FRAMEWORK ADJUSTMENT 14

TO THE

SUMMER FLOUNDER, SCUP, AND BLACK SEA BASS

FISHERY MANAGEMENT PLAN

Includes Environmental Assessment, Regulatory Impact Review, and Regulatory Flexibility Act Analysis

May 2019

Prepared by the
Mid-Atlantic Fishery Management Council
in cooperation with
the National Marine Fisheries Service

Mid-Atlantic Fishery Management Council
800 North State Street, Suite 201
Dover, DE 19901
(302) 674-2331 tel.
(302) 674-5399 fax

National Marine Fisheries Service
55 Great Republic Drive
Gloucester, MA 01930
(978) 281-9315 tel.
(978) 281-9135 fax

Initial submission to NMFS: 3/21/2019
Revisions submitted: 5/8/2019

1. Executive Summary

This document summarizes the alternatives under consideration through a framework adjustment to the Mid-Atlantic Fishery Management Council's (Council's) Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan (FMP) and the Atlantic States Marine Fisheries Commission's (Commission's) complementary Addendum XXXI to their FMP.[1] Fisheries for these three species are managed cooperatively by the Council and the National Marine Fisheries Service (NMFS) in federal waters (3-200 miles) and the Commission and member states in state waters (0-3 miles).

The alternatives considered through this action address conservation equivalency for the recreational black sea bass fishery, recreational conservation equivalency rollover for black sea bass and summer flounder, commercial and recreational transit in Block Island Sound for all three species, and recreational slot limits for all three species (section 5). Table 1 contains a summary of the expected impacts of these alternatives on target and non-target species, human communities, habitat, and protected species. Section 7 describes these impacts in more detail.

The management alternatives considered through this action aim to increase the diversity of tools available for managing all three species, as well as reduce conflict between state and federal regulations. State and federal waters measures for the same species are not always identical. For example, federal waters are sometimes closed to certain fisheries when state waters are open. In addition, possession limits and minimum fish sizes can differ between state and federal waters. Discrepancies between state and federal regulations can be confusing for fishermen, which can result in noncompliance. They also create challenges for enforcement. The conservation equivalency and Block Island Sound transit alternatives (alternative sets 1 and 3) address situations where state and federal waters differ and could help address some of these issues.

Conservation Equivalency Alternatives and Impacts

The Council and Commission FMPs require uniform coastwide recreational management measures for black sea bass in state and federal waters; however, the fisheries vary by state in terms of availability, seasonality, and other factors. As a result, this one size fits all approach has had disproportionate impacts on some states. During 2011-2018, the Commission adopted a series of addenda to allow states to deviate from this requirement and adopt recreational measures that were more appropriate for their fisheries.

This framework action considers alternatives which would allow the black sea bass federal waters measures to be waived through conservation equivalency in favor of the regulations of the states where anglers land their catch (alternatives 1B and 1C). This would help address the disproportionate impacts of uniform coastwide measures on some states. Under the preferred alternative (alternative 1B), recreational conservation equivalency would be allowed for black sea bass using the same process currently used for summer flounder. Recreational conservation equivalency has been allowed for summer flounder since 2002. It is important to emphasize that this action does not consider implementing black sea bass conservation equivalency in any particular year. Rather, the alternatives would update the FMPs to allow this management tools to be used in future years.

[1] Addendum XXXI is available at:
http://www.asmfc.org/uploads/file/5c1a65ebSF_Scup_BSB_AddendumXXXI_Dec2018.pdf

Under all black sea bass conservation equivalency alternatives, recreational fishing effort is expected to continue to be constrained primarily by the recreational harvest limit (RHL). The impacts of the RHL are analyzed in a specifications document each time the RHL is implemented or revised. None of the black sea bass conservation equivalency alternatives are expected to have different impacts on target and non-target species, habitat, or protected species than the impacts of the RHL. They are not expected to result in changes to fishing effort, fishing mortality, or the amount, duration, or location of gear in the water, compared to current conditions. As such, alternatives 1A-1C are expected to have moderate positive impacts on black sea bass by maintaining the current positive stock status. They are expected to have slight negative to slight positive impacts on non-target species (depending on the species) by maintaining the current stock status of those species. They are expected to have slight negative impacts on habitat because some level of interactions between recreational fishing gear and physical habitat would continue and recovery of affected habitat areas would not be expected. Current levels of interactions between protected species and hook and line gear would be expected to continue under alternatives 1A-1C. This is expected to have negligible to moderate negative impacts (depending on the species and gear type) on species listed as endangered or threatened under the Endangered Species Act (ESA) and species protected by the Marine Mammal Protection Act (MMPA) which have had their Potential Biological Removal (PBR) levels reached or exceeded. For MMPA species whose PBR levels have not been reached or exceeded, alternatives 1A-1C are expected to have negligible to slight positive impacts (depending on the species and gear type) by allowing those species to remain in a positive stock status. Negligible impacts are expected for those protected species which have never had observed or documented interactions with the primary gear types in the commercial and recreational summer flounder, scup, and black sea bass fisheries (i.e., bottom otter trawl, fish pot/trap, and hook and line).

The impacts to target and non-target species, habitat, and protected species are expected to be identical under alternatives 1A-1C. The expected socioeconomic impacts vary across these three alternatives. Slight negative socioeconomic impacts associated with differences between state and federal waters measures, and the resulting potential for angler confusion, noncompliance, and state/federal water transit issues (e.g., in Block Island Sound), would be expected to persist under the no action alternative (alternative 1A). Alternatives 1B and 1C would allow federal waters measures to be waived in favor of the measures in the states where anglers land their catch. This would alleviate some of the negative impacts of the no action alternative and could allow anglers to fish under regulations that account for regional variations in the fisheries. Thus, alternatives 1B and 1C could have slight positive socioeconomic impacts compared to current conditions and the no action alternative.

This framework also considers a range of alternatives regarding recreational conservation equivalency rollover. Alternatives 1C and 2B would allow conservation equivalency for black sea bass and summer flounder, respectively, to roll over from one year to the next. Alternative 2A is the no action alternative for summer flounder conservation equivalency rollover. Alternative 1A would not allow conservation equivalency for the recreational black sea bass fishery. Alternative 1B would allow black sea bass conservation equivalency using the current summer flounder process, which does not include rollover. Under the current process for summer flounder, when NMFS approves the use of conservation equivalency, the federal waters

measures are waived through the end of the year. If conservation equivalency is used in a future year, the federal waters measures are typically not waived until the spring (Table 2 in section 4.2). Thus, from January 1 until NMFS completes the rulemaking process to waive federal waters measures, the coastwide federal measures are in place. This creates a situation where federal waters measures are different from state measures for part of the year. This can lead to angler confusion and dissatisfaction, as well as enforcement challenges. Under alternatives 1C and 2B, conservation equivalency could roll over from one year to the next with Board and Council approval. Conservation equivalency would roll over by default; however, each year the Board and Council would need to affirm that roll over is appropriate for the next year. Conservation equivalency rollover could have benefits in terms of administrative efficiency and simplified regulations. These would be considered slight positive socioeconomic impacts. Conservation equivalency rollover is administrative in nature and is not expected to have direct or indirect impacts on target species, non-target species, protected species, or habitats.

Block Island Sound Transit Alternatives and Impacts

This action considers a range of alternatives to allow certain vessels/fishermen to transit a defined area in Block Island Sound while complying with state regulations for summer flounder, scup, and black sea bass (alternative set 3). Like the black sea bass conservation equivalency alternatives, these alternatives are intended to reduce conflicts between state and federal regulations. The Council and Board considered two transit area alternatives (alternatives 3B-1 and 3B-2). They also considered allowing these transit provisions for recreational fisheries only (alternative 3B-3) or for both commercial and recreational fisheries (alternative 3B-4). Their preferred alternatives would allow transit (alternative 3B) in the same area as the existing striped bass transit area (alternative 3B-2) for both commercial and recreational fisheries for all three species (alternative 3B-4).

Under all Block Island Sound transit alternatives, fishing effort will continue to be constrained primarily by the RHL and commercial quota for all three species. Alternative 3B (allow transit in Block Island Sound) and all associated sub-alternatives could allow for an increase in fishing effort in the Rhode Island state waters around Block Island, compared to current conditions and the no action alternative (alternative 3A). The degree of this increase in fishing effort will depend on the sub alternatives chosen for the transit area and affected fisheries (sub-alternatives 3B-1 - 3B-4). Under all sub-alternatives, the increase in fishing effort is expected to be limited because it will only occur in situations where the federal water measures are more restrictive than the state waters measures. In addition, these alternatives only impact those fishermen/vessels which do not have federal permits for summer flounder, scup, or black sea bass and fish for those species in the Rhode Island state waters around Block Island and return to the mainland in Rhode Island, Massachusetts, Connecticut, or New York. A list of all five possible combinations of Block Island Sound transit sub-alternatives ranked from most to least likely to result in an increase in fishing effort is provided in section 7.1.2.

All Block Island Sound transit alternatives are expected to have positive impacts on target species by maintaining their current positive stock status. They are expected to have slight negative to slight positive impacts on non-target species (depending on the species) by maintaining the current stock status of those species.

All Block Island Sound transit alternatives, with the exception of the no action alternative (alternative 3A), could allow for increased fishing opportunities, harvest, revenues, and demand

for for-hire trips in the Rhode Island state waters around Block Island, compared to current conditions. As such, they are expected to have positive socioeconomic impacts. Some alternatives have a higher potential for socioeconomic benefits than others, as described in more detail in section 7.2.2. Section 7.1.2 list all five possible combinations of sub-alternatives from the highest to lowest potential for socioeconomic benefits. The no action alternative is expected to have continued slight negative socioeconomic impacts because the existing regulations can limit fishing opportunities in Block Island Sound in some situations and can also create confusion among anglers and enforcement challenges.

All Block Island Sound transit alternatives, including the no action alternative (alternative 3A) are expected to have slight negative impacts on habitat by allowing continued recreational, or recreational and commercial (depending on the sub-alternative), fishing effort and thus continued impacts of fishing gear on physical habitat. The slight negative impacts of alternative 3B (allow transit in Block Island sound) on habitat are expected to be greater in magnitude than alternative 3A (no action) due to the potential for fishing effort to slightly increase in the Rhode Island state waters around Block Island.

All Block Island Sound transit alternatives are expected to have slight negative impacts on ESA-listed species and MMPA-protected species which have had their PBR levels reached or exceeded due to the continued potential for interactions between fishing gear and those species. For MMPA species whose PBR levels have not been reached or exceeded, the alternatives are expected to have slight positive impacts by allowing those species to remain in a positive stock status. Alternative 3B is expected to have greater negative impacts on protected species than alternative 3A due to the potential for slightly higher fishing effort in the Rhode Island state waters around Block Island. The magnitude of the impacts of alternative 3B varies slightly under the five possible combinations of sub-alternatives based on the expected change in fishing effort under each combination.

Slot Limit Alternatives and Impacts

The Council also considered alternatives which would allow a maximum size limit to be specified in the recreational summer flounder, scup, and/or black sea bass fisheries (alternative set 4). This would allow for the use of traditional slot limits, split slots, and trophy fish. The Council considered these alternatives at the request of Advisory Panel members and other stakeholders who expressed concerns that a standard minimum size limit concentrates fishing mortality on larger fish and that this could negatively impact recruitment for summer flounder. The Commission's complementary addendum (Addendum XXXI) did not include these alternatives because a change to the Commission's FMP is not required for a maximum size limit to be used for state measures. Under the no action alternative (alternative 4A), a maximum size limit cannot be used by the Council to manage the recreational summer flounder, scup, or black sea bass fisheries. The Council's preferred alternative (alternative 4B) would allow a maximum size limit to be used in future years in recreational summer flounder and black sea bass fisheries. Alternative 4C would allow use of a maximum size limit for scup. Alternatives 4B and 4C are not mutually exclusive. The Council agreed that a maximum size limit is not needed for scup; therefore, they did not select alternative 4C as a preferred alternative.

Under all slot limit alternatives, recreational fishing effort is expected to continue to be constrained primarily by the RHL. The impacts of the RHL are analyzed in a specifications document each time the RHL is implemented or revised. The RHLs are generally expected to

have positive impacts on summer flounder, scup, and black sea bass by helping to ensure that overfishing does not occur and the stocks are not overfished.

In years when a decrease in harvest is needed, increasing the minimum size limit can have a greater impact on harvest than decreasing the season or possession limit. For this reason, use of a standard minimum size limit can have moderate positive impacts on the summer flounder, scup, and black sea bass stocks as it can help prevent overfishing. The no action alternative (alternative 4A) would represent a continuation of these moderate positive impacts.

Two past analyses for summer flounder suggest that slot limits could lead to increased harvest in numbers of fish, which would result in an increased fishing mortality rate. A slight increase in spawning stock biomass (SSB) may be possible due to a decreased fishing mortality rate for larger fish compared to smaller fish and differences in maturity, fecundity, and egg viability for large versus small fish. A more recent analysis from the 2018 benchmark stock assessment suggests that these impacts may be even lesser than previously thought, as described in more detail in section 7.1.3.2. Similar analyses have not been done for scup or black sea bass; however, given the life history of those species, increases in SSB would not be expected under slot limits. A slight increase in the fishing mortality rate could be possible. For these reasons, depending on the degree of the increase in fishing mortality, impacts to target species could range from slight negative (if stock status is negatively impacted) to slight positive (if stock status is unchanged) under alternatives 4B and 4C.

Under all slot limit alternatives, impacts to non-target species vary by species and are expected to be slight positive for most non-target species, as most are currently not overfished or experiencing overfishing. Impacts may be slight negative for those non-target species which do not have a positive stock status. Alternative 4B could result in a slight decrease in recreational fishing effort compared to current conditions and alternatives 4A and 4C. Thus, alternative 4B could have greater positive impacts on non-target species than alternatives 4A and 4C.

Compared to slot limits, traditional minimum fish sizes can result in both higher discards and lower harvest in numbers of fish. These could be considered slight negative socio-economic impacts because they could lead to decreased angler satisfaction and potentially lower demand for for-hire trips (and thus lower for-hire revenues). Thus, alternative 4A (no action) is expected to have slight negative socioeconomic impacts. The socioeconomic impacts of slot limits for summer flounder and black sea bass (alternative 4B) or scup (alternative 4C) are expected to be mixed. For example, slot limits could allow anglers to retain more (but smaller) fish, which could increase angler satisfaction. Under recent recreational summer flounder size limits of 15 to 19 inches, depending on the state, many anglers have said they struggle to catch keeper fish as fish larger than the minimum size limits are not highly available. If a slot limit allows anglers to retain smaller fish, they could more easily catch keeper fish due to higher availability of smaller fish compared to larger fish. In addition, since the fishery is managed at the federal level based on an RHL in weight, not numbers of fish, more small fish could be harvested to achieve the same level of removals in weight. However, if the increase in removals is great enough to negatively impact SSB and significantly increase the risk of overfishing, this could result in longer-term moderate to slight negative socioeconomic impacts if it leads to reduced availability or requires more restrictive management measures in future years. Given that availability of large scup has been high in recent years and scup harvest has been below the RHL, slot limits for scup (alternative 4C) may not have notably different socioeconomic impacts than the no action alternative.

All slot limit alternatives are expected to have similar impacts on habitat and protected species as the impacts of the RHL. Alternative 4B (allow use of a slot limit for summer flounder and black sea bass) could lead to a slight decrease in fishing effort compared to current conditions and the no action alternative (alternative 4A). Thus, the impacts of alternative 4B on habitat and protected species could be less negative than the impacts of alternatives 4A and 4C. Generally, the impacts of all three slot limit alternatives on habitat are expected to be slight negative due to continued impacts from fishing gear on habitat. They are all expected to have negligible to slight negative impacts for ESA-listed species (depending on the species) and slight negative to slight positive impacts on MMPA species (depending on the species).

It is important to emphasize that this action does not consider implementing slot limits for any species in any particular year. Rather, the action alternatives would update the FMP to allow this management tool to be used in future years.

Cumulative Impacts

When the preferred alternatives are considered in conjunction with all other impacts from past, present, and reasonably foreseeable future actions, they are not expected to result in any significant impacts, positive or negative; therefore, no significant cumulative effects on the human environment are associated with the preferred alternatives (section 7.5).

Conclusions

A description of the expected environmental impacts and any cumulative impacts resulting from each of the alternatives are provided in section 7. The preferred alternatives are not associated with significant impacts to the biological, socioeconomic, or physical environment, individually or in conjunction with other actions; therefore, a “Finding of No Significant Impact” is warranted.

Table 1: Summary of expected impacts of the alternatives on the VECs. “0” indicates no impact or a negligible impact. “+” indicates a positive impact and “-” indicates a negative impact. “Sl” indicates a slight impact, while “+” or “-” without “Sl” indicates a moderate impact. “Mixed” refers to both positive and negative impacts. Preferred alternatives are emphasized in bold text.

Alt Set	Alternatives	Target Species	Non-Target Species	Human Communities	Habitat	ESA-Listed Species	MMPA Species
Conservation equivalency	1A: No action on black sea bass conservation equivalency	+	Sl- to +	Sl-	Sl-	0 to Sl-	Sl - to Sl+
	1B: Black sea bass conservation equivalency	+	Sl- to +	+	Sl-	0 to Sl-	Sl - to Sl+
	1C: Black sea bass conservation equivalency with rollover	+	Sl- to +	+	Sl-	0 to Sl-	Sl - to Sl+
	2A: No action on summer flounder conservation equivalency rollover	0	0	Sl-	0	0	0
	2B: Conservation equivalency rollover for summer flounder	0	0	Sl+	0	0	0
Block Island Sound Transit	3A: No action	+	Sl- to +	Sl-	Sl-	0 to -	- to Sl+
	3B: Allow transit in a defined area for defined fishermen/vessels	+	Sl- to +	Sl+	Sl-	0 to -	- to Sl+
	3B-1: RI-RI transit corridor	+	Sl- to +	Sl+	Sl-	0 to -	- to Sl+
	3B-2: Striped bass transit area	+	Sl- to +	Sl+	Sl-	0 to -	- to Sl+
	3B-3: Recreational fisheries only	+	Sl- to +	Sl+	Sl-	0 to -	- to Sl+
	3B-4: Recreational and commercial fisheries	+	Sl- to +	Sl+	Sl-	0 to -	- to Sl+
Slot Limits	4A No action	+	Sl- to +	Sl-	Sl-	0 to Sl-	Sl - to Sl+
	4B Allow slot limits in recreational summer flounder and black sea bass fisheries	Sl- to Sl+	Sl- to +	Mixed	Sl-	0 to Sl-	Sl - to Sl+
	4C Allow slot limits in recreational scup fisheries	Sl + to +	Sl- to +	Mixed	Sl-	0 to Sl-	Sl - to Sl+

2. List of Acronyms and Abbreviations

ACL	Annual Catch Limit
AM	Accountability Measure
AP	Advisory Panel
ASMFC	Atlantic States Marine Fisheries Commission
Board	The ASMFC's Summer Flounder, Scup, and Black Sea Bass Management Board
CEQ	Council on Environmental Quality
Commission	Atlantic States Marine Fisheries Commission
Council	Mid-Atlantic Fishery Management Council
CPUE	Catch Per Unit Effort
DPS	Distinct Population Segment
DPSWG	Data Poor Stocks Working Group
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EMU	Ecological Marine Unit
EO	Executive Order
ESA	Endangered Species Act
F	Fishing Mortality Rate
FMSY	Fishing Mortality at Maximum Sustainable Yield
FMP	Fishery Management Plan
FONSI	Finding of No Significant Impact
GARFO	NMFS Greater Atlantic Regional Fisheries Office
MAFMC	Mid-Atlantic Fishery Management Council
MMPA	Marine Mammal Protection Act
MRIP	Marine Recreational Information Program
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MSY	Maximum Sustainable Yield
NEFOP	Northeast Fisheries Observer Program
NEFSC	Northeast Fisheries Science Center
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
PBR	Potential Biological Removal
RFA	Regulatory Flexibility Act
RIR	Regulatory Impact Review
SARC	Stock Assessment Review Committee
SAW	Stock Assessment Work Group
SSB	Spawning Stock Biomass
SSBMSY	Spawning Stock Biomass at Maximum Sustainable Yield
USFWS	United States Fish and Wildlife Service
VEC	Valued Ecosystem Component

3. Contents, Tables, and Figures

3.1. Contents

3.2. Tables

3.3. Figures

4. Introduction and Background

4.1. Purpose and Need

The purposes of this framework action are to:

- Evaluate the following management tools and consider updating the Summer Flounder, Scup, and Black Sea Bass FMP to add them as tools that can be used for one or more of the three species in future years:
    - Recreational black sea bass conservation equivalency,
    - Conservation equivalency rollover for summer flounder and black sea bass
    - Recreational maximum size limits for summer flounder, scup, and black sea bass.
- Evaluate and consider implementing potential transit provisions for recreational and commercial summer flounder, scup, and black sea bass fisheries in Block Island Sound.

