency, including the allocation of the required reductions between the commercial and recreational sectors.

Recreational Fishery Management:

The tables below provide a suite of options for both the ocean and Chesapeake Bay recreational fisheries. Size limits are in total length. Bag limits are per person per day. The Board will choose one option from each table, and all states would be required to implement the selected sub-option for striped bass fisheries in their respective state waters.

Sub-Option 2-A: Ocean Recreational Fishery (All jurisdictions would implement).

Under all sub-options, New York would be required to submit a proposal that achieves an 18% reduction in removals relative to 2017 levels for the Hudson River management area, and Pennsylvania would be required to submit a proposal that achieves an 18% reduction in its state waters (catch from Pennsylvania and the Hudson River is not covered by MRIP).

Sub-Option	Bag Limit	Size Limit	Season and Trophy Fish/Season	% change from 2017		
				Harvest	Release Mortality	Total Removals
2-A1	1	35" min	Same seasons and trophy season as 2017 (see *Appendix 1*)	-43%	+3%	-18%
2-A2	1	28"-35" slot		-46%	+3%	-19%
2-A3^	1	30"-38" slot		-44%	+3%	-18%
2-A4^	1	32"-40" slot		-49%	+4%	-21%

^Under sub-option 2-A3 and 2-A4, ocean trophy fish fisheries would be capped with a 38" and 40" maximum size limit, respectively.

Sub-Option 2-B: Chesapeake Bay Recreational Fishery (MD, PRFC, DC and VA would implement).

Sub-Option	Bag Limit	Size Limit	Season and Trophy Fish/Season	% change from 2017		
				Harvest	Release Mortality	Total Removals
2-B1	1	18" min	Same seasons and trophy season as 2017 (see *Appendix 1*)	-40%	+4%	-20%
2-B2	2	22" min		-34%	+4%	-18%
2-B3^	2	18"-23" slot	Same seasons as 2017 but *without* trophy fish season	-36%	+5%	-19%
2-B4^	2	20"-24" slot		-35%	+5%	-19%

^Under sub-options 2-B3 and 2-B4, states would be required to submit for conservation equivalency to reinstate a trophy fish season.

Commercial Fishery Management
This option is an 18% reduction from the Addendum IV quotas (in pounds) after accounting for approved conservation equivalency programs.

The following table presents quotas for both the ocean and Chesapeake Bay commercial fisheries. Note this option can achieve an 18% reduction from 2017 levels if active commercial fisheries perform the same as they did in 2017. However, there is potential for commercial removals to increase relative to 2017 if active fisheries fully utilize their quotas in 2020.

State	Addendum IV Quota	2017 Harvest	18% Reduction
Chesapeake Bay Commercial Quota^			
Maryland	1,471,888	1,439,760	1,206,948
PRFC	583,362	472,719	478,357
Virginia	1,064,997	827,848	873,298
Chesapeake Bay Total	**3,120,247**	**2,740,327**	**2,558,603**
Ocean Commercial Quota			
Maine*	188	-	154
New Hampshire*	4,313	-	3,537
Massachusetts	869,813	823,409	713,247
Rhode Island^^	182,719	175,312	148,889
Connecticut**	17,813	-	14,607
New York	795,795	701,216	652,552
New Jersey**^^	241,313	-	177,048
Delaware	145,085	141,800	118,970
Maryland^^	98,670	80,457	74,396
Virginia	138,640	133,874	113,685
North Carolina	360,360	-	295,495
Ocean Total	**2,854,706**	**2,056,068**	**2,312,579**

*Commercial harvest/sale prohibited, *with no* re-allocation of quota to the recreational fishery.
**Commercial harvest/sale prohibited, *with* re-allocation of quota to the recreational fishery.
^Jurisdiction-specific quotas for Chesapeake Bay are based on the 2017 allocation of the Bay-wide quota.
^^Addendum IV quota reduced through conservation equivalency for RI (181,572 lbs), NJ (215,912 lbs), and MD (90,727 lbs). An 18% reduction is calculated relative to these reduced quota.

Option 3: The Commercial Sector Takes a Smaller Percent Reduction

An 18% reduction in total removals relative to 2017 levels to reduce F to the target in 2020 where the commercial sector takes a smaller percent reduction than the recreational sector. In this option, the commercial sector will take a 1.8% reduction in quota [the product of the percent total reductions needed (18%) and the proportion of 2017 removals from the commercial sector (10%)]. The commercial percent reduction in numbers of fish is subtracted from the total reductions needed to achieve F target in 2020 to calculate the reduction the recreational sector must take. This reduction is subtracted from the 2017 recreational removals estimate to calculate the new target percent reduction for recreational removals (20%). Under all sub-options, states have the flexibility to develop alternative regulations through conservation equivalency, including the allocation of the required reductions between the commercial and recreational sectors.

The rationale for this suite of options is the commercial fishery is managed via a static quota system which keeps effort and removals relatively constant from year to year, while the recreational management program does not have a harvest limit. This has allowed recreational effort and, therefore, removals to increase with resource availability and other social and economic factors.

Recreational Fishery Management*:*

The tables below provide a suite of options for both the ocean and Chesapeake Bay recreational fisheries. Size limits are in total length. Bag limits are per person per day. The Board will choose one option from each table, and all states would be required to implement the selected sub-option for striped bass fisheries in their respective state waters.

Sub-Option 3-A: Ocean Recreational Fishery (All jurisdictions would implement).

Under all sub-options, New York would be required to submit a proposal that achieves an 18% reduction in removals relative to 2017 levels for the Hudson River management area, and Pennsylvania would be required to submit a proposal that achieves an 18% reduction in its state waters (catch from Pennsylvania and the Hudson River is not covered by MRIP).