This action is needed to increase the diversity of tools available for managing all three species, to consider ways to address regional variations in the fisheries, to respond to stakeholder concerns about the biological impacts of minimum size limits, and to reduce conflict between state and federal regulations.

4.2. Background

State and federal waters measures for the same species are not always identical. For example, fisheries for certain species are sometimes open in state waters when federal waters are closed. In addition, possession limits and minimum fish sizes can differ between state and federal waters. Discrepancies between state and federal regulations can be confusing for fishermen, which can result in noncompliance. They also create challenges for enforcement. The conservation equivalency and Block Island Sound transit alternatives considered through this action (alternative sets 1-3) address situations where state and federal waters differ and could help alleviate some of these issues.

The Council and Commission FMPs require uniform coastwide recreational management measures for black sea bass in state and federal waters; however, the fisheries vary by state in terms of availability, seasonality, and other factors. From 1996 to 2010, uniform coastwide minimum fish sizes, seasons, and bag limits were used by the Council and Commission to help ensure that recreational harvest did not exceed the RHL. In recent years, the Commission allowed deviations from this requirement in state waters. Recent addenda allowed states to develop measures in state waters more closely tailored to the characteristics and needs of their fisheries. This was done first through state shares in 2011 and then through an ad-hoc regional management approach from 2012–2019. Under the ad-hoc process, the Council and Board agreed to coastwide federal waters measures each year. Individual states or regions then worked through the Commission process to develop measures for state waters to ensure that harvest did not exceed the RHL. Maine through New Jersey implemented state waters management measures that differed from the coastwide federal waters measures, while state waters measures in Delaware through North Carolina (north of Cape Hatteras) matched the federal waters measures. In 2018, the Commission approved Addendum XXXI, which allows future changes to state waters measures to be made through specifications, as opposed to requiring an addendum.

This action considers alternatives to allow the black sea bass federal waters measures to be waived through conservation equivalency in favor of the regulations of the states where anglers land their catch (alternative set 1). This would help address the disproportionate impacts of uniform coastwide measures on some states and would allow anglers fishing in both state and federal waters to fish under measures developed with the unique characteristics and needs of the fisheries in each state in mind.

Under the current process for summer flounder, conservation equivalency expires at the end of the year, but the federal waters measures are not waived until the spring after NMFS receives a letter from the Commission certifying that the combination of state and regional measures should prevent harvest from exceeding the RHL (Table 2). Thus, from January 1 until NMFS completes the rulemaking process to waive the federal waters measures, the non-preferred coastwide measures from the previous year are in place in federal waters. This not only creates the potential for confusion but can also result in federal waters measures that are more restrictive than state waters measures. Alternatives 1C and 2B would allow conservation equivalency rollover for black sea bass and summer flounder, respectively, to address these issues.

Under current regulations, when summer flounder, scup, or black sea bass fisheries are closed in federal waters but open in state waters, vessels may not transit federal waters while in possession of any of these species. This has been problematic in Block Island Sound during the fall closure in federal waters for recreational black sea bass in recent years (through 2017, Table 3). In many recent years, state waters in Rhode Island, Connecticut, and/or New York (depending on the year) were open to black sea bass fishing during the federal waters closure. Anglers fishing in state waters around Block Island must pass through federal waters to return to the mainland. Therefore, if they retained any black sea bass during the federal waters closure, they were in violation of the federal regulations while transiting federal waters, even if those fish were legally caught in state waters. Similar issues can arise when the recreational minimum fish size and/or possession limit regulations are more restrictive in federal waters than in state waters. Anglers must abide by the federal regulations when in federal waters unless those measures are waived through conservation equivalency, as has been the case for summer flounder for several years. This has not been an issue for the recreational scup fishery in recent years, as the federal waters measures have been more liberal than the measures in most states. The black sea bass conservation equivalency alternatives (alternative set 1) and the Block Island Sound transit alternatives (alternative set 3) would help to address these issues.

For several years, Advisory Panel members and other stakeholders have asked the Council to consider using slot limits (i.e., a minimum and maximum size limit used in combination) in the recreational summer flounder fishery to help protect larger females, which contribute more to spawning, on an individual basis, than smaller females due to the impacts of maturity rate, fecundity, and egg size and variability. In years when harvest needed to be decreased to prevent exceeding the RHL, this was often achieved through increasing the minimum size limits, which some advisors and other stakeholders argued had negative biological impacts by concentrating fishing mortality on large females. A slot limit, they argued, would reduce the disproportionate impacts on large females while still constraining harvest. The likely impacts of slot limits at a population level are not quite so straight forward, as described in more detail in section 7.1.3. The Council has been unable to use slot limits for summer flounder, scup, or black sea bass because the FMP does not allow for a maximum fish size limit. Alternative set 4 includes alternatives to addresses this issue.

Table 2: Approximate timeline for implementing summer flounder conservation equivalency in recent years. In years when the Commission develops an addendum to modify summer flounder conservation equivalency, the timeline can be delayed and additional steps are added to the Board's process.

<table>
<tr><td colspan="2">August
• Council recommends RHL to NMFS. Board takes final action on RHL for state waters.
October
• Preliminary MRIP data for waves 1-4 (i.e., January - August) of the current year are available.
November
• Monitoring Committee reviews MRIP data through wave 4 and recommends overall % reduction required or liberalization allowed and use of coastwide measures or conservation equivalency (including non-preferred coastwide and precautionary default measures).
December
• Council/Board recommend conservation equivalency or coastwide measures for the following year. If they select conservation equivalency, they also recommend non-preferred coastwide and precautionary default measures.
• NMFS publishes final rule announcing subsequent year's RHL.</td></tr>
<tr><td><u>If Conservation Equivalency Is Recommended</u>
January
• States/regions submit conservation equivalency proposals to Commission staff.
• Technical Committee evaluates proposals.
February
• Board reviews and approves/disapproves proposals.
February/March
• Council staff submits recreational measure package to NMFS. Package includes:
o Overall % reduction required or liberalization allowed,
o Non-preferred coastwide and precautionary default measures; and
o Recommendation to implement conservation equivalency.
April
• NMFS publishes proposed rule for recreational measures announcing the overall % reduction required or liberalization allowed and the non-preferred coastwide and precautionary default measures.
• Board submits letter to NMFS certifying that the combination of state/regional measures is not expected to result in harvest exceeding the RHL.
May
• NMFS publishes final rule announcing overall % reduction required or liberalization allowed and approval of conservation equivalency; or coastwide measures.</td><td><u>If Coastwide Measures Are Recommended</u>
February/March
• Council staff submits recreational measure package to NMFS. Package includes:
o Overall % reduction required or liberalization allowed; and
o Coastwide measures.
April
• NMFS publishes proposed rule for recreational measures announcing the overall % reduction required or liberalization allowed and coastwide measures.
May
• NMFS publishes final rule announcing overall % reduction required or liberalization allowed and coastwide measures.</td></tr>
</table>

Table 3: Federal recreational measures for black sea bass, north of Cape Hatteras, NC, 2007 - 2019.

Years	Minimum size (inches, total length)	Possession limit	Open season
2007-2008	12	25	1/1-12/31
2009	12.5	25	1/1-10/5
2010-2011	12.5	25	5/22-10/11 and 11/1-12/31
2012	12.5	25	5/19-10/14 and 11/1-12/31
2013	12.5	20	5/19-10/14 and 11/1-12/31
2014	12.5	15	5/19-9/18 and 10/18-12/31
2015-2017	12.5	15	5/15-9/21 and 10/22-12/31
2018	12.5	15	5/15-12/31
2019	12.5	15	5/15-12/31

5. Management Alternatives

The following sections describe the management alternatives considered by the Council and the Commission's Summer Flounder, Scup, and Black Sea Bass Management Board (Board).

5.1. Alternative Set 1: Black Sea Bass Conservation Equivalency

The Council and Board considered three alternatives related to black sea bass conservation equivalency.

5.1.1. Alternative 1A: No Action (Conservation Equivalency Cannot be Used For Black Sea Bass)

Under alternative 1A, the recreational black sea bass fishery would continue to be managed with uniform coastwide measures in federal waters. The Commission could continue to set varying recreational measures in state waters. The details of how this is carried out could vary year to year. The Board would have the option of discontinuing ad-hoc regional management and reverting to uniform coastwide measures or adopting an alternative approach. The recent approach to black sea bass recreational management is described in section 4.2.

5.1.2. Alternative 1B: Allow Black Sea Bass Conservation Equivalency Using The Current Summer Flounder Conservation Equivalency Process (Preferred)

This alternative proposes updating the Council and Commission FMPs to allow conservation equivalency to be used for the recreational black sea bass fishery in future years based on the process currently used for summer flounder. This is a preferred alternative.

Under this alternative, the Council and Board would decide each year whether to use coastwide measures or conservation equivalency. If they agree to conservation equivalency, they must agree on a set of non-preferred coastwide measures consisting of a minimum fish size limit (and/or maximum size, see alternative set 4), possession limit, and season that, if implemented on a coastwide basis, would be expected to prevent harvest from exceeding the RHL. They would also agree to a set of precautionary default measures. The precautionary default measures are measures that are intended to be restrictive enough to deter states/regions from implementing measures which are not approved through the conservation equivalency process.

Individual states or regions would then develop proposed measures that, when taken as a whole, are the conservation equivalent of the non-preferred coastwide measures, meaning that they are expected to result in the same level of harvest as the non-preferred coastwide measures. An agreed upon management scheme would form the basis for the state or regional measures. For example, early in summer flounder management, the Commission's FMP designated state-by-state measures based on each state's proportion of total harvest in 1998. Recent addenda have deviated from this approach. Currently, regional (as opposed to state) measures are set to achieve the RHL.

Under alternative 1B, if the Council and Board agree to use conservation equivalency in a given year, the Board would determine the management program to implement conservation equivalency for black sea bass in any given year through a separate action. This program could vary year-to-year. The Board could develop state or regional measures using a different approach than that used for summer flounder (e.g., different regional alignment or data used to develop measures). This action does not specify allocations or other methodologies that would be used to develop state and/or regional measures. It does not specify whether states will individually craft measures or if states will form regions with similar management measures. These details could vary for each year that conservation equivalency is used and will be determined by the Board through separate actions.

The Commission's Technical Committee reviews the state/regional proposals to determine if, as a whole, they are expected to prevent harvest from exceeding the RHL. The Board then considers the proposals for approval, taking into account the Technical Committee's recommendations. If the Board does not approve an individual proposal, that state or region may submit a revised proposal. If a state or region implements measures which are not approved by the Board, then the precautionary default measures would be enforced in that state or region.

After reviewing and approving the state/regional proposals, the Board submits a letter to NMFS certifying that the combination of state and regional measures is expected to prevent harvest from exceeding the RHL. NMFS then either approves or rejects the combination of proposals. If approved, NMFS waives the federal waters measures (i.e., the non-preferred coastwide measures) for the remainder of the calendar year in favor of the state or regional conservation equivalency measures. Federally-permitted vessels and vessels fishing in federal waters are then subject to the regulations in the states where they land their catch.

Table 2 outlines a potential timeline for black sea bass conservation equivalency based on the typical timeline for the summer flounder process.

5.1.3. Alternative 1C: Black Sea Bass Conservation Equivalency Using The Current Summer Flounder Process And Allowing Conservation Equivalency To Roll Over From One Year To The Next

This alternative proposes updating the FMPs to allow conservation equivalency to be used for the recreational black sea bass fishery in future years. It proposes establishing a process for black sea bass conservation equivalency based on the process currently used for summer flounder (as described in the previous section), and would also allow conservation equivalency to roll over from one year to the next with Board and Council approval. Conservation equivalency would roll over by default; however, each year the Board and Council would need to affirm that roll over is appropriate for the next year. They would still review the non-preferred coastwide and precautionary default measures each year to ensure that harvest does not exceed the RHL. If the

fishery would not be expected to be constrained to the RHL, then new non-preferred coastwide and precautionary default measures would need to be developed for the upcoming year. Given the timing of recreational data availability from the Marine Recreational Information Program (MRIP), the Council and Board would continue to review preliminary recreational harvest estimates through August of the current year in December. The Board and the Board's Technical Committee would continue to review final recreational estimates early in the next year. The Commission would send a letter to NMFS by May 31 annually, certifying that the combination of state/regional measures is expected to prevent the RHL from being exceeded. If the Commission cannot make such a certification by May 31, conservation equivalency rollover would expire and NMFS would implement the non-preferred coastwide measures in federal waters for the remainder of the calendar year.

Prior to final action on this framework, NMFS expressed concerns that this timeline would not be feasible in years when the precautionary default measures are needed because the final rule implementing these measures would not be in place until the recreational fishing season is well underway in many states. This would pose challenges for ensuring that the RHL is not exceeded. For this reason, NMFS indicated that they will likely not be able to approve this alternative. As such, it was not selected as a preferred alternative.

5.2. Alternative Set 2: Summer Flounder Conservation Equivalency Rollover

The Council and Board considered two alternatives related to summer flounder conservation equivalency, as described below.

5.2.1. Alternative 2A: No Action (Conservation Equivalency For Summer Flounder Cannot Roll Over from One Year To The Next) (Preferred)

Under the current process for summer flounder, conservation equivalency expires at the end of each year, and a federal rule must be developed to implement conservation equivalency and waive the federal waters measures for the following year, as previously described. Under alternative 2A, there would be no change to the current summer flounder conservation equivalency process (Table 2). This was selected by the Council and Board as a preferred alternative because, as described in section 5.1.3, NMFS indicated that they would not able to approve alternatives for conservation equivalency rollover due to concerns about timing in situations when the precautionary default measures must be implemented.

5.2.2. Alternative 2B: Allow Summer Flounder Conservation Equivalency To Roll Over From One Year To The Next

Under alternative 2B, the conservation equivalency process for summer flounder would be modified so that conservation equivalency could roll over from one year to the next, as described in section 5.1.3 for black sea bass.

As with alternative 1C, NMFS indicated that they will not be able to approve and implement this alternative for summer flounder conservation equivalency rollover. After considering the implications in situations when the precautionary default measures must be implemented, this alternative was determined to be infeasible. Their concerns are described in more detail in section 5.1.3.

5.3. Alternative Set 3: Block Island Sound Transit Provisions

The Council and Board considered a range of alternatives for transit provisions for summer flounder, scup, and black sea bass fisheries in Block Island Sound. These alternatives are described in the following sections. Figure 1 illustrates the relationship between the alternatives. For example, if alternative 3B is selected, either alternative 3B-1 or alternative 3B-3 must be selected. In addition, either alternative 3B-3 or 3B-4 must be selected.

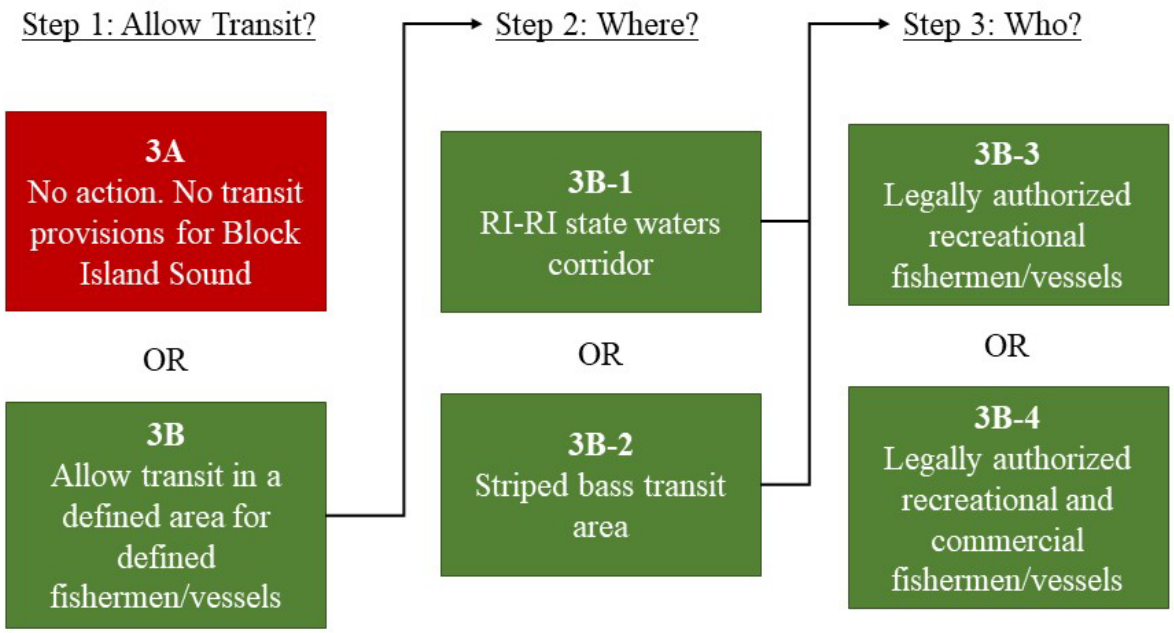

Figure 1: Decision flowchart for Block Island Sound transit alternatives.

5.3.1. Alternative 3A: No Action (No Block Island Sound Transit Provisions)

Under alternative 3A, no change would be made to the current regulations. The current regulations require the following:

- Recreational fishermen without federal summer flounder, scup, or black sea bass permits (i.e., private anglers) must remain in compliance with all federal regulations (i.e., possession limits, minimum fish sizes, and open/closed seasons for summer flounder, scup, and black sea bass) while in federal waters. When in state waters (to fish and/or return to land), all such fishermen are subject to all applicable regulations of that state.
- Non-federally permitted for-hire and commercial vessels (i.e., state-permitted party/charter or commercial vessels without federal summer flounder, scup, or black sea bass fishing permits), in possession of any of the three species legally harvested from state waters may not enter/transit/fish in federal waters, given federal permit requirements (i.e, federal permits are required in federal waters).
- Dual (state and federal) permitted for-hire and commercial vessels in possession of any of the three species legally harvested from state waters may enter/transit/fish in federal waters, provided they remain in compliance with all federal regulations governing the recreational or commercial possession/harvest of those species while in federal waters. Upon re-entering state waters (to continue fishing and/or land), all such fishermen remain subject to the most

restrictive regulations, either federal or state. If federal regulations are more restrictive, dual permitted for-hire and commercial vessels must abide by them wherever they fish, including when they fish in state waters.

5.3.2. Alternative 3B: Block Island Sound Transit Provisions For Summer Flounder, Scup, And Black Sea Bass (Preferred)

Under this alternative, a transit area would be established through which non-federally permitted fishermen/vessels in possession of any of the three species legally harvested from state waters could transit between the Rhode Island state waters surrounding Block Island and the coastal state waters of Rhode Island, New York, Connecticut, or Massachusetts while complying with the state waters regulations for those species. This was selected by the Council and Board as a preferred alternative.

The boundaries of the transit area would be defined through sub-alternative 3B-1 or 3B-2, described in sections 5.3.2.1 and 5.3.2.2. The vessels subject to the transit provisions (recreational or recreational and commercial) would be defined through sub-alternative 3B-3 or 3B-4, described in sections 5.3.2.3 and 5.3.2.4 (Figure 1).

Transit through the defined area would be allowed provided:

- Fishermen and harvest are compliant with all applicable state regulations.
- Gear is stowed in accordance with federal regulations.
- No fishing takes place from the vessel while in federal waters.
- The vessel is in continuous transit.

This alternative would apply only to non-federally permitted fishermen/vessels. There would be no change to current federal regulations requiring all federally permitted vessels to abide by the regulations of the state(s) in which they harvest or land their catch, or the federal waters regulations, whichever are more restrictive.

5.3.2.1. Alternative 3B-1: Block Island Sound Transit Provisions For Summer Flounder, Scup, and Black Sea Bass Apply In A North-South Transit Corridor from Rhode Island State Waters Around Block Island To Rhode Island State Coastal Waters

If alternative 3B is selected, one alternative for transit area must also be chosen (i.e., either alternative 3B-1 or 3B-2; Figure 1).

Under sub-alternative 3B-1, the transit area would be bound by the following coordinates (Figure 2):

- NW (41º18′50″N, -71º32′56″W)
- NE (41º18′20″N, -71º31′27″W)
- SE (41º17′01″N, -71º32′25″W)
- SW (41º17′19″N, -71º33′19″W)

This alternative defines only the transit area. Transit provisions could apply to recreational vessels only, or both recreational and commercial vessels, depending whether sub-alternative 3B-3 or 3B-4 is selected (Figure 1).

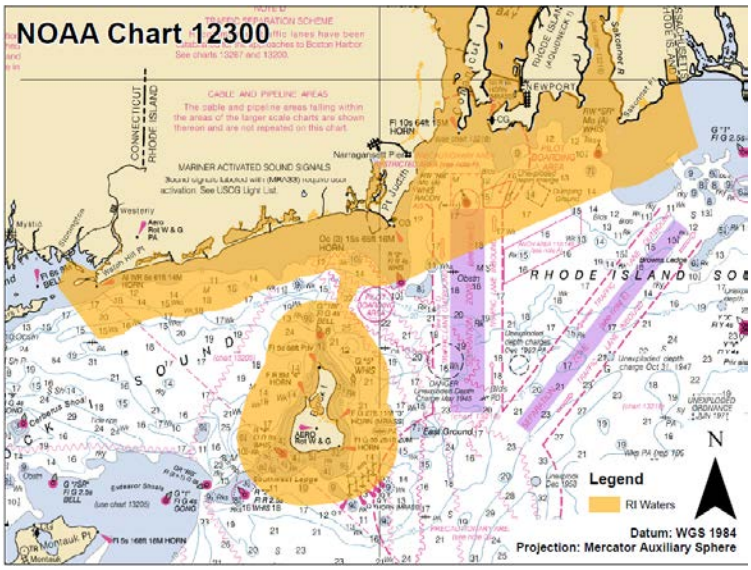

Figure 2:Transit area (orange corridor north of Block Island) under alternative 3B-1.

5.3.2.2. Alternative 3B-2: Block Island Sound Transit Provisions For Summer Flounder, Scup, And Black Sea Bass Apply In The Existing Block Island Transit Zone For Striped Bass (Preferred)

If alternative 3B is selected, one sub-alternative for transit area must also be chosen (i.e., either sub-alternative 3B-1 or 3B-2; Figure 1).

Under alternative 3B-2, the transit area would be identical to the area of the exclusive economic zone (EEZ) around Block Island where transit is currently allowed for striped bass. This area, as shown in Figure 3, is defined in the regulations as follows: “The EEZ within Block Island Sound, north of a line connecting Montauk Light, Montauk Point, NY, and Block Island Southeast Light, Block Island, RI; and west of a line connecting Point Judith Light, Point Judith, RI, and Block Island Southeast Light, Block Island, RI” (50 CFR 697.7 (b). This was selected by the Council and Board as a preferred alternative.

This alternative defines only the transit area. Transit provisions could apply to recreational vessels only, or both recreational and commercial vessels, depending whether sub-alternative 3B-3 or 3B-4 is selected (Figure 1).

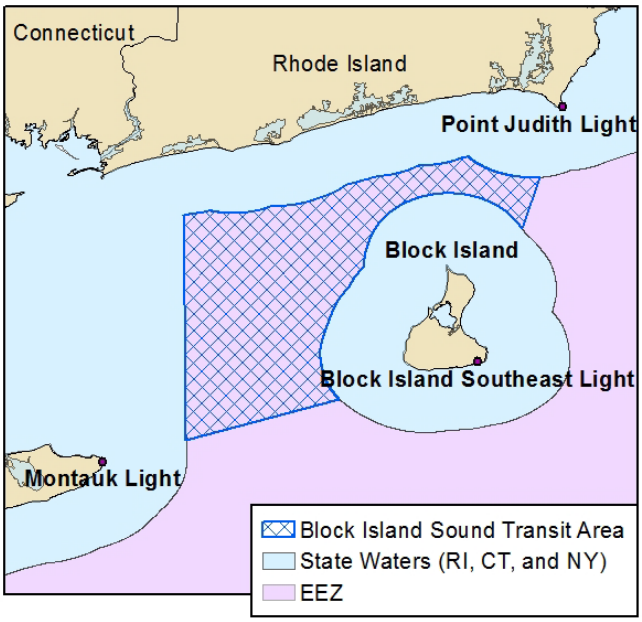

Figure 3: Block Island Sound transit zone for striped bass (blue hatched area).

5.3.2.3. Alternative 3B-3: Transit Provisions Apply To Recreational Fisheries Only

If alternative 3B is selected, only one sub-alternative for fisheries subject to transit provisions must also be chosen (i.e., either sub-alternative 3B-3 or 3B-4; Figure 1).

Sub-alternative 3B-3 would allow all private anglers and all non-federally permitted party/charter vessels in possession of any of the three species legally harvested from state waters to transit through the area defined through sub-alternative 3B-1 or 3B-2 while in compliance with the state regulations for those species.

This sub-alternative would apply only to non-federally permitted fishermen/vessels. There would be no change to current federal regulations requiring all federally permitted vessels to abide by the regulations of the state(s) in which they harvest or land their catch, or the federal waters regulations, whichever are more restrictive.

5.3.2.4. Alternative 3B-4: Transit Provisions Apply To Recreational And Commercial Fisheries (Preferred)

If alternative 3B is selected, only one sub-alternative for fisheries subject to transit provisions should be chosen (i.e., either sub-alternative 3B-3 or 3B-4; Figure 1).

Alternative 3B-4 would allow all private anglers, all non-federally permitted party/charter vessels, and all non-federally permitted commercial vessels in possession of any of the three species legally harvested from state waters to transit through the area defined through alternative 3B-1 or 3B-2 while in compliance with the state regulations for those species. This was selected by the Council and Board as a preferred alternative.

This sub-alternative would apply only to non-federally permitted fishermen/vessels. There would be no change to current federal regulations requiring all federally permitted vessels to abide by the regulations of the state(s) in which they harvest or land their catch, or the federal waters regulations, whichever are more restrictive.

5.4. Alternative Set 4: Recreational Slot Limits

The Council considered three alternatives related to recreational slot limits. The Commission did not consider these alternatives through their complementary addendum for the reasons described in the next section.

When the Council took final action on this framework in December 2018, they considered two slot limit alternatives: a no action alternative and an alternative which would allow use of a maximum size limit for summer flounder, scup, and black sea bass. The Council selected the latter as a preferred alternative, but only for summer flounder and black sea bass. As such, three slot limit alternatives are analyzed in this document for NEPA purposes: a no action alternative (alternative 4A), an alternative addressing summer flounder and black sea bass (alternative 4B, the preferred alternative), and an alternative addressing scup (alternative 4C). Alternatives 4B and 4C are not mutually exclusive. The alternatives were structured this way for ease of analysis and comparison of the Council's preferred alternative against the non-preferred alternatives. The three alternatives are described below.

It is important to emphasize that none of the alternatives consider implementing a specific slot limit for any species in any year. Rather, alternatives 4B and 4C consider updating the FMP to allow slot limits to be used in future years. They would add an additional tool to the fisheries management toolbox for this FMP. The impacts of any specific slot limit will be analyzed in a future document.

5.4.1. Alternative 4A: No Action (Slot Limits Cannot Be Used In Federal Recreational Summer Flounder, Scup, Or Black Sea Bass Fisheries)

Currently, the Council's FMP does not allow for specification of a maximum size limit for summer flounder, scup, or black sea bass. Therefore, slot limits may not be used as a management tool for these fisheries in federal waters. Under this alternative, there would be no change to the Council's FMP and maximum size limits could not be used in federal waters.

Slot limits can be implemented through the Commission process without a change to the Commission's FMP (i.e., for summer flounder through conservation equivalency, and for black sea bass and scup for state waters only). For this reason, the complementary addendum developed by the Commission (Addendum XXXI) does not include slot limit alternatives.

5.4.2. Alternative 4B: Modify The Council's FMP To Allow Use Of A Maximum Size Limit For Recreational Summer Flounder And Black Sea Bass Fisheries In Federal Waters (Preferred)

Under this alternative, the Council's FMP would be modified to allow specification of a maximum fish size limit for recreational summer flounder and black sea bass fisheries. This was selected by the Council as a preferred alternative. This would allow for use of regular slot limits, split slot limits, and trophy fish.

A complementary change is not needed to the Commission's FMP as slot limits can already be used through the Commission process. For this reason, the complementary addendum developed by the Commission (Addendum XXXI) does not include slot limit alternatives.

5.4.3. Alternative 4C: Modify The Council's FMP To Allow Use Of A Maximum Size Limit For Scup Fisheries In Federal Waters

Under this alternative, the Council's FMP would be modified to allow specification of a maximum fish size limit for recreational scup fisheries. This would allow for use of regular slot limits, split slot limits, and trophy fish.

A complementary change is not needed to the Commission's FMP as slot limits can already be used through the Commission process. For this reason, the complementary addendum developed by the Commission (Addendum XXXI) does not include slot limit alternatives.

6. Description Of The Affected Environment

The affected environment consists of those physical, biological, and human components of the environment expected to experience impacts if any of the actions considered through this framework adjustment were to be implemented. This document focuses on four aspects of the affected environment, which are defined as valued ecosystem components (VECs; Beanlands and Duinker 1984).

The VECs include:

- Target and non-target species
- Human communities
- Physical habitat
- Protected species

The following sections describe the recent condition of the VECs.

6.1. Target and Non-Target Species

6.1.1. Summer Flounder

Summer flounder are a demersal flatfish which spawn during the fall and winter over the open ocean over the continental shelf. From October to May, larvae and postlarvae migrate inshore, entering coastal and estuarine nursery areas. Juveniles are distributed inshore and in many estuaries throughout the range of the species during spring, summer, and fall. Adult summer flounder exhibit strong seasonal inshore-offshore movements, normally inhabiting shallow coastal and estuarine waters during the warmer months of the year and remaining offshore during the colder months.

Summer flounder habitat includes pelagic waters, demersal waters, saltmarsh creeks, seagrass beds, mudflats, and open bay areas from the Gulf of Maine through North Carolina. Summer flounder are opportunistic feeders; their prey includes a variety of fish and crustaceans. While the predators of adult summer flounder are not fully documented, larger predators such as large sharks, rays, and monkfish probably include summer flounder in their diets (Packer et al. 1999).

Spawning occurs during autumn and early winter, and the larvae are transported toward coastal areas by prevailing water currents. Development of post larvae and juveniles occurs primarily within bays and estuarine areas. Most fish are sexually mature by age 2. Summer flounder exhibit sexual dimorphism by size; most of the largest fish are females. Females can attain lengths over 90 cm (36 in) and weights up to 11.8 kg (26 lbs.; NEFSC 2011c). Recent NEFSC trawl survey data indicate that while female summer flounder grow faster than males (reaching a

larger size at the same age), the sexes attain about the same maximum age (currently age 16 at 56 cm for males, and age 14 at 65 cm for females). Unsexed commercial fishery samples currently indicate a maximum age of 18 at 52 cm (likely a male) and age 19 at 73 cm (likely a female; M. Terceiro, personal communication, April 2019).

A benchmark stock assessment for summer flounder was peer reviewed and accepted in November 2018. The assessment incorporates data through 2017, including the recently revised (calibrated) MRIP time series (1981-2017) of recreational catch. Based on the results of this stock assessment, the summer flounder stock was not overfished and overfishing was not occurring in 2017 relative to the revised biological reference points. SSB in 2017 was estimated to be about 78% of the biomass reference point, and the fishing mortality rate (F) in 2017 was about 25% below the fishing mortality threshold reference point (Figure 4and Figure 5; NEFSC 2019).

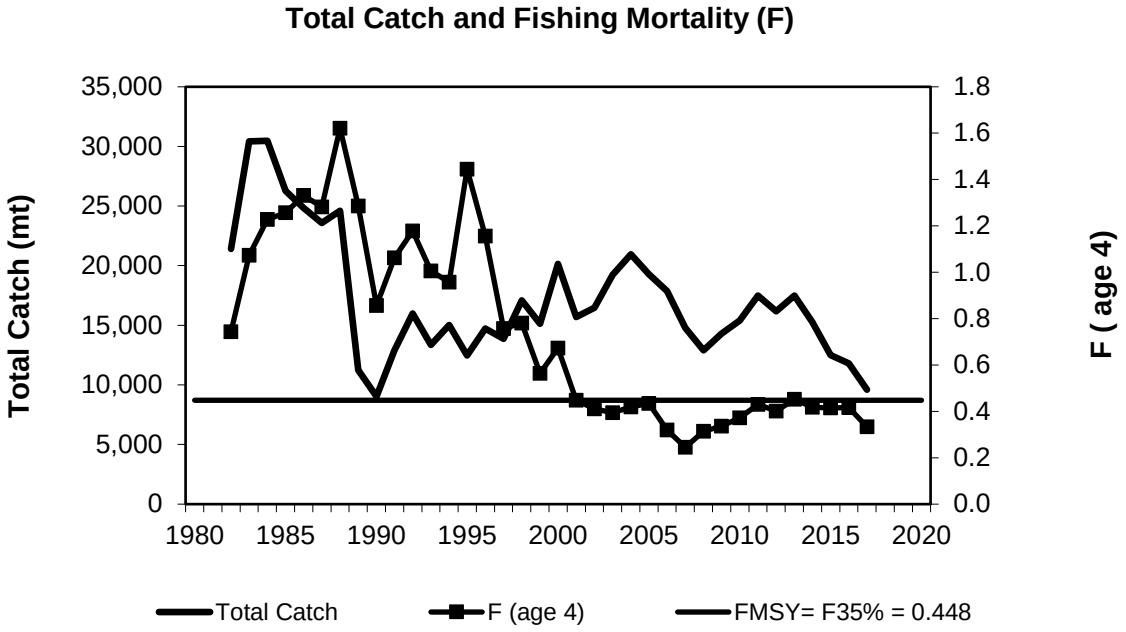

Figure 4: Total fishery catch (mt) and fully-recruited fishing mortality (peak at age 4) of summer flounder. The horizontal solid line is the fishing mortality reference point proxy FMSY = F35% = 0.448 (NEFSC 2019).

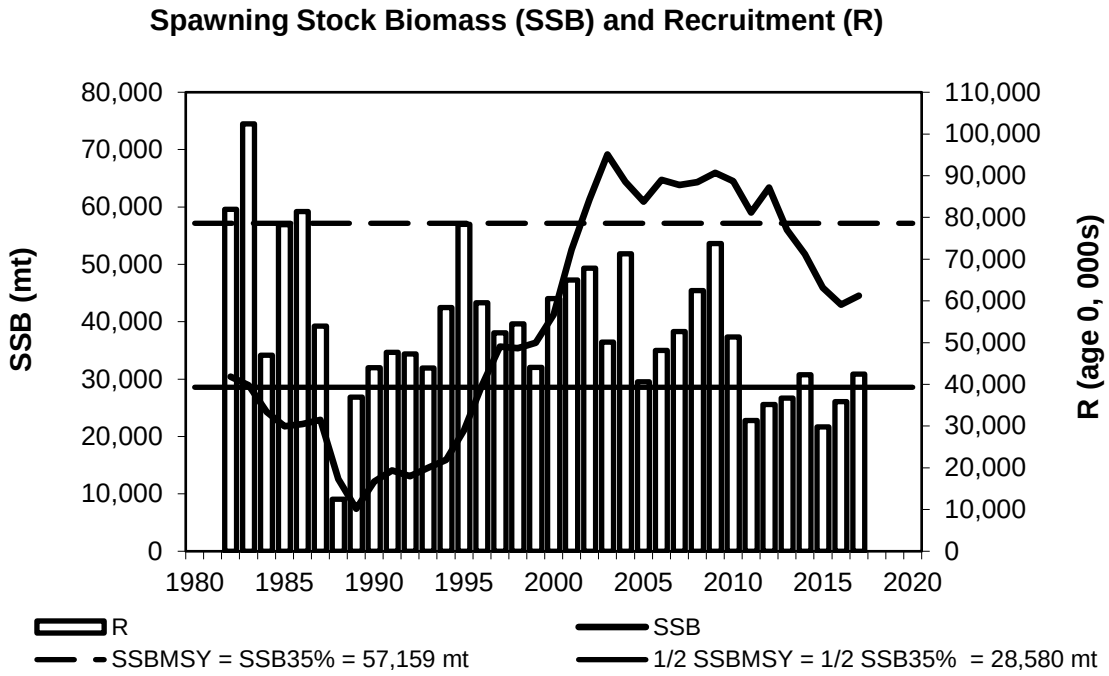

Figure 5: Summer flounder SSB and recruitment at age 0, 1980-2017. The horizontal dashed line is the target biomass reference point proxy, $SSB_{MSY} = SSB_{35\%} = 57{,}159$ mt. The horizontal solid line is the threshold biomass reference point proxy ½ SSB_{MSY} = ½ $SSB_{35\%}$ = 28,580 mt (NEFSC 2019).

6.1.2. Scup

Scup are a schooling, demersal (i.e., bottom-dwelling) species. They are found in a variety of habitats in the Mid-Atlantic. Scup EFH includes demersal waters, areas with sandy or muddy bottoms, mussel beds, and sea grass beds from the Gulf of Maine through Cape Hatteras, North Carolina. Scup undertake extensive seasonal migrations between coastal and offshore waters. They are mostly found in estuaries and coastal waters during the spring and summer. Larger individuals tend to arrive in inshore areas in the spring before smaller individuals. They move offshore and to the south, to outer continental shelf waters south of New Jersey in the fall and winter (Steimle et al. 1999, NEFSC 2015).

The most recent scup benchmark stock assessment took place in 2015 and included data through 2014 (NEFSC 2015). A stock assessment update was conducted in 2017 with catch and survey data through 2016. The assessment update found that scup were not overfished and overfishing was not occurring in 2016 relative to the biological reference points from the benchmark assessment (Terceiro 2017). SSB was very low and averaged around 19.38 million pounds from the early 1980's and late 1990's and then steadily increased from 2000 to a peak in 2011 when it reached 513.80 million pounds. SSB has declined since its peak in 2011 but remains very high and increased slightly in 2016 (Figure 6). Estimated SSB in 2016 was 396.60 million pounds (179,898 mt), 2.1 times SSB at maximum sustainable yield, SSB_{MSY} = 192.47 million pounds (87,302 mt).

The fishing mortality rate in 2016 was 0.139, which is 37% below the fishing mortality threshold reference point ($F_{MSY\ PROXY}$ = F40%) of 0.220 (Terceiro 2017). Fishing mortality was very high

in the 1980's and mid-1990's, typically greater than 1.0, but declined in 1995 and has stabilized since 2001 (Figure 7). Fishing mortality has been below the $F_{MSY\ PROXY}$ reference point for the last 17 years. The average recruitment from 1984 to 2016 is 121 million fish at age 0. The 2015 year class is currently estimated to be historically large at 252 million fish, while the 2016 year class is currently estimated to be below average at 65 million fish (Figure 6).

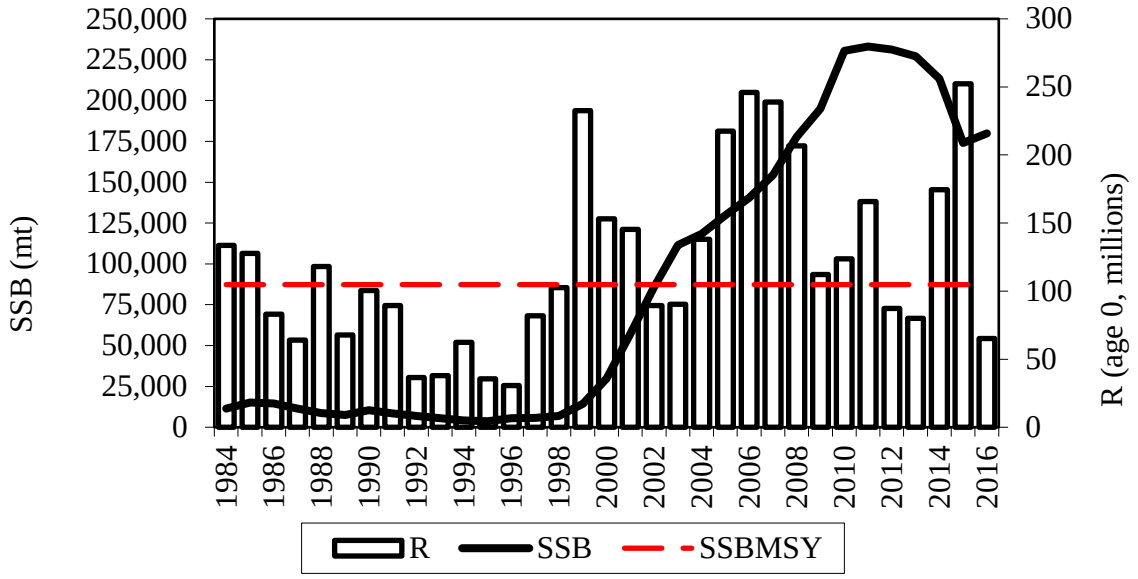

Figure 6: SSB and recruitment for scup from the 2017 stock assessment update (Terceiro 2017). The horizontal dashed line is the SSBMSY proxy = SSB40% = 87,302 mt (NEFSC 2015).