Sub-Option	Bag Limit	Size Limit	Season and Trophy fish/season	% change from 2017		
				Harvest	Release Mortality	Total Removals
3-A1	1	36” min	Same seasons and trophy season as 2017 (see *Appendix 1*)	-48%	+4%	-20%
3-A2	1	28”-34” slot		-52%	+4%	-22%
3-A3	1	30”-37” slot		-51%	+4%	-21%
3-A4^	1	32”-40” slot		-49%	+4%	-21%

^Under sub-option 3-A3 and 3-A4, ocean trophy fish fisheries would be capped with a 37” and 40” maximum size limit, respectively.

Sub-Option 3-B: Chesapeake Bay Recreational Fishery (MD, PRFC, DC and VA would implement).

Sub-Option	Bag Limit	Size Limit	Season and Trophy Fish/Season	% change from 2017		
				Harvest	Release Mortality	Total Removals
3-B1^	1	MD: 19" min PRFC, DC, VA: 20" min	Same seasons and trophy season as 2017 (see *Appendix 1*)	-48%	+4%	-29%
3-B2	1	18” min		-40%	+4%	-20%
3-B3	2	23” min	Same seasons as 2017 *except* the trophy season starts no earlier than May 1	-42%	+6%	-20%
3-B4	2	18”-22" slot		-48%	+6%	-21%
3-B5	2	20”-23" slot		-47%	+6%	-20%
3-B6	2	22”-40" slot	Same seasons as 2017; same trophy season and minimum sizes *except* with a 40” max size limit	-39%	+5%	-21%

^Sub-option 3-B1 drops the bag limit to 1-fish but maintains 2018 size limits. The PDT notes that a higher percent reduction is projected relative to 2017 size limits (i.e., when all fisheries were at a 20” minimum).

(COMMERCIAL FISHERY MANAGEMENT OPTION FOR OPTION 3 ON NEXT PAGE)

Commercial Fishery Management
This option is a 1.8% reduction from the Addendum IV quotas (in pounds) after accounting for approved conservation equivalency programs.

The following table presents quotas for both the ocean and Chesapeake Bay commercial fisheries. Note this option can achieve a 1.8% reduction from 2017 levels if active commercial fisheries perform the same as they did in 2017. However, there is potential for commercial removals to increase relative to 2017 if active fisheries fully utilize their quotas in 2020.

State	Addendum IV Quota	2017 Harvest	1.8% Reduction
Chesapeake Bay Commercial Quota^			
Maryland	1,471,888	1,439,760	1,445,394
PRFC	583,362	472,719	572,861
Virginia	1,064,997	827,848	1,045,827
Chesapeake Bay Total	**3,120,247**	**2,740,327**	**3,064,083**
Ocean Commercial Quota			
Maine*	188	-	185
New Hampshire*	4,313	-	4,235
Massachusetts	869,813	823,409	854,156
Rhode Island^^	182,719	175,312	178,304
Connecticut**	17,813	-	17,492
New York	795,795	701,216	781,471
New Jersey**^^	241,313	-	212,026
Delaware	145,085	141,800	142,473
Maryland^^	98,670	80,457	89,094
Virginia	138,640	133,874	136,144
North Carolina	360,360	-	353,874
Ocean Total	**2,854,706**	**2,056,068**	**2,769,454**

*Commercial harvest/sale prohibited, *with no* re-allocation of quota to the recreational fishery.
**Commercial harvest/sale prohibited, *with* re-allocation of quota to the recreational fishery.
^Jurisdiction-specific quotas for Chesapeake Bay are based on the 2017 allocation of the Bay-wide quota.
^^Addendum IV quota reduced through conservation equivalency for RI (181,572 lbs), NJ (215,912 lbs), and MD (90,727 lbs). A 1.8% reduction is calculated relative to these reduced quota.

3.2 Circle Hook Provision

This section proposes options regarding the use of circle hooks when fishing with bait to reduce striped bass discard mortality in recreational fisheries.

Discard mortality accounts for a considerable amount of removals in the Atlantic striped bass fishery along the east coast. The latest assessment assumes 9% of fish that are released alive die as a result of being caught (Diodati and Richards 1996), although there is some evidence it may be higher, particularly in the summer months. Management measures that increase the minimum size limit or reduce bag limits can lead to an increase in the number of striped bass released.

The use of circle hooks by anglers targeting striped bass with bait, live or chunk, has been identified as a method to reduce the discard mortality of striped bass in recreational fisheries. The ASMFC defines circle hooks as "a non-offset hook where the point is pointed perpendicularly back towards the shank" (ASMFC 2003b). The term non-offset circle hook means the point and barb are in the same plane as the shank (e.g. when the hook is laying on a flat surface, the entire hook and barb also lay flat). When a circle hook begins to exit the mouth of a fish, the shape causes the shaft to rotate towards the point of resistance and the barb is more likely to embed in the jaw or corner of the fish's mouth. Circle hooks can reduce rates of "gut-hooking" and lower the likelihood of puncturing internal organs if the hook is swallowed.

Caruso (2000) found discard mortality was reduced by 12.5% by using circle hooks compared to j-hooks in Massachusetts waters and the incidence of potentially lethal wounding was low with circle hooks. Lower discard mortality was also estimated on the Hudson River with circle hook usage when compared to j-hooks (Millard et al. 2005). Within Chesapeake Bay, Lukacovic and Uphoff (2007) collected data on striped bass hooking mortality using natural cut bait on j-hooks and circle hooks. The study found that j-hooks were 3.7 times more likely to result in deep-hooking than circle hooks, and deeply-hooked fish were 17 times more likely to die when released.

While circle hooks have been demonstrated to reduce hooking mortality rates, factors other than hook type can also affect the release mortality rate. These other factors include water temperature (Nelson 1994; Wilde et al. 2000; Millard et al. 2005), air temperature (Lukacovic and Uphoff 2007), salinity (RMC 1990), hook size (ASMFC 2003b), fish length (Lukacovic and Uphoff 2007), and hooking location (Nelson 1994; Millard et al. 2005; Lukacovic and Uphoff 2007). Additionally, it is unknown how many anglers currently use circle hooks, resulting in uncertainty on how many additional fish could be saved if mandatory circle hook measures are put in place. Enforceability and compliance are also concerns depending on how regulations are implemented, specifically depending on which anglers these regulations would apply to (e.g., to only those targeting striped bass, or all bait fishing in a state).