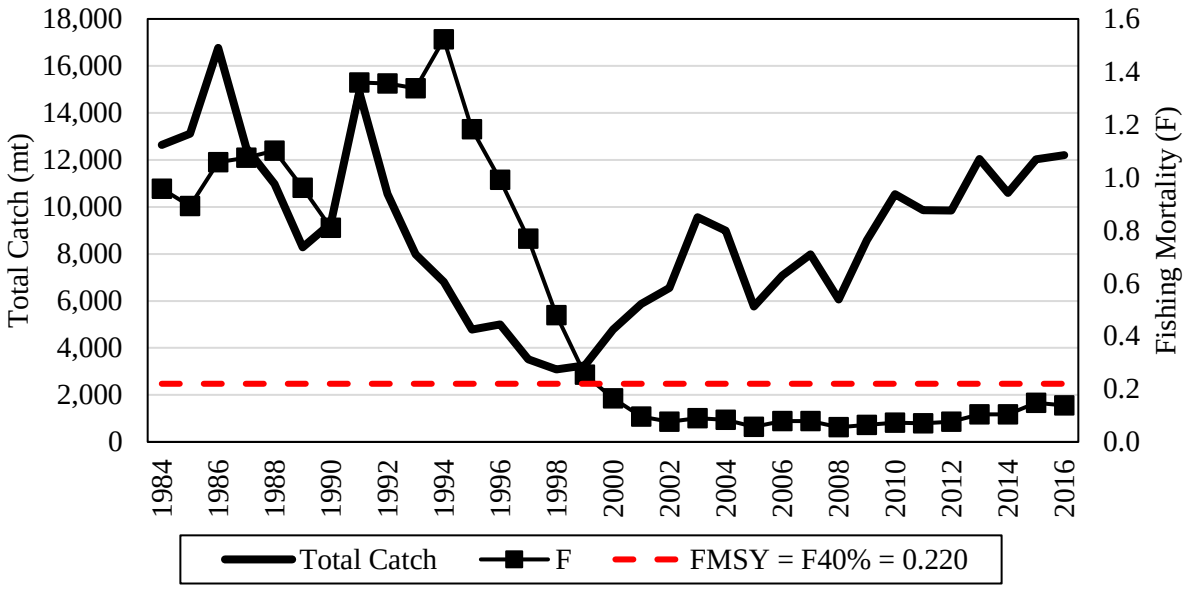

Figure 7: Total fishery catch and fishing mortality (F at age 3) for scup from the 2017 stock assessment update (Terceiro 2017). The horizontal dashed line is the FMSY proxy = F40% = 0.220 (NEFSC 2015).

6.1.3. Black Sea Bass

Black sea bass are protogynous hermaphrodites, meaning most develop as female and some later transition to males. Black sea bass are commonly associated with physical structures such as reefs, though they utilize a variety of habitats including open bottom.

Their protogynous life history and structure-orienting behavior have posed challenges for prior analytical assessments of this species. The 2016 benchmark stock assessment working group reviewed a published study which analyzed simulated data to better understand how these life history characteristics impact the assessment and the black sea bass population (Blaylock and Shepherd 2016). It was concluded that the stock is more robust to exploitation than previously thought due to factors such as the contribution of secondary males to spawning success and a sex ratio that is not as highly skewed towards females at young ages and males at older ages, compared to other species with a more typical protogynous hermaphrodite life history. The working group also examined catches from the NEFSC bottom trawl survey and various state surveys and concluded that there is no significant difference in the number or length frequency of black sea bass caught near structures such as reefs or up to distances 11 miles from such structures, indicating that trawl surveys can be appropriately used as tuning indices in the stock assessment (NEFSC 2017).

The 2016 benchmark stock assessment indicated that the black sea bass stock north of Cape Hatteras, NC was not overfished and overfishing was not occurring in 2015. SSB averaged around 6 million pounds from the late 1980's and early 1990's and then steadily increased from 1997 to 2002 when it reached 18.7 million pounds. SSB then declined until 2007 (8.9 million pounds), followed by a steady increase through 2014 (Figure 8). SSB in 2015 was estimated to be 48.89 million pounds (22,176 mt), 2.3 times the target biomass level (i.e., SSB_{MSY} = 21.31 million pounds/9,667 mt).

The fishing mortality rate in 2015 was 0.27, below the fishing mortality threshold reference point ($F_{MSY\ PROXY}$ = F40%) of 0.36 (NEFSC 2017). Fishing mortality was very high in the early 1990's, typically greater than 1.0, but declined and stabilized after 1997 once black sea bass was added to the FMP. Fishing mortality has been below the reference point for the last five years (Figure 9). Model estimated recruitment was relatively constant throughout the time series except for large peaks from the 1999 and 2011 year classes. Average recruitment at age 1 from 1989 – 2015 was 24.3 million fish with the 1999 year class estimated at 37.3 fish and the 2011 year class estimated at 68.9 million fish. Since 2012, recruitment has been average with the latest cohort in the model (2014 year class) estimated to be 24.9 million fish (Figure 8).

Catch, landings, and survey indices through 2017 indicate that black sea bass biomass continues to be high, and the 2015 year class appears to be above average (NEFSC 2018a).

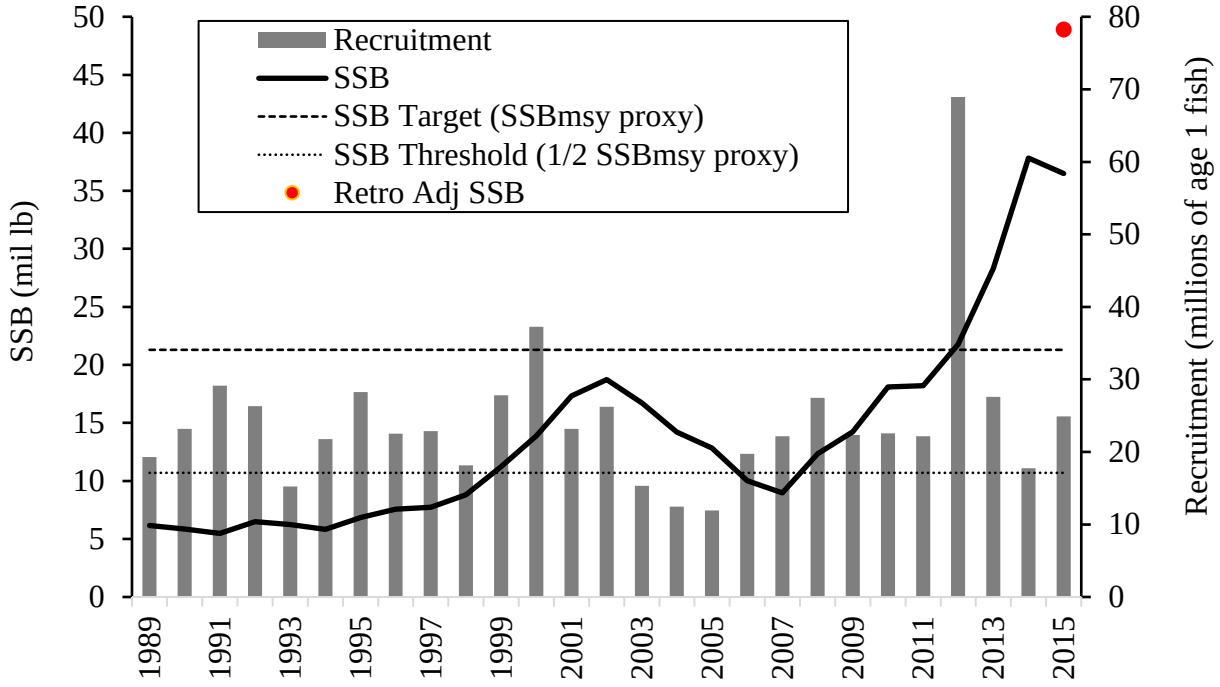

Figure 8: Black sea bass SSB and recruitment from 1989 to 2015 and biomass reference points from the 2016 benchmark stock assessment (NEFSC 2017). The 2015 retro-adjusted SSB value was generated to correct for the retrospective bias present in the assessment model and is used as the estimate to compare to the reference points.

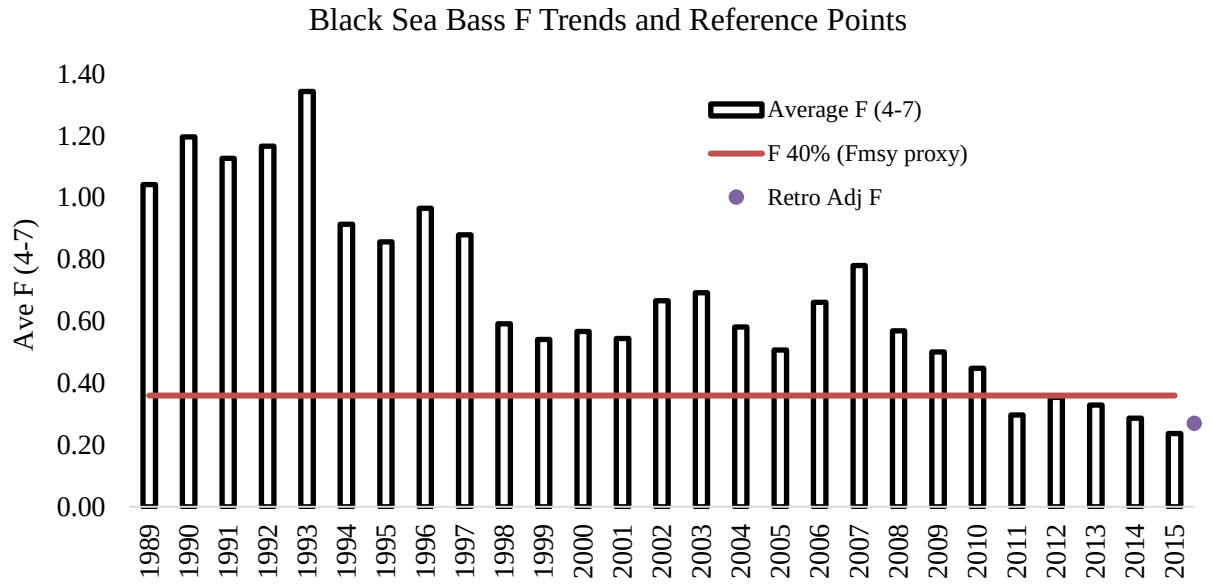

Figure 9: Fishing mortality rate on black sea bass ages 4-7 and the $F_{MSY\ PROXY}$ reference point from the 2016 benchmark stock assessment (NEFSC 2017). The 2015 retro-adjusted fishing mortality rate value was generated to correct for the retrospective bias present in the assessment model and is used as the estimate to compare to the reference points.

6.1.4. Non-Target Species

6.1.4.1. Identification of Non-Target Species

Non-target species are those species caught incidentally while targeting other species. Non-target species may be retained or discarded. It can be difficult to develop accurate quantitative estimates of catch of non-target species. The intended target species for each tow is not always obvious. Fishermen may intend to target one or multiple species and the intended target species may change mid-trip. For example, the seasonal distributions of summer flounder, scup, and black sea bass are generally similar, and these species are often caught together. In addition, there are relevant uncertainties associated with data used to examine catch and discards (i.e., observer and vessel trip report data). Observer data may not be representative of the entire fishery due to limited coverage and differences in behavior when observers are present. Vessel trip report (VTR) data are based on fishermen's self-reported best estimates of catch and are not intended to be precise measurements. For these reasons, a combination of quantitative and qualitative data were used here to evaluate non-target species interactions in these fisheries.

Northeast Fisheries Observer Program (NEFOP) data from 2013-2017 were analyzed to identify species caught on observed commercial trips for which summer flounder, scup, or black sea bass made up at least 75% of the landings by weight (a proxy for directed trips). The other species most commonly caught on these trips were summer flounder, scup, black sea bass, spiny dogfish, little skate, clearnose skate, winter skate, barndoor skate, northern sea robin, and striped sea robin. With the exception of skates in the summer flounder fishery and spiny dogfish in all three fisheries, non-target species generally comprised a small portion of the overall catch on these trips (Table 4). All these species, except northern and striped sea robins, are managed by the Mid-Atlantic or New England Fishery Management Councils and/or the Commission. Northern and striped sea robins are not managed.

Table 4: Percent of other species caught on observed trips where summer flounder, scup, or black sea bass made up at least 75% of the recorded catch, 2013-2017. Only those species comprising at least 2% of the "other" catch are listed.

	Summer flounder directed trips[a]	Scup directed trips[a]	Black sea bass directed trips[a]
SUMMER FLOUNDER	--	2.17%	1.03%
SCUP	1.04%	--	2.32%
SEA BASS, BLACK	1.25%	2.63%	--
DOGFISH, SPINY	7.22%	10.17%	18.99%
SKATE, LITTLE	25.46%	3.20%	2.05%
SKATE, CLEARNOSE	8.18%	0.15%	0.19%
SKATE, WINTER (BIG)	4.22%	1.06%	0.39%
SKATE, NK	2.78%	0.20%	0.45%
SKATE, BARNDOOR	2.43%	0.58%	0.19%
SEA ROBIN, NORTHERN	3.22%	1.86%	2.73%
SEA ROBIN, STRIPED	1.87%	0.91%	19.23%
SEA ROBIN, NK	0.04%	0.01%	3.07%

[a] Defined as trips where the target species comprised at least 75% of the catch.

A species guild approach was used to examine non-target species interactions in the summer flounder, scup, and black sea bass recreational fisheries from Maine through Virginia. This analysis identified species that were caught together on 5% or more of recreational trips. Sea robins, black sea bass, and bluefish were highly correlated with summer flounder (J. Brust,

personal communication January 2018). Black sea bass, sea robins, tautog, cunner, bluefish, summer flounder, and smooth dogfish were highly correlated with scup (J. Brust, personal communication April 2019). Scup, summer flounder, sea robins, Atlantic croaker, and tautog where highly correlated with black sea bass (NEFSC 2017).

Management measures for both the commercial and recreational non-target species managed by the Mid-Atlantic or New England Fishery Management Councils (i.e., all species listed in this section except sea robins and cunner which are unmanaged and smooth dogfish which are managed by the Commission) include accountability measures (AMs) to address annual catch limit (ACL) overages through reductions in landings limits in following years. AMs for these species take discards into account. These measures help to mitigate negative impacts from discards in the commercial fisheries for summer flounder, scup, and black sea bass, and other fisheries.

6.1.4.2. Management and Status of Commercial Non-Target Species

For the purposes of this action, summer flounder, scup, and black sea bass are both commercial target and non-target species. They are described in detail in sections 6.1.1 - 6.1.3.

Spiny dogfish are jointly managed by the MAFMC and the NEFMC. The Commission also has a complementary FMP for state waters. The most recent assessment update was in 2018, which found that the stock is not overfished nor subject to overfishing. SSB was estimated to be 67% of the target B_{MSY} proxy in 2017 (NEFSC 2018b).

The **Northeast skate complex** includes seven skate species: *Leucoraja ocellata* (winter skate); *Dipturis laevis* (barndoor skate); *Amblyraja radiata* (thorny skate); *Malacoraja senta* (smooth skate); *Leucoraja erinacea* (little skate); *Raja eglanteria* (clearnose skate); and *Leucoraja garmani* (rosette skate). Little skate, clearnose skate, barndoor skate, and winter skate are the main skate species identified as non-target species in the summer flounder, scup, and black sea bass fisheries. Skate are mostly harvested incidentally in trawl and gillnet fisheries targeting groundfish, monkfish, and scallops. The fishing mortality reference points for skates are based on changes in biomass indices from the NEFSC bottom trawl survey. If the three-year moving average of the survey biomass index for a skate species declines by more than the average CV of the survey time series, then fishing mortality is assumed to be greater than F_{MSY} and it is concluded that overfishing is occurring (NEFSC 2007). None of the skate species identified as non-target species in the commercial summer flounder, scup, and black sea bass fisheries (i.e., little, clearnose, barndoor, and winter skates) are overfished or experiencing overfishing (NEFMC 2018).

Northern and striped sea robins are not currently managed and have not been assessed, therefore their overfished and overfishing status is unknown (Table 5).

Table 5: Most recent stock status information for commercial non-target species identified in this action for the summer flounder, scup, and black sea bass fisheries.

	Stock biomass status	**Fishing mortality status**
SUMMER FLOUNDER	Not overfished in 2017; SSB_{2017} estimated at 78% of biomass target	Overfishing not occurring in 2017; F_{2017} estimated at 25% below F_{MSY}
SCUP	Not overfished; SSB_{2016} estimated at 210% of biomass target	Overfishing not occurring in 2016; F_{2016} estimated at 37% below F_{MSY}
BLACK SEA BASS	Not overfished; SSB_{2015} estimated at 230% of biomass target	Overfishing not occurring in 2015; F_{2015} estimated at 25% below F_{MSY}
SPINY DOGFISH	Not overfished; SSB_{2018} estimated at 67% of biomass target	Overfishing not occurring in 2017; F_{2015} estimated at 17% below F_{MSY}
LITTLE SKATE	Not overfished (see text)	Overfishing not occurring (see text)
CLEARNOSE SKATE	Not overfished (see text)	Overfishing not occurring (see text)
WINTER SKATE	Not overfished (see text)	Overfishing not occurring (see text)
BARNDOOR SKATE	Not overfished (see text)	Overfishing not occurring (see text)
NORTHERN SEA ROBIN	Unknown (not assessed)	Unknown (not assessed)
STRIPED SEA ROBIN	Unknown (not assessed)	Unknown (not assessed)

6.1.4.3. Management and Status of Recreational Non-Target Species

For the purposes of this action, summer flounder, scup, and black sea bass are both recreational target and non-target species. They are described in detail in sections 6.1.1 - 6.1.3.

Bluefish is jointly managed by the MAFMC and the ASMFC. The most recent bluefish assessment indicates that the stock was not overfished and overfishing was not occurring in 2014. SSB was 190.77 million pounds (86,534 mt) in 2014 (85% of the biomass target of SSB_{MSY} proxy = $SSB_{35\%SPR}$ = 223.42 million pounds or 101,343 mt). Fully-selected fishing mortality in 2014 was estimated to be 0.157, below the threshold ($F_{MSY\ proxy} = F_{35\%SPR} = 0.19$; MAFMC 2017a).

Northern sea robins, striped sea robins, and cunner have not been assessed, therefore their overfished and overfishing status is unknown. They are not managed at the federal level or by the Commission.

Tautog are managed by the ASMFC. The latest assessment (ASMFC 2016) assessed four regions (Massachusetts/Rhode Island, Long Island Sound, New Jersey/New York Bight, and Delaware/Maryland/Virginia) using landings and index data through 2015. The stock status for each region is described in Table 6.

Table 6: Current tautog fishing mortality and biomass targets and thresholds for each assessed region (ASMFC 2016).

Region	F_{target}	$F_{threshold}$	F_{3yravg}	SSB_{target}	$SSB_{threshold}$	SSB_{2015}	Status
MA/RI	0.28	0.49	0.23	3,631 mt	2,723 mt	2,196 mt	Not overfished, overfishing not occurring
Long Island Sound	0.28	0.49	0.51	2,865 mt	2,148 mt	1,603 mt	Overfished, overfishing
New Jersey/New York Bight	0.20	0.34	0.54	3,154 mt	2,351 mt	1,809 mt	Overfished, overfishing
DE/MD/VA	0.16	0.24	0.16	1,919 mt	1,447 mt	621 mt	Overfished, overfishing not occurring

Atlantic croaker is managed by the ASMFC. The latest stock assessment (ASMFC 2017a) was not endorsed by an independent panel of fisheries scientists for management use; however, the panel agreed with the general results of the assessment. The panel recommended continued use of the annual "traffic light analysis" established in 2014 to monitor fishery and resource trends, and implement management measures as needed. This analysis assigns a color (red, yellow, or green) to categorize relative levels of indicators of the condition of the fish population (abundance metric) or fishery (harvest metric). For example, as harvest increases relative to its long-term mean, the proportion of green in a given year will increase and as harvest decreases, the amount of red in that year will increase. Under the Atlantic croaker FMP, state-specific management action would be initiated when the proportion of red exceeds the specified thresholds (for both harvest and abundance) over three consecutive years. A key issue causing uncertainty in the assessment results was the disagreement between recent trends in harvest and fishery independent indices of abundance. Recent harvest numbers are declining while estimated abundance from fishery independent surveys is increasing (ASMFC 2017a).

Smooth dogfish are managed by NMFS with complementary measures implemented by the ASMFC in state waters. Smooth dogfish are a predominant target species in the recreational shark fisheries off the U.S. east coast. They are also harvested in commercial fisheries. Smooth dogfish are not overfished and overfishing are not occurring according to the latest stock assessment, which took place in 2015 (SEDAR 2015).

The status of recreational non-target species relevant to this action are summarized in Table 7.

Table 7: Most recent stock status information for non-target species in the recreational summer flounder and black sea bass fisheries.