If Option B or Option C is selected, the Board must specify an implementation schedule. The schedule should consider state legislative and regulatory/public outreach development processes, including consultation with its stakeholders and user groups.

Option A. Status Quo
The language from Amendment 6, Section 5.3.1 would remain in place:
The states/jurisdictions are recommended to encourage the use of circle hooks to reduce the mortality associated with hooking and releasing striped bass. A number of studies have been conducted that have demonstrated that release mortality is decreased significantly with the use of circle hooks. In order to promote the use of circle hooks, states are encouraged to develop public relations/education campaigns on their benefits.

Option B. States/jurisdictions would be required to implement regulations requiring the use of circle hooks, as defined above, with the intent of reducing striped bass discard mortality in their recreational fisheries when fishing with bait. States have the flexibility to develop regulations that address specific needs of their fisheries. In order to promote the use of circle hooks, states are encouraged to develop public education and outreach campaigns on their benefits when fishing with bait.

Option C. States/jurisdictions would be required to promote the use of circle hooks by developing public education and outreach campaigns on their benefits when fishing with bait. States/jurisdictions must provide updates on public education and outreach efforts in annual state compliance reports.

4.0 Compliance Schedule

If approved, states must implement Addendum VI according to the following schedule to be in compliance with the Atlantic Striped Bass Interstate FMP:

XXXXXX: States submit proposals to meet requirements of Addendum VI.

XXXXXX: Management Board reviews and takes action on state proposals.

[Month Day, Year]: States implement regulations.

5.0 Literature Cited

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6.0 Tables and Figures

Table 1. Total removals (harvest and discards/release mortality) of Atlantic striped bass by sector in pounds, 2004-2018. Note: Harvest is from ACCSP/MRIP, dead discards and release mortality is from ASMFC. Estimates exclude inshore catch and harvest from North Carolina.

Year	Commercial		Recreational		Total Removals
	Harvest	Dead Discards	Harvest	Release Mortality	
2004	7,335,116	1,262,136	54,091,836	14,307,082	76,144,795
2005	7,121,319	1,078,391	53,031,074	14,412,620	79,581,675
2006	6,785,006	1,333,235	57,421,174	16,303,942	74,333,557
2007	7,047,195	1,181,533	50,674,431	12,680,939	63,054,061
2008	7,190,685	953,364	42,823,614	12,436,713	76,637,612
2009	7,216,792	1,076,465	56,665,318	11,236,287	73,903,661
2010	6,996,713	920,564	54,411,389	10,833,398	80,236,228
2011	6,789,792	809,577	61,431,360	7,569,260	74,729,834
2012	6,516,868	1,411,621	59,592,092	8,046,178	69,269,469
2013	5,819,678	901,326	53,256,619	10,731,891	82,432,216
2014	5,937,949	1,167,696	65,057,289	8,177,402	63,484,692
2015	4,830,124	1,031,887	47,948,610	11,621,265	57,294,717
2016	4,831,442	1,085,060	39,898,799	11,655,870	61,229,668
2017	4,803,867	1,110,833	43,671,532	15,818,534	59,392,844
2018	4,714,661	870,348	37,896,549	12,343,941	40,997,978

Table 2. Total removals (harvest and discards/release mortality) of Atlantic striped bass by sector in numbers of fish, 2004-2018. Note: Harvest is from ACCSP/MRIP, dead discards and release mortality is from ASMFC. Estimates exclude inshore catch and harvest from North Carolina.

Year	Commercial		Recreational		Total Removals
	Harvest	Dead Discards	Harvest	Release Mortality	
2004	879,768	160,196	4,553,027	3,665,234	9,258,224
2005	970,403	145,094	4,480,802	3,441,928	9,038,227
2006	1,047,648	158,260	4,883,960	4,812,332	10,902,201
2007	1,015,226	166,397	3,944,679	2,944,253	8,070,556
2008	1,027,837	108,962	4,381,186	2,391,200	7,909,184
2009	1,049,959	128,191	4,700,222	1,942,061	7,820,433
2010	1,031,430	133,064	5,388,440	1,760,759	8,313,693
2011	944,777	87,924	5,006,358	1,482,029	7,521,088
2012	870,606	191,577	4,046,299	1,847,880	6,956,361
2013	784,379	112,097	5,157,760	2,393,425	8,447,661
2014	750,263	121,253	4,033,747	2,172,342	7,077,604
2015	623,313	101,343	3,085,725	2,307,133	6,117,515
2016	607,084	105,119	3,500,434	2,981,430	7,194,066
2017	592,670	108,475	2,934,293	3,419,651	7,055,089
2018	622,451	90,092	2,244,766	2,826,667	5,783,976

Table 3. Total recreational harvest of Atlantic striped bass by state in numbers of fish, 2004-2018. Harvest is from MRIP. *Estimates exclude inshore harvest from North Carolina.