	Biomass status	**Fishing mortality status**
ATLANTIC CROAKER	Unknown (assessment not accepted in peer review)	Unknown (assessment not accepted in peer review)
BLUEFISH	Not overfished	Overfishing not occurring
SCUP[a]	Not overfished; SSB_{2016} estimated at 210% of biomass target	Overfishing not occurring in 2016; F_{2016} estimated at 37% below F_{MSY}
BLACK SEA BASS[b]	Not overfished; SSB_{2015} estimated at 230% of biomass target	Overfishing not occurring in 2016; F_{2015} estimated at 25% below F_{MSY}
SUMMER FLOUNDER[c]	Not overfished in 2017; SSB_{2017} estimated at 78% of biomass target	Overfishing not occurring in 2017; F_{2017} estimated at 25% below F_{MSY}
TAUTOG		
MA/RI	Not overfished	Overfishing not occurring
Long Island Sound	Overfished	Overfishing is occurring
New Jersey/New York Bight	Overfished	Overfishing is occurring
DE/MD/VA	Overfished	Overfishing not occurring
NORTHERN SEA ROBIN	Unknown (not assessed)	Unknown (not assessed)
SMOOTH DOGFISH		

[a] Identified as a recreational non-target species for black sea bass.
[b] Identified as a recreational non-target species for summer flounder and scup.
[c] Identified as a recreational non-target species for scup and black sea bass.

6.2. Human Communities

The following sections summarize the commercial and recreational fisheries for summer flounder, scup, and black sea bass with a focus on 2017. Data for 2018 are currently preliminary and incomplete. Commercial data are based on unpublished NMFS dealer and VTR data. Recreational data are from MRIP. In most cases, the recreational harvest data shown are "calibrated" estimates, meaning they account for recent adjustments to the estimation methodology accounting for a revised angler intercept methodology and a new effort estimation methodology, namely, a transition from a telephone-based effort survey to a mail-based effort survey. These revised/calibrated estimates are in most years are several times higher than the previous/uncalibrated estimates for shore and private boat modes. Uncalibrated estimates are shown for comparison with past RHLs as these RHLs did not account for the revised/calibrated recreational data.

6.2.1. Summer Flounder Fisheries

Commercial Fishery

In 2017, commercial fishermen from Maine through North Carolina landed 5.83 million pounds of summer flounder, about 103% of the commercial quota and the lowest commercial landings since at least 1980 (Table 8, Figure 10). Total ex-vessel value in 2017 was $24.60 million, resulting in an average price per pound of $4.22 (Figure 11).

VTR data suggest that NMFS statistical areas 537, 539, 612, 613, 615, and 616 had the highest amounts of commercial summer flounder catch in 2017 (Table 9, Figure 12).

At least 100,000 pounds of summer flounder were landed by commercial fishermen in 13 ports in 7 states in 2017. These ports accounted for 82% of all 2017 commercial summer flounder landings. Beaufort, NC and Point Judith, RI were the leading ports in 2017 in pounds of summer flounder landed, while Point Judith, RI was the leading port in number of vessels landing summer flounder (Table 10).

Over 194 federally-permitted dealers from Maine through North Carolina purchased summer flounder in 2017. More dealers in New York purchased summer flounder than in any other state (Table 16).

A moratorium permit is required to fish commercially for summer flounder in federal waters. In 2017, 766 vessels held such permits. About 62% of these vessels also held a scup moratorium permit and 60% also held a black sea bass moratorium permit; 414 vessels held moratorium permits for all three species.

In 2017, about 96% of the commercial summer flounder landings (by weight) reported on VTRs were caught with bottom otter trawls. All other gear types each accounted for less than 1% of commercial landings.

Table 8: Commercial and recreational summer flounder landings, commercial quotas, and RHLs, 1998-2017, in millions of pounds.

Year	Com. Landings	Com. Quota	% Over/ Under Quota	Rec. Landings (Calibrated)*	Rec. Landings (Pre-Calibration)*	RHL	% Over/ Under RHL*
1998	11.19	10.93	+2%	22.86	12.48	7.41	+68%
1999	10.62	10.73	-1%	16.70	8.37	7.41	+13%
2000	11.23	10.88	+3%	27.03	16.47	7.41	+122%
2001	10.94	10.06	+9%	18.56	11.64	7.16	+63%
2002	14.49	14.46	0%	16.29	8.01	9.72	-18%
2003	14.30	13.87	+3%	21.49	11.64	9.28	+25%
2004	17.37	16.76	+4%	21.20	11.02	11.21	-2%
2005	16.91	17.90	-6%	18.55	10.92	11.98	-9%
2006	13.80	13.94	-1%	18.63	10.50	9.29	+13%
2007	10.04	9.79	+3%	13.89	9.34	6.68	+40%
2008	9.21	9.32	-1%	12.34	8.15	6.21	+31%
2009	10.94	10.74	+2%	11.66	6.03	7.16	-16%
2010	13.04	12.79	+2%	11.34	5.11	8.59	-41%
2011	16.56	17.38	-5%	13.48	5.96	11.58	-49%
2012	13.03	12.73	+2%	16.13	6.49	8.59	-24%
2013	12.49	11.44	+9%	19.41	7.36	7.63	-4%
2014	11.07	10.51	+5%	16.23	7.39	7.01	+5%
2015	10.68	11.07	-4%	11.83	4.72	7.38	-36%
2016	7.81	8.12	-4%	13.24	6.18	5.42	+14%
2017	5.83	5.66	+3%	10.06	3.19	3.77	-15%

*See page 37. Percentage over/under the RHL is based on a comparison to the pre-calibration MRIP estimates.

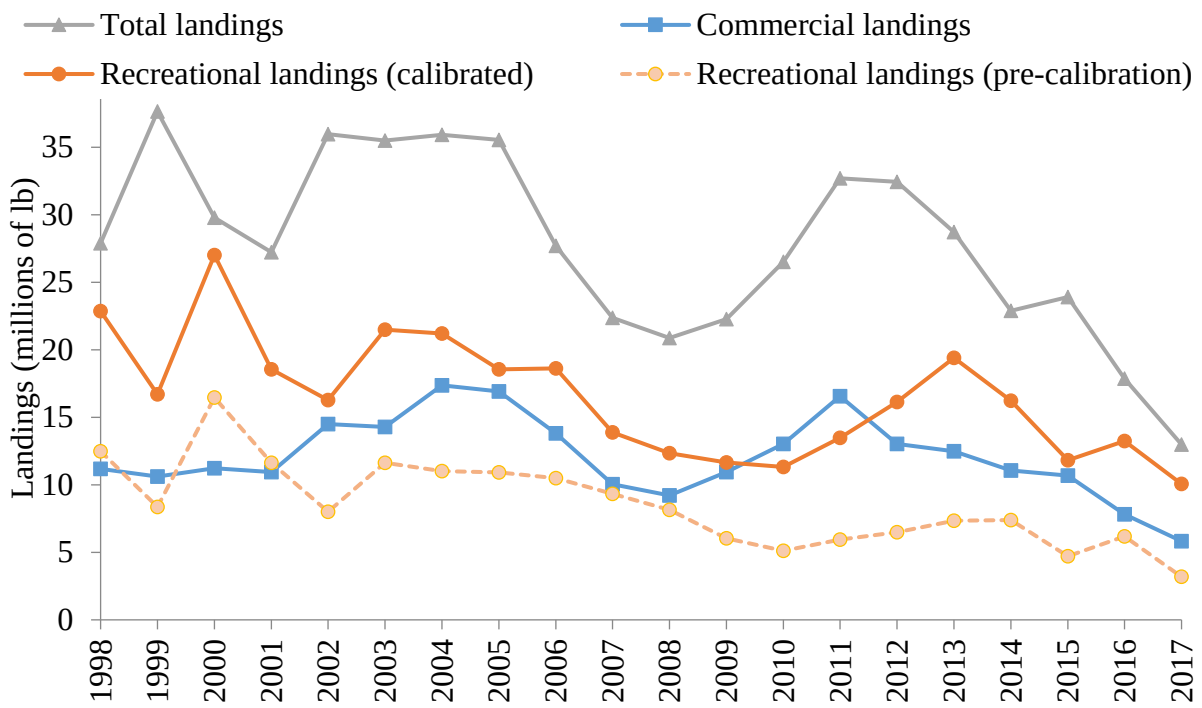

Figure 10: Commercial and recreational summer flounder landings, 1998-2017, Maine through North Carolina. Calibrated and uncalibrated MRIP recreational estimates are shown (see page 37). Total landings include the calibrated MRIP estimates.

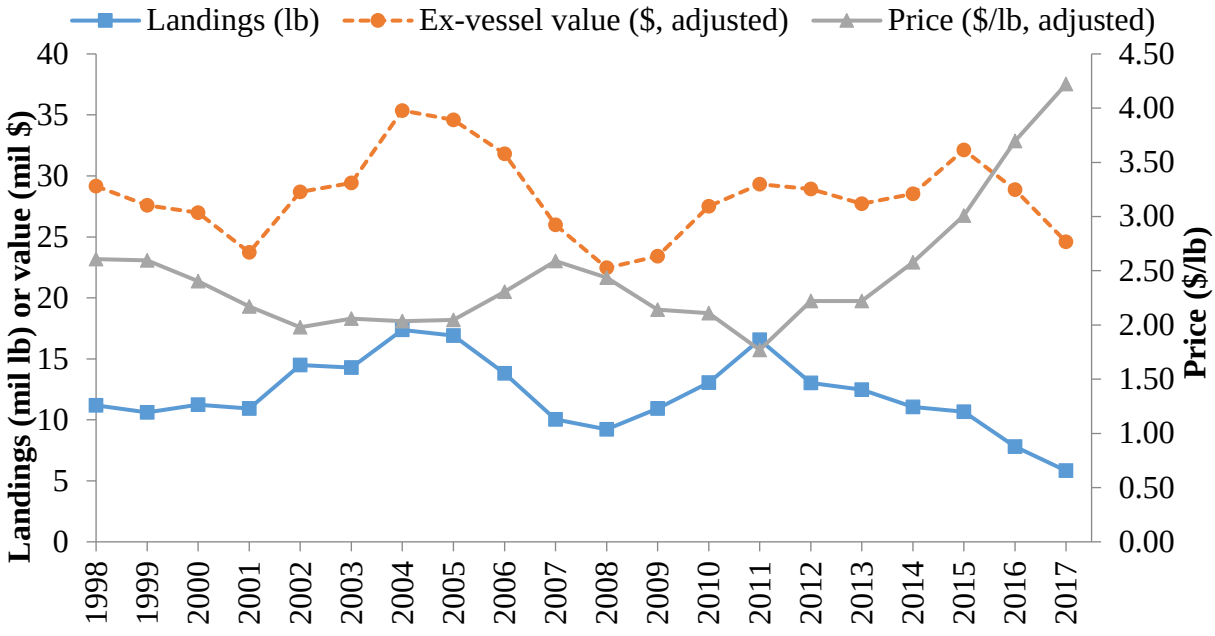

Figure 11: Commercial landings, ex-vessel value, and price for summer flounder from Maine through North Carolina, 1994-2017. Ex-vessel value and price are adjusted to 2017 dollars.

Table 9: Statistical areas which accounted for at least 5% of the total commercial summer flounder catch (by weight) in 2017, with associated number of trips, according to VTR data.

Statistical Area	Percent of 2017 Commercial Summer Flounder Catch	Number of Trips
616	24%	823
537	23%	1,469
613	13%	1,617
612	7%	1,205
615	7%	425
539	6%	2,478

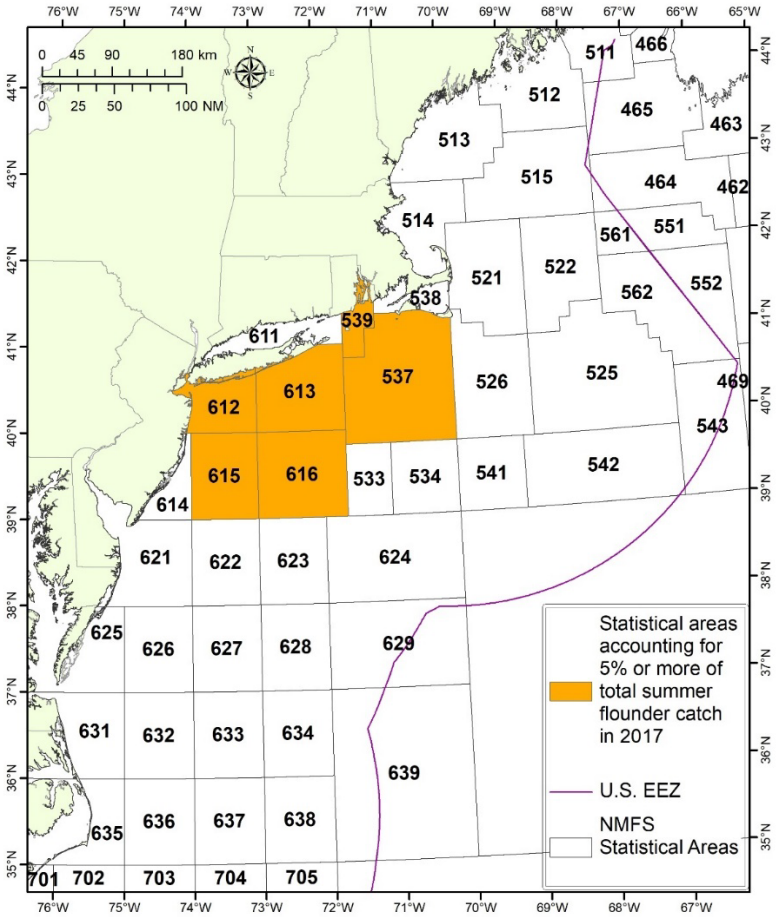

Figure 12: NMFS statistical areas, highlighting those which accounted for at least 5% of commercial summer flounder catch in 2017, according to VTR data.

Table 10: Ports reporting at least 100,000 pounds of commercial summer flounder landings in 2017, based on dealer data.

Port	Commercial summer flounder landings (lb)	% of total commercial summer flounder landings	Number of vessels landings summer flounder
BEAUFORT, NC	902,639	15	69
POINT JUDITH, RI	770,412	13	140
HAMPTON, VA	598,478	10	57
PT. PLEASANT, NJ	480,258	8	58
NEWPORT NEWS, VA	428,416	7	43
MONTAUK, NY	289,375	5	77
WANCHESE, NC	274,174	5	25
BELFORD, NJ	241,572	4	20
NEW BEDFORD, MA	211,907	4	69
CHINCOTEAGUE, VA	192,609	3	25
CAPE MAY, NJ	132,848	2	49
ENGELHARD, NC	131,580	2	9
ORIENTAL, NC	105,698	2	10

Table 11: Number of dealers per state which reported purchases of summer flounder in 2017. C = Confidential.

State	MA	RI	CT	NY	NJ	DE	MD	VA	NC
Number Of Dealers	27	29	16	45	25	C	6	16	30

Recreational Fishery

According to the calibrated MRIP numbers, recreational anglers harvested 10.06 million pounds of summer flounder in 2017, the lowest harvest in weight since 1995 (Table 8, Figure 10). About 86% of recreational summer flounder harvest in 2017 was from anglers who fished on private or rental boats. About 3% was from party or charter boats, and about 11% was from anglers fishing from shore.

Hook and line is the predominant gear type in the recreational summer flounder fishery. Most recreational summer flounder catch occurs in state waters during the warmer months when the fish migrate inshore. In 2017, about 76% of recreational summer flounder landings occurred in state waters and about 24% occurred in federal waters. New York and New Jersey collectively accounted for 77% of recreational summer flounder harvest in 2017. All other states accounted for less than 10% each of 2017 recreational harvest (Table 12).

Vessels carrying passengers for hire in federal waters must obtain a federal party/charter permit. In 2017, 820 vessels held summer flounder federal party/charter permits. About 95% of these vessels also had a federal party/charter permit for black sea bass and about 90% also had a federal party/charter permit for scup.

Table 12: Proportion of annual recreational summer flounder landings (in weight) by state for all waves, 2015-2017, based on calibrated MRIP data downloaded March 2019.

State	2015	2016	2017	2015-2017
Maine	0%	0%	0%	0%
New Hampshire	0%	0%	0%	0%
Massachusetts	3%	2%	2%	2%
Rhode Island	7%	3%	6%	5%
Connecticut	9%	8%	4%	7%
New York	41%	43%	42%	42%
New Jersey	28%	36%	35%	33%
Delaware	2%	3%	3%	3%
Maryland	2%	1%	2%	1%
Virginia	6%	4%	5%	5%
North Carolina	1%	1%	1%	1%
Total	100%	100%	100%	100%

6.2.2. Scup Fisheries

Commercial Fishery

In 2017, commercial fishermen from Maine through North Carolina landed 15.44 million pounds of scup, about 84% of the commercial quota. Total ex-vessel value in 2017 was $9.60 million, resulting in an average price per pound of $0.62. In general, the price tends to be lower when landings are higher, and vice versa (Figure 14). This relationship is not linear and many other factors besides landings also influence price.

The commercial scup fishery operates year-round, taking place mostly in federal waters during the winter and mostly in state waters in the summer. VTR data suggest that NMFS statistical areas 537, 539, 611, 613, and 616 were responsible for the highest amounts of commercial scup catch in 2017 (Table 14, Figure 15).

At least 100,000 pounds of scup were landed by commercial fishermen in 17 ports in 7 states in 2017. These ports accounted for about 92% of all 2017 commercial scup landings. Point Judith, RI was the leading port in terms of landings and number of vessels landing scup (Table 15).

A moratorium permit is required to fish commercially for scup in federal waters. In 2017, 634 vessels held such permits. About 75% of these vessels also held a summer flounder moratorium permit and about 83% also held a black sea bass moratorium permit; 414 vessels held moratorium permits for all three species.

Over 171 federally-permitted dealers from Maine through North Carolina purchased scup in 2017. More dealers in New York purchased scup than in any other state (Table 16).

In 2017, about 97% of the commercial scup landings by weight reported on VTRs were caught with bottom otter trawls. Pots and sink gillnets each accounted for about 1% of commercial landings. All other gear types each accounted for less than 1% of commercial landings. Although bottom otter trawl is the dominant gear type overall and in federal waters, other gear types such as pots/traps, hand lines, floating traps, and pound nets play a larger role in the summer in some state waters.

Table 13. Commercial and recreational scup landings, commercial quotas, and RHLs, 1998-2017, in millions of pounds.

Year	Com. Landings	Com. Quota	% Over/ Under Quota	Rec. Landings (Calibrated)*	Rec. Landings (Pre-Calibration)*	RHL	% Over/ Under RHL*
1998	4.18	4.57	-9%	1.82	0.87	1.55	-44%
1999	3.32	2.53	31%	4.63	1.89	1.24	+52%
2000	2.66	1.75	52%	11.39	5.44	1.24	+339%
2001	4.07	3.53	15%	9.77	4.26	1.77	+141%
2002	7.28	7.25	0%	6.23	3.62	2.71	+34%
2003	9.89	12.1	-18%	17.21	8.48	4.01	+112%
2004	9.28	12.34	-25%	12.83	7.28	4.01	+81%
2005	8.18	12.23	-33%	4.30	2.69	3.96	-32%
2006	9.00	11.93	-25%	5.93	3.72	4.15	-10%
2007	9.25	8.90	4%	7.10	4.56	2.74	+67%
2008	5.19	5.24	-1%	5.76	3.79	1.83	+107%
2009	8.20	8.37	-2%	6.28	3.23	2.59	+25%
2010	10.4	10.68	-3%	12.48	5.97	3.01	+98%
2011	15.03	20.36	-26%	10.32	3.67	5.74	-36%
2012	14.88	27.91	-47%	8.27	4.17	8.45	-51%
2013	17.87	23.53	-24%	12.57	5.37	7.55	-29%
2014	15.96	21.95	-27%	9.84	4.43	7.03	-37%
2015	17.03	21.23	-20%	11.93	4.41	6.80	-35%
2016	15.76	20.47	-23%	10.00	4.26	6.09	-30%
2017	15.44	18.38	-16%	13.54	5.42	5.50	-1%

*See page 37. Percentage over/under the RHL is based on a comparison to the pre-calibration MRIP estimates.