Year	ME	NH	MA	RI	CT	NY	NJ^	DE	MD	VA	NC*	total
2004	118,305	22,104	666,703	159,552	134,502	458,148	1,042,093	66,567	668,512	893,302	323,239	4,553,027
2005	118,323	35,480	536,058	195,580	202,636	854,633	958,051	48,815	819,052	517,320	194,854	4,480,802
2006	140,868	20,865	483,187	129,264	168,265	614,759	972,248	44,453	1,342,324	833,543	134,184	4,883,960
2007	95,474	8,146	471,873	135,771	163,871	602,845	722,166	17,171	1,127,310	518,275	81,777	3,944,679
2008	133,379	11,884	514,064	73,408	132,755	1,169,855	791,013	67,708	779,700	670,543	36,877	4,381,186
2009	146,497	17,291	694,992	138,357	100,267	574,188	1,141,495	64,776	1,104,647	711,164	6,548	4,700,222
2010	37,299	21,383	808,175	162,049	170,199	1,449,043	1,091,368	61,374	1,151,822	368,584	67,144	5,388,440
2011	48,517	54,202	873,496	202,237	91,104	1,005,255	1,038,894	43,662	1,112,977	328,404	207,610	5,006,358
2012	31,379	37,302	1,010,563	130,689	137,125	927,503	742,420	51,320	719,622	258,376	0	4,046,299
2013	73,345	63,157	658,713	308,312	269,562	902,452	1,324,245	70,635	1,185,023	302,316	0	5,157,760
2014	86,409	16,522	523,531	171,984	131,829	804,490	501,949	26,171	1,639,631	131,231	0	4,033,747
2015	14,434	10,036	485,317	67,036	140,783	406,786	600,269	41,895	1,111,503	207,666	0	3,085,725
2016	14,180	17,627	230,069	128,354	63,334	697,675	659,574	5,892	1,545,587	138,142	0	3,500,434
2017	22,042	37,723	392,347	59,582	94,536	472,321	625,909	27,786	1,091,645	110,402	0	2,934,293
2018	16,025	13,378	389,457	39,169	85,467	181,681	465,289	4,174	993,305	56,821	0	2,244,766

Table 4. Total recreational release mortality of Atlantic striped bass by state in numbers of fish x1000, 2004-2018. Recreational releases are from MRIP and a 9% mortality rate is applied to calculate release mortality. *Estimates exclude inshore harvest from North Carolina.

Year	ME	NH	MA	RI	CT	NY	NJ^	DE	MD	VA	NC*	Total Releases	Release Mortality (9% of Releases)
2004	1,597	593	13,338	1,899	1,414	4,568	3,685	373	8,748	4,263	247	40,725	3,665
2005	4,729	1,001	9,043	2,052	4,172	3,468	3,078	560	7,492	2,469	179	38,244	3,442
2006	8,059	889	19,279	2,094	2,016	4,407	3,605	685	9,024	3,375	37.2	53,470	4,812
2007	1,927	451	10,840	1,485	1,863	3,011	4,673	597	5,660	2,185	22.5	32,714	2,944
2008	1,157	197	7,496	778	5,063	2,782	3,668	633	3,222	1,547	26.4	26,569	2,391
2009	674	124	5,989	1,070	2,427	2,262	3,503	444	4,011	1,072	1.00	21,578	1,942
2010	522	161	5,090	619	1,416	3,036	2,436	256	5,390	586	51.4	19,564	1,761
2011	453	191	4,036	621	1,571	2,692	2,447	338	3,484	389	245	16,467	1,482
2012	657	164	3,629	1,292	892	2,428	1,822	358	9,001	289	0.00	20,532	1,848
2013	985	295	4,670	2,574	2,312	3,956	4,349	273	6,676	503	0.00	26,594	2,393
2014	1,023	316	6,425	438	740	2,784	2,840	530	8,304	738	0.00	24,137	2,172
2015	824	262	4,471	1,653	1,761	3,682	2,440	309	8,524	1,709	0.00	25,635	2,307
2016	2,162	819	6,299	1,416	1,208	3,739	1,808	218	13,781	1,638	39.2	33,127	2,981
2017	2,719	1,418	12,866	1,543	4,993	2,761	2,316	254	7,788	1,333	5.15	37,996	3,420
2018	2,174	356	5,377	2,180	7,514	1,989	2,756	352	7,458	1,247	3.49	31,407	2,827

Figure 1. Female spawning stock biomass (SSB) and recruitment (age-1 fish), 1982-2017. Source: 2018 benchmark stock assessment for Atlantic striped bass.