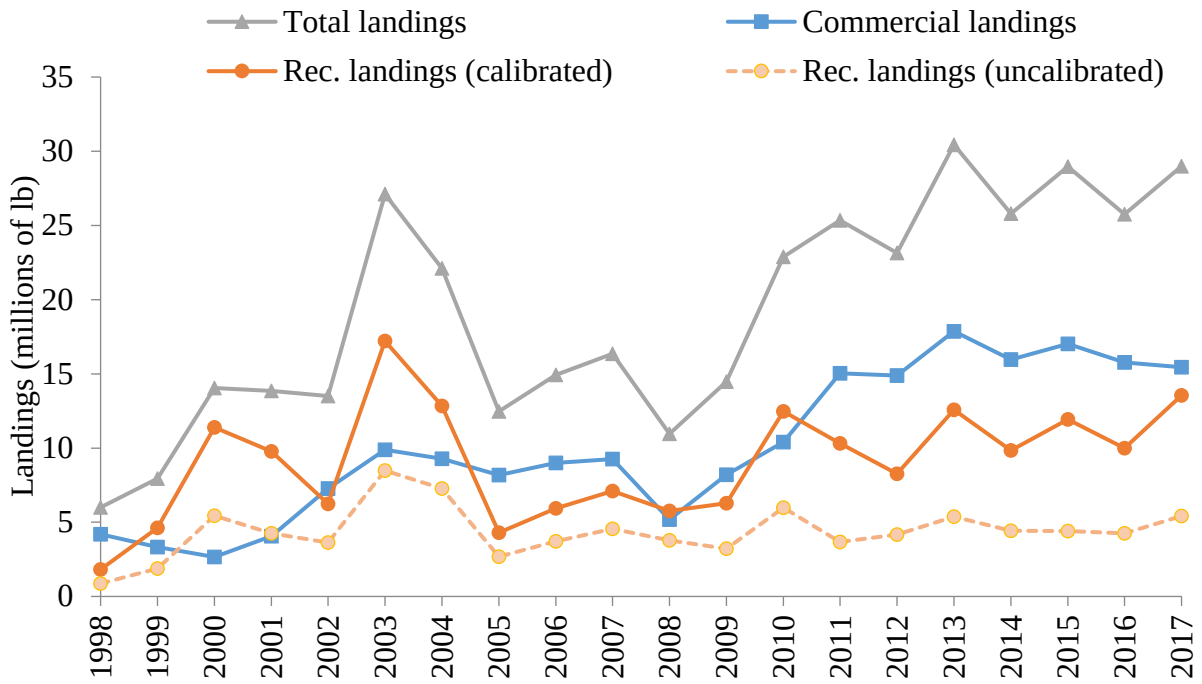

Figure 13: Commercial and recreational scup landings, 1998-2017, Maine through North Carolina. Calibrated and uncalibrated MRIP recreational estimates are shown (see page 37). Total landings include the calibrated MRIP estimates.

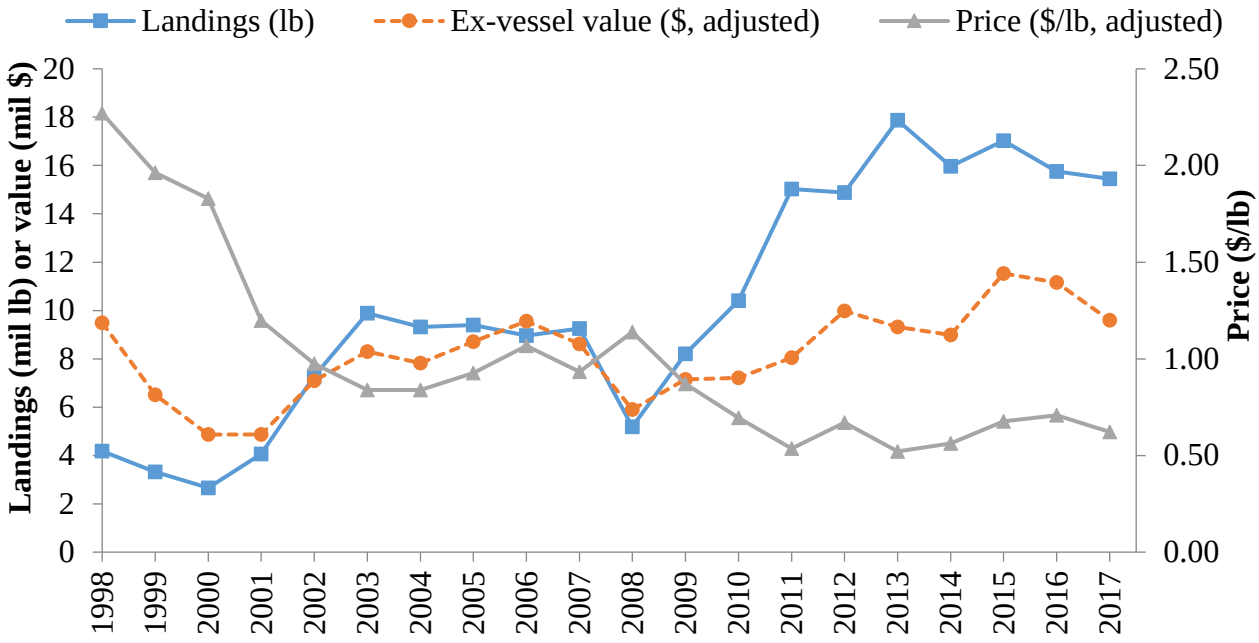

Figure 14: Commercial landings, ex-vessel value, and price for scup from Maine through North Carolina, 1994-2017. Ex-vessel value and price are adjusted to 2017 dollars.

Table 14: Statistical areas which accounted for at least 5% of the total commercial scup catch (by weight) in 2017, with associated number of trips, according to VTR data.

Statistical Area	Percent of 2017 Commercial Scup Catch	Number of Trips
537	40%	1,426
539	14%	2,506
616	12%	542
613	12%	1,126
611	9%	1,870

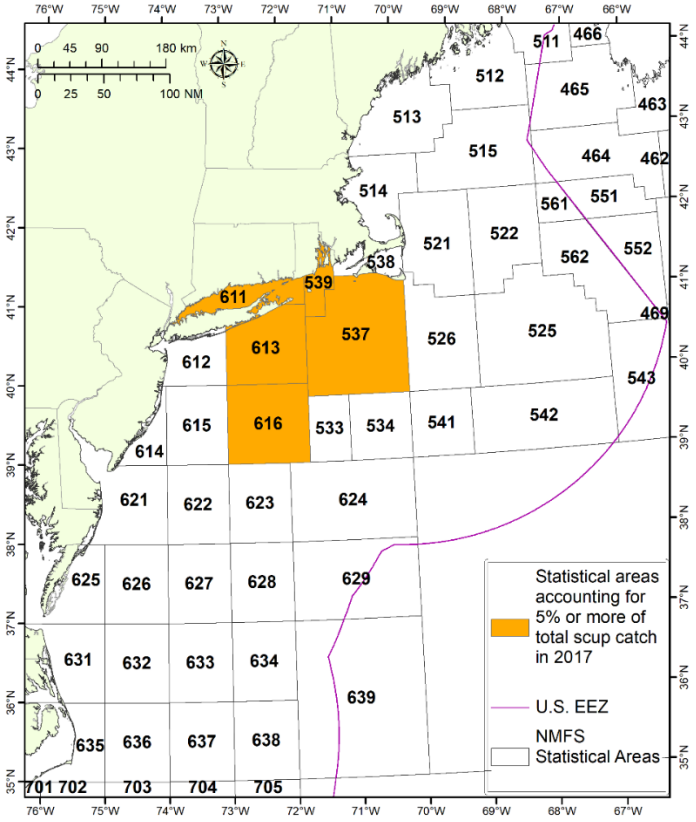

Figure 15: NMFS statistical areas, highlighting those which accounted for at least 5% of commercial scup catch in 2017, according to VTR data.

Table 15: Ports reporting at least 100,000 pounds of scup landings in 2017, based on dealer data.

Port	Commercial scup landings (lb)	% of total commercial scup landings	Number of vessels landing scup
POINT JUDITH, RI	5,279,877	34%	134
MONTAUK, NY	2,655,349	17%	83
NEW BEDFORD, MA	2,067,044	13%	69
PT. PLEASANT, NJ	1,414,580	9%	38
NEW LONDON, CT	438,687	3%	6
HAMPTON, VA	360,494	2%	42
LITTLE COMPTON, RI	281,527	2%	12
BELFORD, NJ	270,689	2%	19
MATTITUCK, NY	265,314	2%	4
STONINGTON, CT	213,465	1%	17
HAMPTON BAYS, NY	200,614	1%	37
NEWPORT, RI	175,828	1%	14
HYANNIS, MA	163,783	1%	13
BEAUFORT, NC	149,994	1%	31
CAPE MAY, NJ	137,123	1%	21
TIVERTON, RI	100,521	1%	4
SHINNECOCK, NY	100,005	1%	7

Table 16: Number of dealers per state which reported purchases of scup in 2017. C = confidential.

State	NH	MA	RI	CT	NY	NJ	DE	MD	VA	NC
Number of Dealers	C	37	28	15	39	21	C	4	13	14

Recreational Fishery

According to the calibrated MRIP numbers, recreational anglers harvested 13.54 million pounds of scup in 2017, the highest recreational harvest since 2003 (Table 13, Figure 13). About 68% of recreational scup harvest in weight 2017 was from anglers who fished on private or rental boats. About 11% was from anglers fishing on party or charter boats, and about 21% was from anglers fishing from shore.

The predominant gear type in the recreational scup fishery is hook and line. Most recreational scup catch occurs in state waters during the warmer months when the fish migrate inshore. Between 2008 and 2017, about 97% of recreational scup harvest in weight occurred in state waters and about 3% occurred in federal waters. The states of Massachusetts through New Jersey accounted for over 99% of recreational scup harvest in 2017 (Table 17).

Vessels carrying passengers for hire in federal waters must obtain a federal party/charter permit. In 2017, 752 vessels held scup federal party/charter permits. About 96% of these vessels also had federal party/charter permits for summer flounder and black sea bass.

Table 17: Proportion of annual recreational scup landings (in weight) by state for all waves, 2015-2017, based on calibrated MRIP data downloaded March 2019.

State	2015	2016	2017	2015-2017
MAINE	0%	0%	0%	0%
NEW HAMPSHIRE	0%	0%	0%	0%
MASSACHUSETTS	16%	22%	18%	18%
RHODE ISLAND	11%	16%	8%	11%
CONNECTICUT	9%	14%	13%	12%
NEW YORK	62%	43%	49%	52%
NEW JERSEY	1%	5%	12%	6%
DELAWARE	0%	0%	0%	0%
MARYLAND	0%	0%	0%	0%
VIRGINIA	0%	2%	0%	1%
NORTH CAROLINA	0%	0%	0%	0%
Total	100%	100%	100%	100%

6.2.3. Black Sea Bass Fisheries

Commercial Fishery

In 2017, commercial fishermen from Maine through North Carolina landed 3.99 million pounds of black sea bass, about 97% of the commercial quota and the highest landings since at least 1981 (Table 17, Figure 16). Total ex-vessel value was $12.24 million, for an average price of $3.07 per pound. Landings and ex-vessel value increased from 2016, while the price per pound decreased (Figure 17).

VTR data suggest that statistical area 616 was responsible for the largest percentage of commercial black sea bass catch in 2017. Statistical area 539 accounted for only 5% of 2017 catch, but had the highest number of trips that caught black sea bass, accounting for 19% of all trips (Table 19, Figure 18). It should be noted that some fishermen harvest black sea bass only in state waters and do not have federal permits; therefore, they are not required to submit VTRs. This is a source of uncertainty in estimates based on VTR data.

At least 100,000 pounds of black sea bass were landed in each of nine ports in seven states from Maine through North Carolina in 2017. These nine ports accounted for approximately 65% of all commercial black sea bass landings in 2017. Point Pleasant, NJ was the top port in terms of black sea bass landings. Point Judith, RI was the top port in terms of number of trips which landed black sea bass (Table 20).

A moratorium permit is required to fish commercially for black sea bass in federal waters. In 2017, 679 vessels held such permits. About 67% of these vessels also held summer flounder moratorium permits and about 78% also held scup moratorium permits; 414 vessels held moratorium permits for all three species.

A total of 204 federally-permitted dealers from Maine through North Carolina purchased black sea bass in 2017. More dealers bought black sea bass in New York than in any other state (Table 21).

VTR data indicate that 73% of the black sea bass caught in 2017 was caught with bottom otter trawl gear. About 16% was caught with fish pots and traps, 5% in offshore lobster traps, and 4%

with hand lines. Other gear types accounted for less than 1% of total commercial catch. VTR data may undercount the contribution of fish pots and hand lines. As previously stated, fishermen who operate only in state waters and do not have federal fishing permits are not required to submit VTRs. In the black sea bass fishery, fish pots and handlines may be more prevalent in state waters than in federal waters.

Table 18. Commercial and recreational black sea bass landings, commercial quotas, and RHLs, 1998-2017, in millions of pounds. Pre-calibration recreational landings prior to 2004 include all North Carolina landings. Calibrated landings are for Maine through Cape Hatteras, NC.

Year	Com. Landings	Com. Quota	% Over/ Under Quota	Rec. Landings (Calibrated)*	Rec. Landings (Pre-Calibration)*	RHL	% Over/ Under RHL*
1998	2.61	3.03	-14%	1.77	1.29	3.15	-59%
1999	2.95	3.03	-3%	2.16	1.70	3.15	-46%
2000	2.71	2.63	+3%	4.65	4.12	3.15	31%
2001	2.93	2.64	+11%	6.24	3.60	3.15	14%
2002	3.56	3.13	+14%	5.67	4.44	3.43	29%
2003	3.03	3.01	+1%	5.67	3.45	3.43	1%
2004	3.04	3.77	-19%	3.09	1.97	4.01	-51%
2005	2.87	3.95	-27%	3.21	1.88	4.13	-54%
2006	2.83	3.83	-26%	2.74	1.80	3.99	-55%
2007	2.29	2.38	-4%	3.34	2.17	2.47	-12%
2008	1.93	2.03	-5%	3.57	2.03	2.11	-4%
2009	1.18	1.09	+8%	5.70	2.56	1.14	125%
2010	1.68	1.76	-5%	8.07	3.19	1.83	74%
2011	1.69	1.71	-1%	3.27	1.17	1.83	-36%
2012	1.72	1.71	+1%	7.04	3.18	1.32	141%
2013	2.26	2.17	+4%	5.68	2.46	2.26	9%
2014	2.40	2.17	+11%	6.94	3.67	2.26	62%
2015	2.46	2.21	+11%	7.82	3.79	2.33	63%
2016	2.59	2.71	-4%	12.05	5.19	2.82	84%
2017	3.99	4.12	-3%	11.48	4.16	4.29	-3%

*See page 37. Percentage over/under the RHL is based on a comparison to the pre-calibration MRIP estimates.

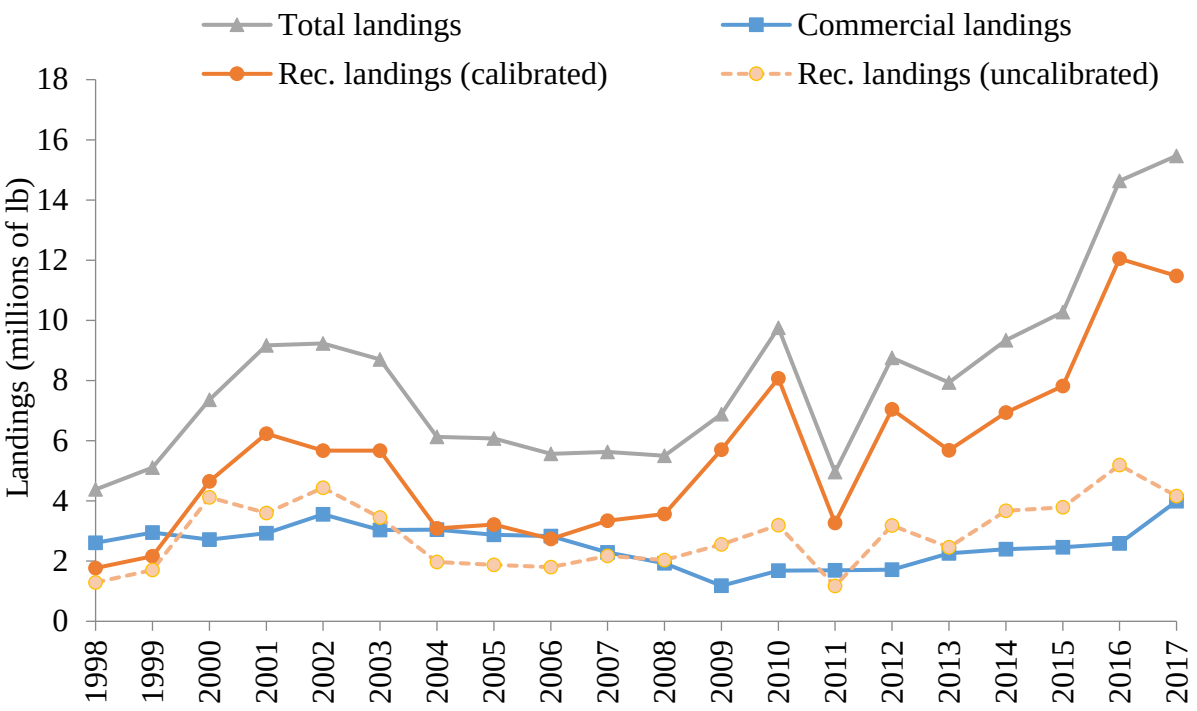

Figure 16: Commercial and recreational black sea bass landings, 1998-2017, Maine through Cape Hatteras, NC. Calibrated and uncalibrated MRIP recreational estimates are shown (see page 37). Total landings include the calibrated MRIP estimates. Pre-calibration recreational landings prior to 2004 include all North Carolina landings.

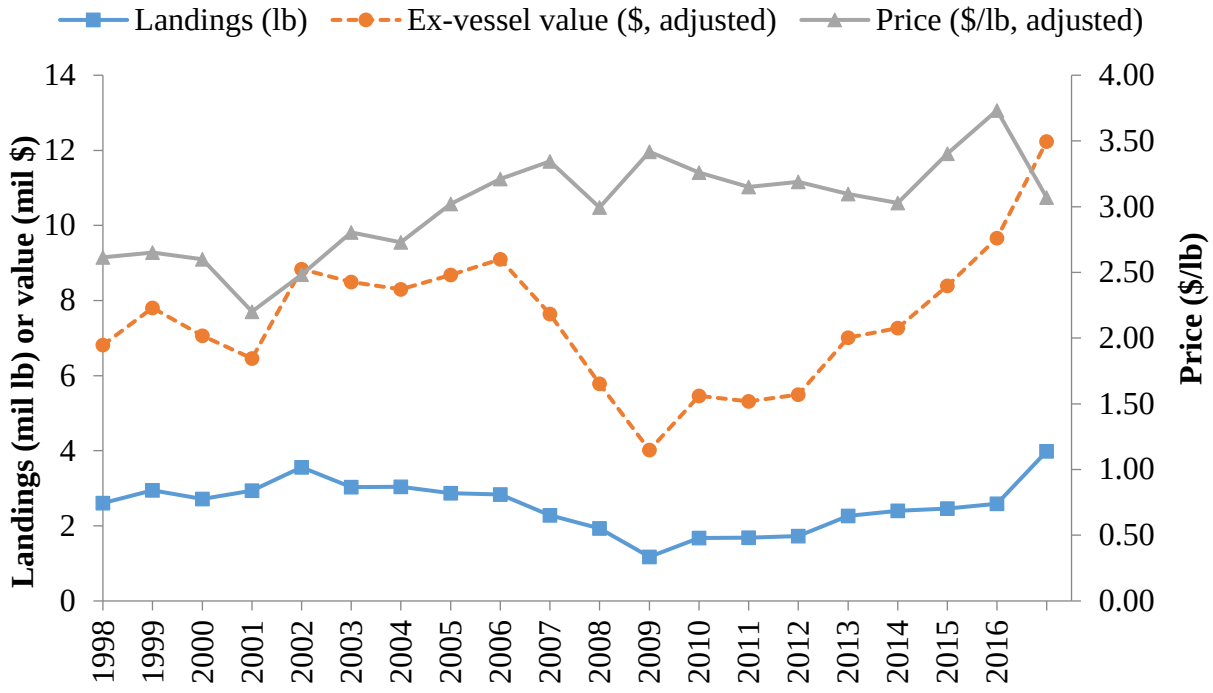

Figure 17: Commercial landings, ex-vessel value, and price for black sea bass, from Maine through North Carolina, 1994-2017. Ex-vessel value and price are adjusted to 2017 dollars.

Table 19: Statistical areas that accounted for at least 5% of the total commercial black sea bass catch in 2017, with associated number of trips.