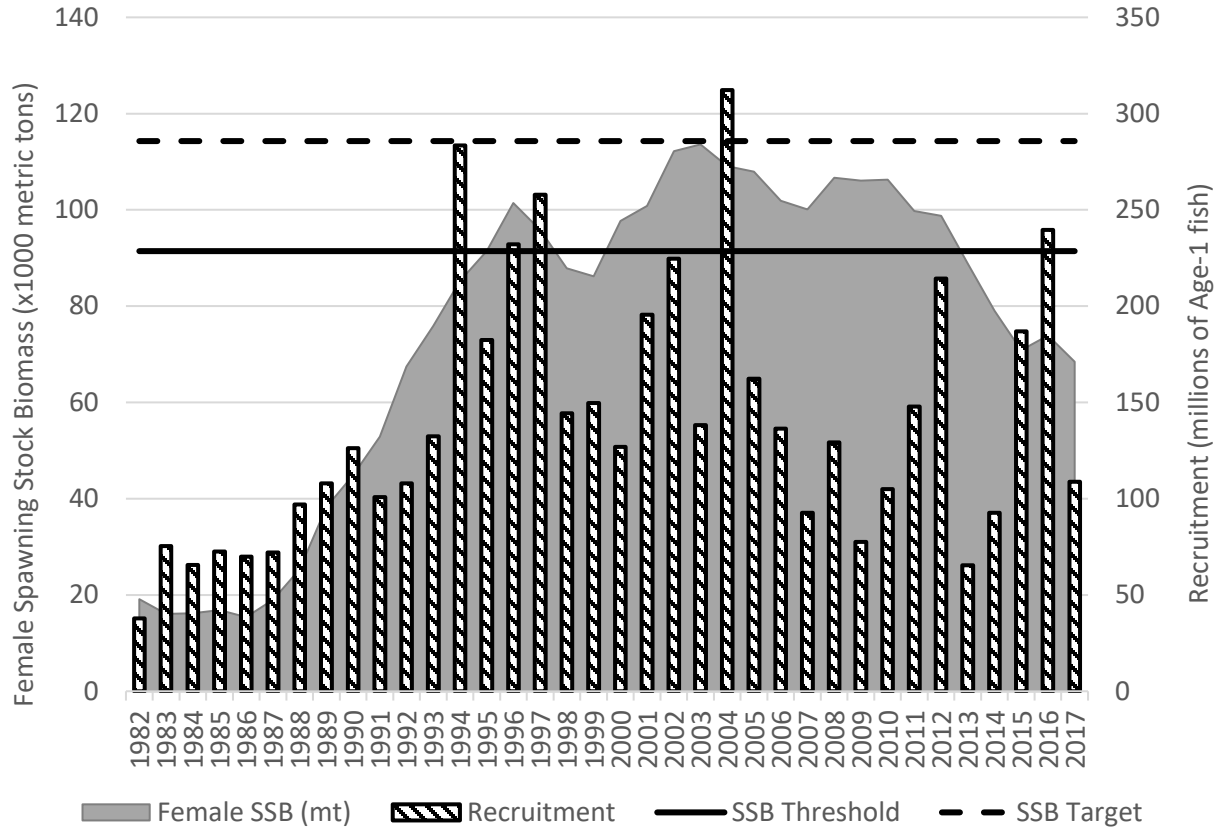


Figure 2. Total fishing mortality (F), 1982-2017. Source: 2018 benchmark stock assessment for Atlantic striped bass.

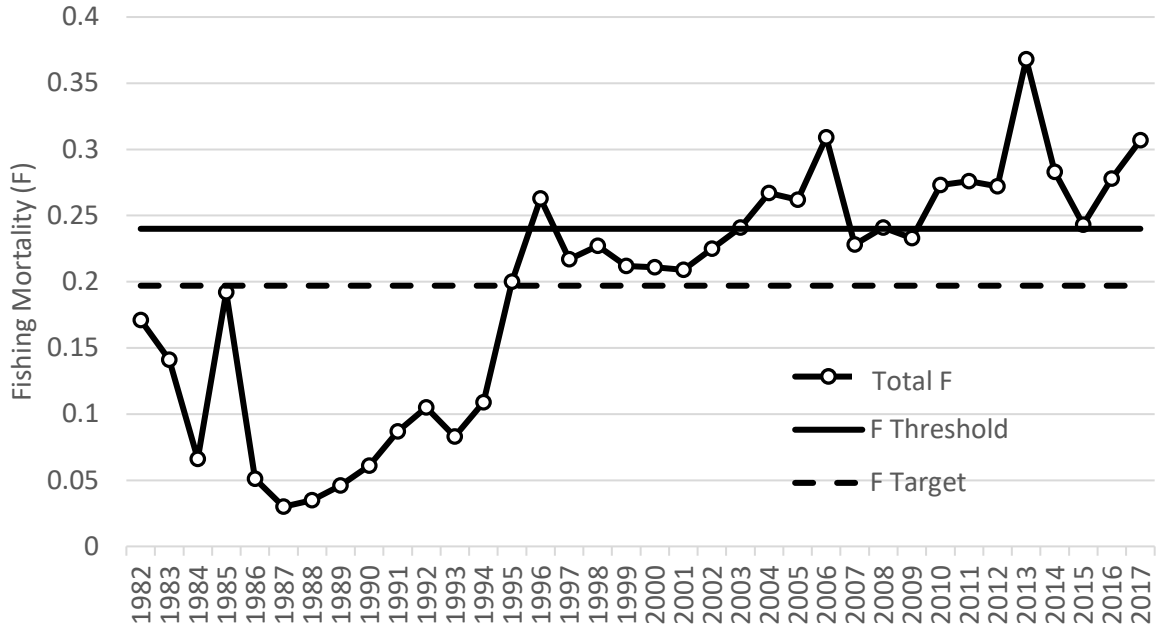


Figure 3. Total striped bass removals by sector in numbers of fish, 1982-2018. Note: Harvest is from ACCSP/MRIP, dead discards and release mortality is from ASMFC. Estimates exclude inshore catch and harvest from North Carolina.

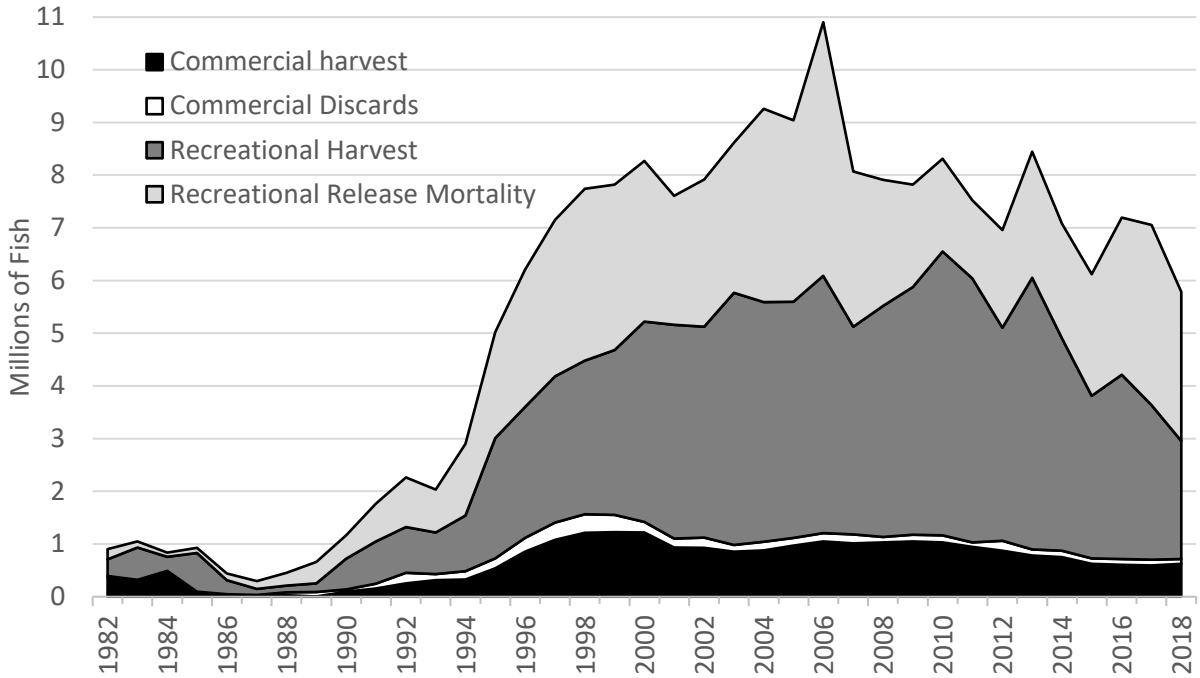


Figure 4. The proportion of recreational fish caught and released alive, 1982-2018. Source: MRIP. Excludes inshore catch from North Carolina.

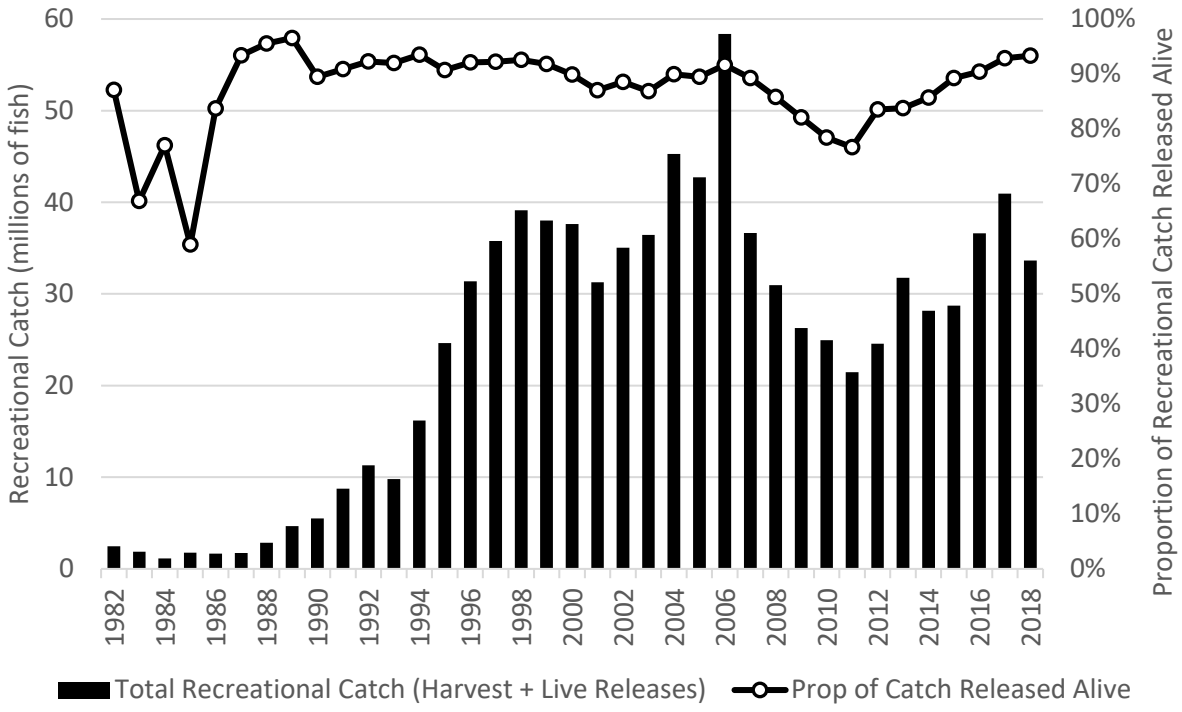


Figure 5. Projected fishing mortality and 95% confidence intervals if total removals in 2020 equal an 18% reduction from 2017 removals, plotted with the F target, F threshold, and F in 2017.