Statistical Area	Percent of 2017 Commercial Black Sea Bass Catch	Number of Trips
616	35%	677
613	12%	1,205
615	9%	211
537	8%	1,081
621	8%	353
612	7%	696
539	5%	2,148

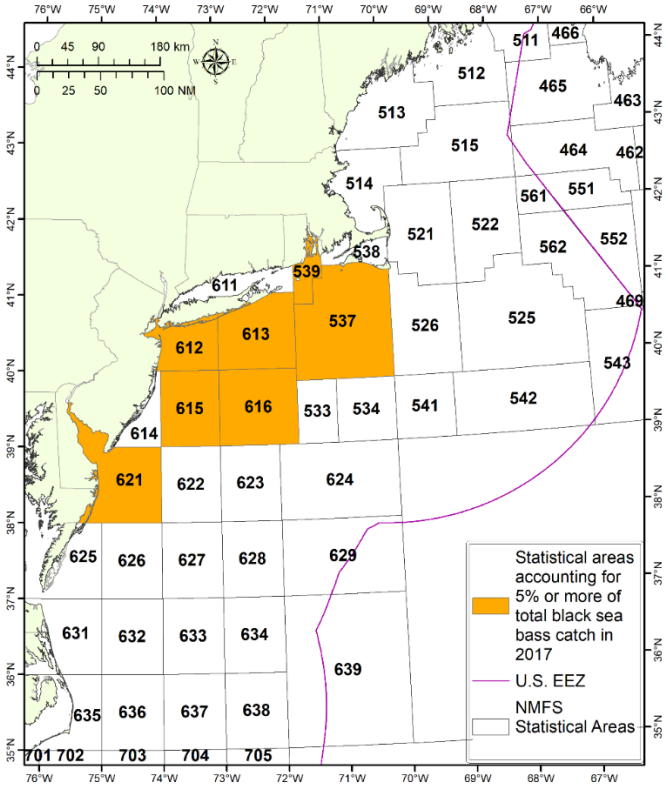

Figure 18: NMFS statistical areas, highlighting those which accounted for at least 5% of commercial black sea bass catch in 2017, according to VTR data.

Table 20: Ports reporting at least 100,000 pounds of commercial black sea bass landings in 2017, based on dealer data.

Port name	Black sea bass landings (lb)	% of total commercial black sea bass landings	Number of vessels landing black sea bass
PT. PLEASANT, NJ	590,917	14.8	48
HAMPTON, VA	398,221	10.0	38
POINT JUDITH, RI	344,849	8.7	148
OCEAN CITY, MD	332,940	8.4	8
BEAUFORT, NC	219,199	5.5	51
CHINCOTEAGUE, VA	203,888	5.1	9
NEW BEDFORD, MA	198,447	5.0	58
CAPE MAY, NJ	168,011	4.2	29
MONTAUK, NY	152,969	3.8	104

Table 21: Number of dealers per state which reported purchases of black sea bass in 2017.

State	MA	RI	CT	NY	NJ	DE	MD	VA	NC
Number of dealers	29	29	14	45	33	4	6	16	28

Recreational Fishery

According to the calibrated MRIP numbers, recreational anglers harvested 11.48 million pounds of black sea bass in 2017 (Table 18, Figure 16). About 92% of recreational black sea bass harvest in weight 2017 was from anglers who fished on private or rental boats. About 7% was from party or charter boats, and about 1% was from anglers fishing from shore.

The predominant gear type in the recreational black sea bass fishery is hook and line.

In 2017, about 41% of recreational black sea bass harvest in weight occurred in state waters and about 59% occurred in federal waters. New York had the highest black sea bass recreational harvest in 2017, accounting for 46% of total harvest from Maine through North Carolina (Table 22).

Vessels carrying passengers for hire in federal waters must obtain a federal party/charter permit. In 2017, 814 vessels held black sea bass federal party/charter permits, an increase from the 749 permits issued in 2016. About 96% of these vessels also held a federal summer flounder party/charter permit and about 90% also held a federal scup party/charter permit.

Over the past 5 years (i.e., 2013-2017), about 41% of the annual recreational harvest of black sea bass (in numbers of fish) from Maine through North Carolina occurred in federal waters. The proportion of harvest from state and federal waters varied by state (Table 22).

Table 22: Proportion of annual recreational black sea bass landings (in weight) by state for all waves, 2015-2017, based on calibrated MRIP data downloaded March 2019.

State	2015	2016	2017	2015-2017
MAINE	0%	0%	0%	0%
NEW HAMPSHIRE	0%	0%	0%	0%
MASSACHUSETTS	20%	14%	12%	15%
RHODE ISLAND	10%	9%	6%	8%
CONNECTICUT	11%	11%	9%	10%
NEW YORK	43%	53%	46%	48%
NEW JERSEY	7%	6%	17%	10%
DELAWARE	1%	1%	1%	1%
MARYLAND	1%	2%	2%	2%
VIRGINIA	1%	1%	1%	1%
NORTH CAROLINA	6%	2%	5%	4%
Total	100%	100%	100%	100%

6.3. Physical Habitat

The physical, chemical, biological, and geological components of benthic and pelagic environments are important aspects of habitat for marine species and have implications for reproduction, growth, and survival of marine species. The following sections briefly describe key aspects of physical habitats which may be impacted by the alternatives considered in this document. This information is drawn from Stevenson et al. (2004), unless otherwise noted.

Summer flounder, scup, and black sea bass inhabit the northeast U.S. shelf ecosystem, which extends from the coast to the edge of the continental shelf from the Gulf of Maine through Cape Hatteras, including the slope sea offshore to the Gulf Stream.

The Gulf of Maine is a semi-enclosed coastal sea, characterized by relatively cold waters and deep basins, with a patchwork of various sediment types.

Georges Bank is a relatively shallow coastal plateau that slopes gently from north to south and has steep submarine canyons on its eastern and southeastern edge. It is characterized by highly productive, well-mixed waters and strong currents.

The Mid-Atlantic Bight is comprised of the sandy, relatively flat, gently sloping continental shelf from southern New England to Cape Hatteras, North Carolina.

The continental slope begins at the continental shelf break and continues eastward with increasing depth until it becomes the continental rise. It is fairly homogenous, with exceptions at the shelf break, some canyons, the Hudson Shelf Valley, and in areas of glacially rafted hard bottom.

The continental shelf in this region was shaped largely by sea level fluctuations caused by past ice ages. The shelf’s basic morphology and sediments derive from the retreat of the last ice sheet and the subsequent rise in sea level. Currents and waves have since modified this basic structure.

Shelf and slope waters of the Mid-Atlantic Bight have a slow southwestward flow that is occasionally interrupted by warm core rings or meanders from the Gulf Stream. On average, shelf water moves parallel to bathymetry isobars at speeds of 5 - 10 cm/s at the surface and 2

cm/s or less at the bottom. Storm events can cause much more energetic variations in flow. Tidal currents on the inner shelf have a higher flow rate of 20 cm/s that increases to 100 cm/s near inlets.

The shelf slopes gently from shore out to between 100 and 200 km offshore where it transforms to the slope (100 - 200 m water depth) at the shelf break. Numerous canyons incise the slope and some cut up onto the shelf itself. The primary morphological features of the shelf include shelf valleys and channels, shoal massifs, scarps, and sand ridges and swales. Most of these structures are relic except for some sand ridges and smaller sand-formed features. Shelf valleys and slope canyons were formed by rivers of glacier outwash that deposited sediments on the outer shelf edge as they entered the ocean. Most valleys cut about 10 m into the shelf; however, the Hudson Shelf Valley is about 35 m deep. The valleys were partially filled as the glacier melted and retreated across the shelf. The glacier also left behind a lengthy scarp near the shelf break from Chesapeake Bay north to the eastern end of Long Island. Shoal retreat massifs were produced by extensive deposition at a cape or estuary mouth. Massifs were also formed as estuaries retreated across the shelf.

Some sand ridges are more modern in origin than the shelf's glaciated morphology. Their formation is not well understood; however, they appear to develop from the sediments that erode from the shore face. They maintain their shape, so it is assumed that they are in equilibrium with modern current and storm regimes. They are usually grouped, with heights of about 10 m, lengths of 10 - 50 km and spacing of 2 km. Ridges are usually oriented at a slight angle towards shore, running in length from northeast to southwest. The seaward face usually has the steepest slope. Sand ridges are often covered with smaller similar forms such as sand waves, megaripples, and ripples. Swales occur between sand ridges. Since ridges are higher than the adjacent swales, they are exposed to more energy from water currents and experience more sediment mobility than swales. Ridges tend to contain less fine sand, silt and clay while relatively sheltered swales contain more of the finer particles. Swales have greater benthic macrofaunal density, species richness and biomass, due in part to the increased abundance of detrital food and the less physically rigorous conditions.

Sand waves are usually found in patches of 5 - 10 with heights of about 2 m, lengths of 50 - 100 m and 1 - 2 km between patches. Sand waves are primarily found on the inner shelf, and often observed on sides of sand ridges. They may remain intact over several seasons. Megaripples occur on sand waves or separately on the inner or central shelf. During the winter storm season, they may cover as much as 15% of the inner shelf. They tend to form in large patches and usually have lengths of 3 - 5 m with heights of 0.5 - 1 m. Megaripples tend to survive for less than a season. They can form during a storm and reshape the upper 50 - 100 cm of the sediments within a few hours. Ripples are also found everywhere on the shelf and appear or disappear within hours or days, depending upon storms and currents. Ripples usually have lengths of about 1 - 150 cm and heights of a few centimeters.

Sediments are uniformly distributed over the shelf in this region. A sheet of sand and gravel varying in thickness from 0 - 10 m covers most of the shelf. The mean bottom flow from the constant southwesterly current is not fast enough to move sand, so sediment transport must be episodic. Net sediment movement is in the same southwesterly direction as the current. The sands are mostly medium to coarse grains, with finer sand in the Hudson Shelf Valley and on the outer shelf. Mud is rare over most of the shelf, but is common in the Hudson Shelf Valley. Occasionally relic estuarine mud deposits are re-exposed in the swales between sand ridges. Fine

sediment content increases rapidly at the shelf break, which is sometimes called the "mud line," and sediments are 70 - 100% fine on the slope. On the slope, silty sand, silt, and clay predominate (Stevenson et al. 2004).

Greene et al. (2010) identified and described Ecological Marine Units (EMUs) in New England and the Mid-Atlantic based on sediment type, seabed form (a combination of slope and relative depth)[2], and benthic organisms.[3] According to this classification scheme, the sediment composition off New England and the Mid-Atlantic is about 68% sand, 26% gravel, and 6% silt/mud. The seafloor is classified as about 52% flat, 26% depression, 19% slope, and 3% steep.

Artificial reefs are another significant Mid-Atlantic habitat. These localized areas of hard structure were formed by shipwrecks, lost cargoes, disposed solid materials, shoreline jetties and groins, submerged pipelines, cables, and other materials (Steimle and Zetlin 2000). While some of these materials were deposited specifically for use as fish habitat, most have an alternative primary purpose; however, they have all become an integral part of the coastal and shelf ecosystem. In general, reefs are important for attachment sites, shelter, and food for many species, and fish predators such as tunas may be attracted by prey aggregations, or may be behaviorally attracted to the reef structure.

Like all the world's oceans, the western North Atlantic is experiencing changes to the physical environment due to global climate change. These changes include warming temperatures; sea level rise; ocean acidification; changes in stream flow, ocean circulation, and sediment deposition; and increased frequency, intensity, and duration of extreme climate events. These changes in physical habitat can impact the metabolic rate and other biological processes of marine species. As such, these changes have implications for the distribution and productivity of many marine species. Several studies demonstrate that the distribution and productivity of several species in the Mid-Atlantic have changed over time, likely because of changes in physical habitat conditions such as temperature (e.g., Weinberg 2005, Lucey and Nye 2010, Nye et al. 2011, Pinsky et al. 2013, Gaichas et al. 2015).

6.3.1. Essential Fish Habitat

The MSA defines EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity" (MSA section 3). The MSA requires that Councils describe and identify EFH for managed species and "minimize to the extent practicable adverse effects on such habitat caused by fishing, and identify other actions to encourage the conservation and enhancement of such habitat" (MSA section 303 (a)(7)).

The broad definition of EFH has led the Mid-Atlantic and the New England Fishery Management Councils to identify EFH throughout most of the Northeast U.S. Shelf Ecosystem, ranging from areas out to the shelf break to wetlands, streams, and rivers. Table 23 summarizes EFH within the affected area of this action for federally-managed species and life stages that are vulnerable to bottom tending fishing gear. EFH maps and text descriptions for these species and life stages can be found at www.fisheries.noaa.gov/resource/map/essential-fish-habitat-mapper.

[2] Seabed form contains the categories of depression, mid flat, high flat, low slope, side slope, high slope, and steep slope.

[3] See Greene et al. 2010 for a description of the methodology used to define EMUs.

Table 23: Geographic distributions and habitat characteristics of EFH designations for benthic fish and shellfish species within the affected environment of the action.

Species	Life Stage	Geographic Area	Depth (meters)	Habitat Type and Description
American plaice	Juveniles	Gulf of Maine and bays and estuaries from Passamaquoddy Bay to Saco Bay, Maine and from Massachusetts Bay to Cape Cod Bay, Massachusetts Bay	40-180	Sub-tidal benthic habitats on mud and sand, also found on gravel and sandy substrates bordering bedrock
American plaice	Adults	Gulf of Maine, Georges Bank and bays and estuaries from Passamaquoddy Bay to Saco Bay, Maine and from Massachusetts Bay to Cape Cod Bay, Massachusetts Bay	40-300	Sub-tidal benthic habitats on mud and sand, also gravel and sandy substrates bordering bedrock
Atlantic cod	Juveniles	Gulf of Maine, Georges Bank, and Southern New England, including nearshore waters from eastern Maine to Rhode Island and the following estuaries: Passamaquoddy Bay to Saco Bay; Massachusetts Bay, Boston Harbor, Cape Cod Bay, and Buzzards Bay	Mean high water-120	Structurally-complex intertidal and sub-tidal habitats, including eelgrass, mixed sand and gravel, and rocky habitats (gravel pavements, cobble, and boulder) with and without attached macroalgae and emergent epifauna
Atlantic cod	Adults	Gulf of Maine, Georges Bank, Southern New England, and the Mid-Atlantic to Delaware Bay, including the following estuaries: Passamaquoddy Bay to Saco Bay; Massachusetts Bay, Boston Harbor, Cape Cod Bay, and Buzzards Bay	30-160	Structurally complex sub-tidal hard bottom habitats with gravel, cobble, and boulder substrates with and without emergent epifauna and macroalgae, also sandy substrates and along deeper slopes of ledges
Atlantic halibut	Juveniles & Adults	Gulf of Maine, Georges Bank, and continental slope south of Georges Bank	60-140 and 400-700 on slope	Benthic habitats on sand, gravel, or clay substrates
Atlantic sea scallop	Eggs	Gulf of Maine coastal waters and offshore banks, Georges Bank, and the Mid-Atlantic, including the following estuaries: Passamaquoddy Bay to Sheepscot River; Casco Bay, Massachusetts Bay, and Cape Cod Bay	18-110	Inshore and offshore benthic habitats (see adults)
Atlantic sea scallop	Larvae	Gulf of Maine coastal waters and offshore banks, Georges Bank, and the Mid-Atlantic, including the following estuaries: Passamaquoddy Bay to Sheepscot River; Casco Bay, Massachusetts Bay, and Cape Cod Bay	No information	Inshore and offshore pelagic and benthic habitats: pelagic larvae ("spat"), settle on variety of hard surfaces, including shells, pebbles, and gravel and to macroalgae and other benthic organisms such as hydroids
Atlantic sea scallop	Juveniles	Gulf of Maine coastal waters and offshore banks, Georges Bank, and the Mid-Atlantic, including the following estuaries: Passamaquoddy Bay to Sheepscot River; Casco Bay, Great Bay, Massachusetts Bay, and Cape Cod Bay	18-110	Benthic habitats initially attached to shells, gravel, and small rocks (pebble, cobble), later free-swimming juveniles found in same habitats as adults
Atlantic sea scallop	Adults	Gulf of Maine coastal waters and offshore banks, Georges Bank, and the Mid-Atlantic, including the following estuaries:	18-110	Benthic habitats with sand and gravel substrates

Species	Life Stage	Geographic Area	Depth (meters)	Habitat Type and Description
		Passamaquoddy Bay to Sheepscot River; Casco Bay, Great Bay, Massachusetts Bay, and Cape Cod Bay		
Atlantic surfclams	Juveniles and adults	Continental shelf from southwestern Gulf of Maine to Cape Hatteras, North Carolina	Surf zone to about 61, abundance low >38	In substrate to depth of 3 ft
Atlantic wolffish	Eggs	U.S. waters north of 41˚N latitude and east of 71˚W longitude	<100	Sub-tidal benthic habitats under rocks and boulders in nests
Atlantic wolffish	Juveniles	U.S. waters north of 41˚N latitude and east of 71˚W longitude	70-184	Sub-tidal benthic habitats
Atlantic wolffish	Adults	U.S. waters north of 41˚N latitude and east of 71˚W longitude	<173	A wide variety of sub-tidal sand and gravel substrates once they leave rocky spawning habitats, but not on muddy bottom
Barndoor skate	Juveniles and adults	Primarily on Georges Bank and in Southern New England and on the continental slope	40-400 on shelf and to 750 on slope	Sub-tidal benthic habitats on mud, sand, and gravel substrates
Black sea bass	Juveniles and adults	Continental shelf and estuarine waters from the southwestern Gulf of Maine and Cape Hatteras, North Carolina	Inshore in summer and spring	Benthic habitats with rough bottom, shellfish and eelgrass beds, man-made structures in sandy-shelly areas, also offshore clam beds and shell patches in winter
Clearnose skate	Juveniles	Inner continental shelf from New Jersey to the St. Johns River in Florida and certain bays and certain estuaries including Raritan Bay, inland New Jersey bays, Chesapeake Bay, and Delaware Bays	0-30	Sub-tidal benthic habitats on mud and sand, but also on gravelly and rocky bottom
Clearnose skate	Adults	Inner continental shelf from New Jersey to the St. Johns River in Florida and certain bays and certain estuaries including Raritan Bay, inland New Jersey bays, Chesapeake Bay, and Delaware Bays	0-40	Sub-tidal benthic habitats on mud and sand, but also on gravelly and rocky bottom
Golden tilefish	Juveniles and adults	Outer continental shelf and slope from U.S.-Canada boundary to the Virginia-North Carolina boundary	100-300	Burrows in semi-lithified clay substrate, may also utilize rocks, boulders, scour depressions beneath boulders, and exposed rock ledges as shelter
Haddock	Juveniles	Inshore and offshore waters in the Gulf of Maine, on Georges Bank, and on the continental shelf in the Mid-Atlantic region	40-140 and as shallow as 20 in coastal Gulf of Maine	Sub-tidal benthic habitats on hard sand (particularly smooth patches between rocks), mixed sand and shell, gravelly sand, and gravel
Haddock	Adults	Offshore waters in the Gulf of Maine, on Georges Bank, and on the continental shelf in Southern New England	50-160	Sub-tidal benthic habitats on hard sand (particularly smooth patches between rocks), mixed sand and shell, gravelly sand, and gravel and adjacent to boulders and cobbles along the margins of rocky reefs
Little skate	Juveniles	Coastal waters in the Gulf of Maine, Georges Bank, and the continental shelf in the Mid-Atlantic region as far south as Delaware Bay, including certain	Mean high water-80	Intertidal and sub-tidal benthic habitats on sand and gravel, also found on mud

Species	Life Stage	Geographic Area	Depth (meters)	Habitat Type and Description
		bays and estuaries in the Gulf of Maine		
Little skate	Adults	Coastal waters in the Gulf of Maine, Georges Bank, and the continental shelf in the Mid-Atlantic region as far south as Delaware Bay, including certain bays and estuaries in the Gulf of Maine	Mean high water-100	Intertidal and sub-tidal benthic habitats on sand and gravel, also found on mud
Longfin inshore squid	Eggs	Inshore and offshore waters from Georges Bank southward to Cape Hatteras	Generally <50	Bottom habitats attached to variety of hard bottom types, macroalgae, sand, and mud
Monkfish	Juveniles	Gulf of Maine, outer continental shelf in the Mid-Atlantic, and the continental slope	50-400 in the Mid-Atlantic, 20-400 in the Gulf of Maine, and to 1000 on the slope	Sub-tidal benthic habitats on a variety of habitats, including hard sand, pebbles, gravel, broken shells, and soft mud, also seek shelter among rocks with attached algae
Monkfish	Adults	Gulf of Maine, outer continental shelf in the Mid-Atlantic, and the continental slope	50-400 in the Mid-Atlantic, 20-400 in the Gulf of Maine, and to 1000 on the slope	Sub-tidal benthic habitats on hard sand, pebbles, gravel, broken shells, and soft mud, but seem to prefer soft sediments, and, like juveniles, utilize the edges of rocky areas for feeding
Ocean pout	Eggs	Georges Bank, Gulf of Maine, and the Mid-Atlantic, including certain bays and estuaries in the Gulf of Maine	<100	Sub-tidal hard bottom habitats in sheltered nests, holes, or rocky crevices
Ocean pout	Juveniles	Gulf of Maine, on the continental shelf north of Cape May, New Jersey, on the southern portion of Georges Bank, and including certain bays and estuaries in the Gulf of Maine	Mean high water-120	Intertidal and sub-tidal benthic habitats on a wide variety of substrates, including shells, rocks, algae, soft sediments, sand, and gravel
Ocean pout	Adults	Gulf of Maine, Georges Bank, on the continental shelf north of Cape May, New Jersey, and including certain bays and estuaries in the Gulf of Maine	20-140	Sub-tidal benthic habitats on mud and sand, particularly in association with structure forming habitat types; i.e. shells, gravel, or boulders
Ocean quahogs	Juveniles and adults	Continental shelf from southern New England and Georges Bank to Virginia	9-244	In substrate to depth of 3 ft
Offshore hake	Juveniles	Outer continental shelf and slope from Georges Bank to 34° 40'N	160-750	Pelagic and benthic habitats
Offshore hake	Adults	Outer continental shelf and slope from Georges Bank to 34° 40'N	200-750	Pelagic and benthic habitats
Pollock	Juveniles	Inshore and offshore waters in the Gulf of Maine (including bays and estuaries in the Gulf of Maine), the Great South Channel, Long Island Sound, and Narragansett Bay, Rhode Island	Mean high water-180 in Gulf of Maine, Long Island Sound, and Narragansett Bay; 40-180 on Georges Bank	Intertidal and sub-tidal pelagic and benthic rocky bottom habitats with attached macroalgae, small juveniles in eelgrass beds, older juveniles move into deeper water habitats also occupied by adults
Pollock	Adults	Offshore Gulf of Maine waters, Massachusetts Bay and Cape Cod Bay, on the southern edge of Georges Bank, and in Long Island Sound	80-300 in Gulf of Maine and on Georges Bank; <80 in Long Island Sound, Cape Cod	Pelagic and benthic habitats on the tops and edges of offshore banks and shoals with mixed rocky substrates, often with attached macro algae