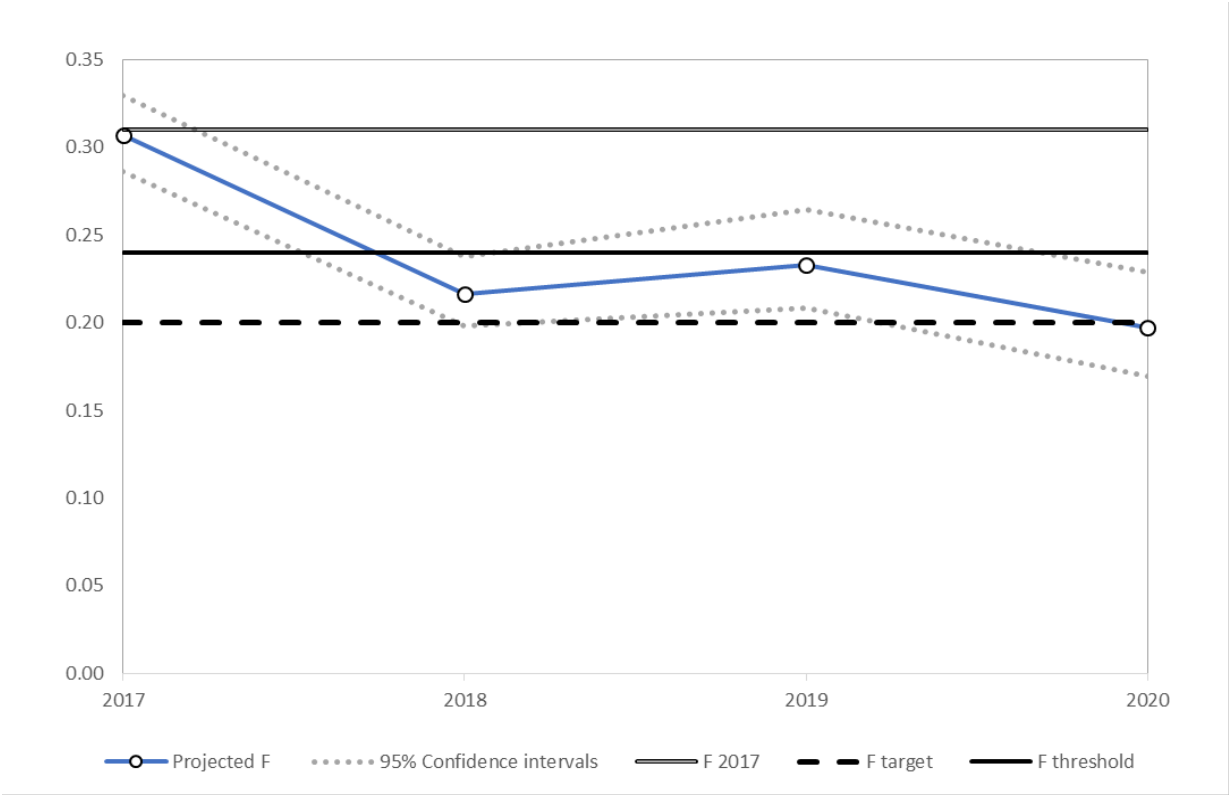
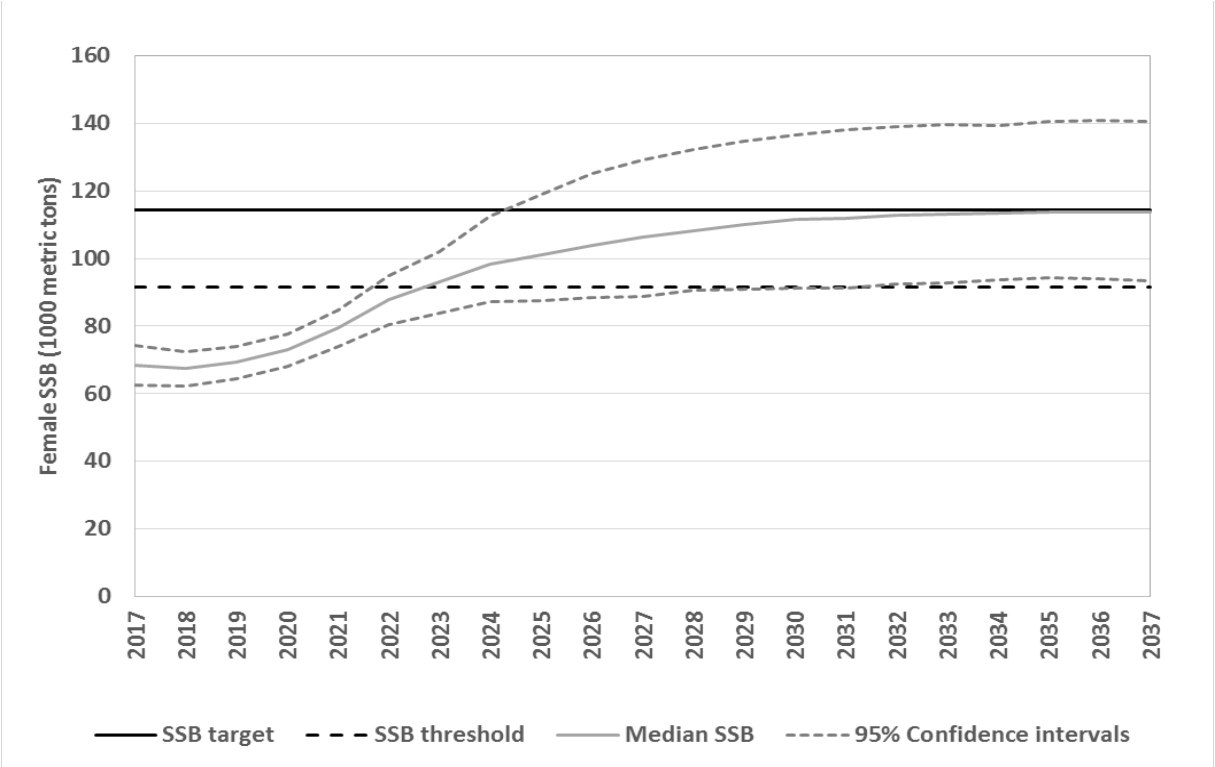


Figure 6. Projecting female spawning stock biomass (SSB) forward until SSB target is achieved while fishing at the fishing mortality target (F = 0.20) beginning in 2020.



Appendix 1. <u>Summary of Atlantic striped bass regulations in 2017.</u> Source: 2018 State Compliance Reports. Minimum size limits and slot size limits are in total length (TL). *commercial quota reallocated to recreational bonus fish program

<u>Commercial</u> regulations in 2017.

STATE	SIZE LIMITS	SEASONAL QUOTA	OPEN SEASON
ME	Commercial fishing prohibited		
NH	Commercial fishing prohibited		
MA	34" minimum size	869,813 lbs. Hook & line only	6.23 until quota reached, Monday and Thursdays only; 15 fish/day with commercial boat permit; 2 fish/day with rod and reel permit (striped bass endorsement required for both permits)
RI	Floating fish trap (FFT): 26" minimum size General category (GC; mostly rod & reel): 34" min.	Total: 181,540 lbs., split 39:61 between the FFT and GC. Gill netting prohibited.	FFT: 4.1 – 12.31, or until quota reached; unlimited possession limit until 70% of quota projected to be harvested, then 500 lbs/day GC: 5.28-8.31, 9.10-12.31, or until quota reached. Closed Fridays and Saturdays during both seasons.
CT*	Commercial fishing prohibited; bonus program: 22 – <28" slot size limit, 5.1 – 12.31 (voucher required)		
NY	28"-38" minimum size (Hudson River closed to commercial harvest)	795,795 lb. Pound nets, gill nets (6-8"stretched mesh), hook & line.	6.1 – 12.15, or until quota reached. Limited entry permit only.
NJ*	Commercial fishing prohibited; bonus program: 1 fish at 24 – <28" slot size limit, 9.1 – 12.31 (permit required)		
PA	Commercial fishing prohibited		
DE	Gillnet: 28" minimum size, except 20" min in Del. Bay and River during spring season. Hook and Line: 28" min	Gillnet: 137,831 lbs. Hook and line: 14,509 lbs.	Gillnet: 2.15-5.31 (2.15-3.30 for Nanticoke River) & 11.15-12.31; drift nets only 2.15-2.28 & 5.1-5.31; no fixed nets in Del. River. No trip limit. Hook and Line: 4.1–12.31, 200 lbs/day trip limit

Appendix 1, commercial regulations in 2017 (continued).

STATE	SIZE LIMITS	SEASONAL QUOTA	OPEN SEASON
MD	Ocean: 24" minimum CB and Rivers: 18–36"	Ocean: 90,727 lbs. CB and Rivers: 1,471,888 lbs. (part of Bay-wide quota).	Ocean: 1.1-5.31, 10.1-12.31, Mon- Fri Bay Pound Net: 6.1-12.30, Mon-Sat Bay Haul Seine: 6.1-12.29, Mon-Fri Bay Hook & Line: 6.1-12.28, Mon-Thu Bay Drift Gill Net: 1.2-2.28, 12.1-12.29, Mon-Thu
PRFC	18-36" slot size limit 2.15-3.25 and 18" minimum size all other seasons	583,362 lbs. (part of Bay-wide quota). Allocated by gear and season.	Hook & line: 1.1-3.25, 6.1-12.31 Pound Net & Other: 2.15-3.25, 6.1-12.15 Gill Net: 1.1-3.25, 11.13-12.31 Misc. Gear: 2.15-3.25, 6.1-12.15
DC	Commercial fishing prohibited		
VA	Bay and Rivers: 18" min size, and 18-28" slot size limit 3.26–6.15 Ocean: 28" min	Bay and Rivers: 1,064,997 lbs. (part of Bay-wide quota). Ocean: 136,141 lbs. ITQ-system for both areas.	Bay and Rivers: 1.16-12.31 Ocean: 1.16-12.31
NC	Ocean: 28"	360,360 lbs. (split between gear types). Number of fish allocated to each permit holder. Allocation varies by permit.	Seine fishery was open for 120 days, 150 fish/permit Gill net fisher was open for 45 days, 50 fish/permit Trawl fishery was open for 70 days, 100 fish/permit

Appendix 1, recreational regulations in 2017. C&R = catch and release

STATE	SIZE LIMITS	BAG LIMIT	GEAR RESTRICTIONS	OPEN SEASONS
ME	28" minimum size	1 fish/day	Hook & line only; circle hooks only when using live bait	All year, except spawning areas are closed 12.1 – 4.30 and catch and release only 5.1 – 6.30
NH	28" minimum size	1 fish/day	Gaffing and culling prohibited	All year
MA	28" minimum size	1 fish/day	Hook & line only; no high-grading	All year
RI	28" minimum size	1 fish/day	None	All year
CT	28" minimum size	1 fish/day	Spearing and gaffing prohibited	All year
NY	Ocean and Delaware River: 28" minimum size Hudson River: 18"-28" slot limit, or >40"	1 fish/day	Angling only. Spearing permitted in ocean waters. Catch and release only during closed season.	Ocean: 4.15 – 12.15 Hudson River: 4.1 – 11.30 Delaware River: All year
NJ	1 fish at 28" to < 43", and 1 fish ≥ 43"		Circle hooks required while fishing with natural bait during springtime spawning ground closure.	Ocean: All year All other waters: 3.1 – 12.31, except spawning ground closure from 4.1 – 5.31 in the lower Delaware River and tributaries
PA	Upstream from Calhoun St Bridge: 1 fish at ≥ 28" minimum size, year round Downstream from Calhoun St Bridge: 1 fish at ≥ 28" minimum size, 1.1 – 3.31 and 6.1 – 12.31 2 fish at 21"-25" slot size limit, 4.1 – 5.31			
DE	28" minimum size, no harvest 38-43" (inclusive)	2 fish/day	Hook & line, spear (for divers) only. Circle hooks required in spawning season.	All year except 4.1-5.31 in spawning grounds (C&R allowed). In Del. River, Bay & tributaries, may only harvest 20-25"slot from 7.1-8.31

Appendix 1, recreational regulations in 2017 (continued). C&R = catch and release

STATE	SIZE LIMITS	BAG LIMIT	OTHER	OPEN SEASON
MD	Ocean: 28”-38” slot limit or ≥44” CB Spring Trophy: 35” minimum CB Summer/Fall^: 20” minimum and only one fish can be >28”	Ocean: 2 fish/day CB Spring Trophy: 1 fish/day CB Summer/Fall^: 2 fish/day	See compliance report for specifics.	Ocean: All year CB: C&R only 1.1-4.14^ CB Spring Trophy: 4.15-5.15 Bay Summer/Fall: 5.16-12.20
PRFC	Spring Trophy: 35” minimum Summer/Fall: 20” minimum and only 1 fish can be >28”	Trophy: 1 fish/day Summer/Fall: 2 fish/day	No more than two hooks or sets of hooks for each rod or line	Spring Trophy: 4.15 -5.15 Summer/Fall: 5.16-12.31
DC	20” minimum and only one fish can be >28”	2 fish/day	Hook & line only	5.16-12.31
VA	Ocean: 28” minimum Ocean Trophy: 36” minimum CB Trophy: 36” minimum CB Spring: 20-28” (with 1 fish >36”) CB Fall: 20” minimum and only one fish can be >28”	Ocean: 1 fish/day Ocean Trophy: 1 fish/day Bay Trophy: 1 fish/day Bay Spring: 2 fish/day Bay Fall: 2 fish/day	Hook & line, rod & reel, hand line only. Gaffing is illegal in Virginia marine waters. No possession in the spawning reaches of the Bay during trophy season	Ocean: 1.1-3.31, 5.16-12.31 Ocean Trophy: 5.1-5.15 Bay Trophy: 5.1-6.15 Bay Spring: 5.16-6.15 Bay Fall: 10.4-12.31
NC	Ocean: 28” minimum	Ocean: 1 fish/day	No gaffing allowed.	Ocean: All year

^in Susquehanna Flats and Northeast River: C&R only from 1.1-5.3 and 1 fish/day at 20-26” slot size limit from 5.16-5.31