Species	Life Stage	Geographic Area	Depth (meters)	Habitat Type and Description
			Bay, and Narragansett Bay	
Red hake	Juveniles	Gulf of Maine, Georges Bank, and the Mid-Atlantic, including Passamaquoddy Bay to Cape Cod Bay in the Gulf of Maine, Buzzards Bay and Narragansett Bay, Long Island Sound, Raritan Bay and the Hudson River, and lower Chesapeake Bay	Mean high water-80	Intertidal and sub-tidal soft bottom habitats, esp those that that provide shelter, such as depressions in muddy substrates, eelgrass, macroalgae, shells, anemone and polychaete tubes, on artificial reefs, and in live bivalves (e.g., scallops)
Red hake	Adults	In the Gulf of Maine, the Great South Channel, and on the outer continental shelf and slope from Georges Bank to North Carolina, including inshore bays and estuaries as far south as Chesapeake Bay	50-750 on shelf and slope, as shallow as 20 inshore	Sub-tidal benthic habitats in shell beds, on soft sediments (usually in depressions), also found on gravel and hard bottom and artificial reefs
Rosette skate	Juveniles and adults	Outer continental shelf from approximately 40˚N to Cape Hatteras, North Carolina	80-400	Benthic habitats with mud and sand substrates
Scup	Juveniles	Continental shelf between southwestern Gulf of Maine and Cape Hatteras, North Carolina and in nearshore and estuarine waters between Massachusetts and Virginia	No information	Benthic habitats, in association with inshore sand and mud substrates, mussel and eelgrass beds
Scup	Adults	Continental shelf and nearshore and estuarine waters between southwestern Gulf of Maine and Cape Hatteras, North Carolina	No information, generally overwinter offshore	Benthic habitats
Silver hake	Juveniles	Gulf of Maine, including certain bays and estuaries, and on the continental shelf as far south as Cape May, New Jersey	40-400 in Gulf of Maine, >10 in Mid-Atlantic	Pelagic and sandy sub-tidal benthic habitats in association with sand-waves, flat sand with amphipod tubes, shells, and in biogenic depressions
Silver hake	Adults	Gulf of Maine, including certain bays and estuaries, the southern portion of Georges Bank, and the outer continental shelf and some shallower coastal locations in the Mid-Atlantic	>35 in Gulf of Maine, 70-400 on Georges Bank and in the Mid-Atlantic	Pelagic and sandy sub-tidal benthic habitats, often in bottom depressions or in association with sand waves and shell fragments, also in mud habitats bordering deep boulder reefs, on over deep boulder reefs in the southwest Gulf of Maine
Smooth skate	Juveniles	Offshore Gulf of Maine, some coastal bays in Maine and New Hampshire, and on the continental slope from Georges Bank to North Carolina	100-400 offshore Gulf of Maine, <100 inshore Gulf of Maine, to 900 on slope	Benthic habitats, mostly on soft mud in deeper areas, but also on sand, broken shells, gravel, and pebbles on offshore banks in the Gulf of Maine
Smooth skate	Adults	Offshore Gulf of Maine and the continental slope from Georges Bank to North Carolina	100-400 offshore Gulf of Maine, to 900 on slope	Benthic habitats, mostly on soft mud in deeper areas, but also on sand, broken shells, gravel, and pebbles on offshore banks in the Gulf of Maine
Summer flounder	Juveniles	Continental shelf and estuaries from Cape Cod, Massachusetts, to Cape Canaveral, Florida	To maximum 152	Benthic habitats, including inshore estuaries, salt marsh creeks, seagrass beds, mudflats, and open bay areas
Summer flounder	Adults	Continental shelf from Cape Cod, Massachusetts, to Cape	To maximum 152 in colder months	Benthic habitats

Species	Life Stage	Geographic Area	Depth (meters)	Habitat Type and Description
		Canaveral, Florida, including shallow coastal and estuarine waters during warmer months		
Spiny dogfish	Juveniles	Primarily the outer continental shelf and slope between Cape Hatteras and Georges Bank and in the Gulf of Maine	Deep water	Pelagic and epibenthic habitats
Spiny dogfish	Female sub-adults	Throughout the region	Wide depth range	Pelagic and epibenthic habitats
Spiny dogfish	Male sub-adults	Primarily in the Gulf of Maine and on the outer continental shelf from Georges Bank to Cape Hatteras	Wide depth range	Pelagic and epibenthic habitats
Spiny dogfish	Female adults	Throughout the region	Wide depth range	Pelagic and epibenthic habitats
Spiny dogfish	Male adults	Throughout the region	Wide depth range	Pelagic and epibenthic habitats
Thorny skate	Juveniles	Offshore Gulf of Maine, some coastal bays in the Gulf of Maine, and on the continental slope from Georges Bank to North Carolina	35-400 offshore Gulf of Maine, <35 inshore Gulf of Maine, to 900 on slope	Benthic habitats on a wide variety of bottom types, including sand, gravel, broken shells, pebbles, and soft mud
Thorny skate	Adults	Offshore Gulf of Maine and on the continental slope from Georges Bank to North Carolina	35-400 offshore Gulf of Maine, <35 inshore Gulf of Maine, to 900 on slope	Benthic habitats on a wide variety of bottom types, including sand, gravel, broken shells, pebbles, and soft mud
White hake	Juveniles	Gulf of Maine, Georges Bank, and Southern New England, including bays and estuaries in the Gulf of Maine	Mean high water - 300	Intertidal and sub-tidal estuarine and marine habitats on fine-grained, sandy substrates in eelgrass, macroalgae, and un-vegetated habitats
White hake	Adults	Gulf of Maine, including coastal bays and estuaries, and the outer continental shelf and slope	100-400 offshore Gulf of Maine, >25 inshore Gulf of Maine, to 900 on slope	Sub-tidal benthic habitats on fine-grained, muddy substrates and in mixed soft and rocky habitats
Windowpane flounder	Juveniles	Estuarine, coastal, and continental shelf waters from the Gulf of Maine to northern Florida, including bays and estuaries from Maine to Maryland	Mean high water - 60	Intertidal and sub-tidal benthic habitats on mud and sand substrates
Windowpane flounder	Adults	Estuarine, coastal, and continental shelf waters from the Gulf of Maine to Cape Hatteras, North Carolina, including bays and estuaries from Maine to Maryland	Mean high water - 70	Intertidal and sub-tidal benthic habitats on mud and sand substrates
Winter flounder	Eggs	Eastern Maine to Absecon Inlet, New Jersey (39° 22´N) and Georges Bank	0-5 south of Cape Cod, 0-70 Gulf of Maine and Georges Bank	Sub-tidal estuarine and coastal benthic habitats on mud, muddy sand, sand, gravel, submerged aquatic vegetation, and macroalgae
Winter flounder	Juveniles	Coastal Gulf of Maine, Georges Bank, and continental shelf in Southern New England and Mid-Atlantic to Absecon Inlet, New Jersey, including bays and estuaries from eastern Maine to northern New Jersey	Mean high water - 60	Intertidal and sub-tidal benthic habitats on a variety of bottom types, such as mud, sand, rocky substrates with attached macro algae, tidal wetlands, and eelgrass; young-of-the-year juveniles on muddy and sandy sediments in and

Species	Life Stage	Geographic Area	Depth (meters)	Habitat Type and Description
				adjacent to eelgrass and macroalgae, in bottom debris, and in marsh creeks
Winter flounder	Adults	Coastal Gulf of Maine, Georges Bank, and continental shelf in Southern New England and Mid-Atlantic to Absecon Inlet, New Jersey, including bays and estuaries from eastern Maine to northern New Jersey	Mean high water - 70	Intertidal and sub-tidal benthic habitats on muddy and sandy substrates, and on hard bottom on offshore banks; for spawning adults, also see eggs
Winter skate	Juveniles	Coastal waters from eastern Maine to Delaware Bay, including certain bays and estuaries from eastern Maine to Chincoteague Bay, Virginia, and on Georges Bank and the continental shelf in Southern New England and the Mid-Atlantic	0-90	Sub-tidal benthic habitats on sand and gravel substrates, are also found on mud
Winter skate	Adults	Coastal waters from eastern Maine to Delaware Bay, including certain bays and estuaries in Maine and New Hampshire, and on Georges Bank and the continental shelf in Southern New England and the Mid-Atlantic	0-80	Sub-tidal benthic habitats on sand and gravel substrates, are also found on mud
Witch flounder	Juveniles	Gulf of Maine and outer continental shelf and slope	50-400 and to 1500 on slope	Sub-tidal benthic habitats with mud and muddy sand substrates
Witch flounder	Adults	Gulf of Maine and outer continental shelf and slope	35-400 and to 1500 on slope	Sub-tidal benthic habitats with mud and muddy sand substrates
Yellowtail flounder	Juveniles	Gulf of Maine, Georges Bank, and the Mid-Atlantic, including certain bays and estuaries in the Gulf of Maine	20-80	Sub-tidal benthic habitats on sand and muddy sand
Yellowtail flounder	Adults	Gulf of Maine, Georges Bank, and the Mid-Atlantic, including certain bays and estuaries in the Gulf of Maine	25-90	Sub-tidal benthic habitats on sand and sand with mud, shell hash, gravel, and rocks

6.3.2. Fishery Impact Considerations

Only those gear types which contact the bottom impact physical habitat. The actions proposed in this document are relevant to both the commercial and recreational summer flounder and black sea bass fisheries and the commercial scup fishery. The recreational fisheries for all three species are almost exclusively hook and line fisheries. MRIP data for 2012-2016 indicate that over 99% of recreational landings were taken by hook and line for both species. Recreational hook and line gears generally have minimal impacts on physical habitat and EFH in this region (Stevenson et al. 2004). Weighted hook and line gear can contact the bottom, but the magnitude and footprint of any impacts resulting from this contact is likely minimal. Thus, the recreational fisheries are expected to have very minor or no impacts on habitat.

The commercial fisheries for all three species are primarily prosecuted with bottom trawl gear (Table 24). Otter trawl doors can create furrows in sand, mud, and gravel/rocky substrates. Studies have found furrow depths that range from 2 to 10 cm. Bottom trawl gear can also re-suspend and disperse surface sediments and can smooth topographic features. It can also result in reduced abundance, and in some cases reduced diversity, of benthic species such as nematodes,

polychaetes, and bivalves. It can also have short-term positive ecological impacts such as increased food value and increased chlorophyll production in surface sediments. The duration of these impacts varies by sediment type, depth, and frequency of the impact (e.g., a single trawl tow vs. repeated tows). Some studies documented effects that lasted only a few months. Other studies found effects that lasted up to 18 months. Impacts tend to have shorter durations in dynamic environments with less structured bottom composition compared to less dynamic environments with structured bottom. Shallower water, stronger bottom currents, more wave action, finer-grained sediments, and higher frequencies of natural disturbance are characteristics that make environments more dynamic (Stevenson et al. 2004).

Compared to otter trawls and dredges, Stevenson et al. (2004) summarized fewer studies on other bottom tending gears such as traps. Morgan and Chuenpagdee (2003) found that the impacts of bottom gill nets, traps, and longlines were generally limited to warm or shallow-water environments with rooted aquatic vegetation or live bottom environments (e.g., coral reefs). These impacts were of a lesser degree than those from bottom trawls and dredges. Eno et al. (2001) found that traps can bend, smother, and uproot sea pens in soft sediments; however, sea pen communities were largely able to recover within a few days of the impact.

The Mid-Atlantic Council developed some fishery management actions with the sole intent of protecting marine habitats. For example, in Amendment 9 to the Mackerel, Squids, and Butterfish FMP, the Council determined that bottom trawls used in Atlantic mackerel, longfin and *Illex* squid, and butterfish fisheries have the potential to adversely affect EFH for some federally-managed fisheries (MAFMC 2008). As a result of Amendment 9, closures to squid trawling were developed for portions of Lydonia and Oceanographer Canyons. Subsequent closures were implemented in these and Veatch and Norfolk Canyons to protect tilefish EFH by prohibiting all bottom trawling activity. In addition, amendment 16 to the Mackerel, Squid, and Butterfish FMP prohibits the use of all bottom-tending gear in fifteen discrete zones and one broad zone where deep sea corals are known or highly likely to occur (81 Federal Register 90246, December 14, 2016).

Actions implemented in the Summer Flounder, Scup, and Black Sea Bass FMP that affected species with overlapping EFH were considered Amendment 13 (MAFMC 2002). The analysis in Amendment 13 indicated that no management measures were needed to minimize impacts to EFH because the trawl fisheries for summer flounder, scup, and black sea bass in federal waters are conducted primarily in high energy mobile sand and bottom habitat where gear impacts are minimal and/or temporary in nature.

Table 24: Percent of reported commercial landings taken by gear category by species from 2017 VTR data.

	Summer Flounder	**Scup**	**Black Sea Bass**
Bottom otter trawls	96%	97%	73%
Pots and traps	<1%	1%	21%
Sink gillnets	<1%	1%	<1%
Handlines	<1%	<1%	4%
Other	<1% each	<1% each	<1% each

6.4. Protected Species

Numerous protected species inhabit the affected environment of the Summer Flounder, Scup, and Black Sea Bass FMP and have the potential to be affected by the proposed action (i.e., there have been observed/documented interactions in the fisheries or with gear type(s) similar to those used in the fisheries (bottom trawl, pot/trap, and hook and line gear). These species are under NMFS jurisdiction and are afforded protection under the Endangered Species Act (ESA) of 1973 and/or the Marine Mammal Protection Act (MMPA) of 1972.

Cusk, alewife, and blueback herring are NMFS "candidate species" under the ESA. Candidate species are those petitioned species for which NMFS has determined that listing may be warranted under the ESA and those species for which NMFS has initiated an ESA status review through an announcement in the Federal Register. If a species is proposed for listing the conference provisions under Section 7 of the ESA apply (see 50 CFR 402.10); however, candidate species receive no substantive or procedural protection under the ESA. As a result, these species will not be discussed further in this document; however, NMFS recommends that project proponents consider implementing conservation actions to limit the potential for adverse effects on candidate species from any proposed action. Additional information on these species can be found at: http://www.nmfs.noaa.gov/pr/species/esa/candidate.htm.

A summary of protected species and critical habitat that may occur in the affected environment is provided in Table 25, followed by sections detailing which species and critical habitat are not likely to be affected by the proposed action (section 6.4.1) and which species would be potentially affected by the proposed action (i.e., there have been observed/documented interactions in the fishery or with gear type(s) similar to those used in the fishery; section 6.4.2).

Table 25: Species protected under the ESA and/or MMPA that may occur in the affected environment of the summer flounder, scup, and black sea bass fisheries. Species italicized and in bold are MMPA strategic stocks.[4]

Species	**Status**	**Potentially affected by this action?**
Cetaceans		
North Atlantic right whale (Eubalaena glacialis)	***Endangered***	***Yes***
Humpback whale, West Indies DPS (Megaptera novaeangliae)	***Protected (MMPA)***	***Yes***
Fin whale (Balaenoptera physalus)	***Endangered***	***Yes***
Sei whale (Balaenoptera borealis)	***Endangered***	***Yes***
Blue whale (Balaenoptera musculus)	***Endangered***	***No***
Sperm whale (Physeter macrocephalus	***Endangered***	***No***
Minke whale (*Balaenoptera acutorostrata*)	Protected (MMPA)	Yes
Pilot whale (Globicephala spp.)[5]	***Protected (MMPA)***	***Yes***
Pygmy sperm whale (*Kogia breviceps*)	Protected (MMPA)	No
Dwarf sperm whale (*Kogia sima*)	Protected (MMPA)	No

[4] A strategic stock is a marine mammal stock for which: (1) the level of direct human-caused mortality exceeds the PBR level; (2) based on the best available scientific information, is declining and is likely to be listed as a threatened species under the ESA within the foreseeable future; and/or (3) is listed as threatened or endangered under the ESA, or is designated as depleted under the MMPA.

[5] Due to difficulties in identifying the species at sea, short finned (*G. melas melas*) and long finned (*G. macrorhynchus*) pilot whales are often referred to as *Globicephala spp*.

Species	Status	Potentially affected by this action?
Risso's dolphin (*Grampus griseus*)	Protected (MMPA)	Yes
Atlantic white-sided dolphin (*Lagenorhynchus acutus*)	Protected (MMPA)	Yes
Short Beaked Common dolphin (*Delphinus delphis*)	Protected (MMPA)	Yes
Atlantic Spotted dolphin (*Stenella frontalis*)	Protected (MMPA)	No
Striped dolphin (*Stenella coeruleoalba*)	Protected (MMPA)	No
Bottlenose dolphin (Tursiops truncatus)[6]	***Protected (MMPA)***	***Yes***
Harbor porpoise (*Phocoena phocoena*)	Protected (MMPA)	Yes
Sea Turtles		
Leatherback sea turtle (*Dermochelys coriacea*)	Endangered	Yes
Kemp's ridley sea turtle (*Lepidochelys kempii*)	Endangered	Yes
Green sea turtle, North Atlantic DPS (*Chelonia mydas*)	Threatened	Yes
Loggerhead sea turtle (*Caretta caretta*), Northwest Atlantic Ocean DPS	Threatened	Yes
Hawksbill sea turtle (*Eretmochelys imbricate*)	Endangered	No
Fish		
Shortnose sturgeon (*Acipenser brevirostrum*)	Endangered	No
Atlantic salmon (*Salmo salar*)	Endangered	Yes
Atlantic sturgeon *(Acipenser oxyrinchus)*		
Gulf of Maine DPS	Threatened	Yes
New York Bight, Chesapeake Bay, Carolina & South Atlantic DPS	Endangered	Yes
Cusk (*Brosme brosme)*	Candidate	Yes
Alewife *(Alosa pseudoharengus)*	Candidate	Yes
Blueback herring *(Alosa aestivalis)*	Candidate	Yes
Pinnipeds		
Harbor seal (*Phoca vitulina*)	Protected (MMPA)	Yes
Gray seal (*Halichoerus grypus*)	Protected (MMPA)	Yes
Harp seal (*Phoca groenlandicus*)	Protected (MMPA)	Yes
Hooded seal (*Cystophora cristata*)	Protected (MMPA)	Yes
Critical Habitat		
North Atlantic Right Whale	ESA (Protected)	No
Northwest Atlantic DPS of Loggerhead Sea Turtle	ESA (Protected)	No

6.4.1. Protected Species and Critical Habitat Not Likely Affected by the Proposed Action

Based on available information, it has been determined that this action is not likely to affect blue whales, sperm whales, shortnose sturgeon, Atlantic spotted dolphins, striped dolphins, pygmy sperm whales, dwarf sperm whales, or hawksbill sea turtles. Further, this action is not likely to adversely affect any critical habitat for the species listed in Table 25. This determination was made because either the occurrence of the species is not known to overlap with the summer flounder, scup, and black sea bass fisheries and/or there have never been documented interactions between the species and these fisheries (NMFS NEFSC FSB 2018; https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region; http://www.nefsc.noaa.gov/fsb/take_reports/nefop.html).

[6] This includes the Western North Atlantic Offshore, Northern Migratory Coastal, and Southern Migratory Coastal Stocks of Bottlenose Dolphins. See Hayes et al. 2017 and Hayes et al. 2018 for further details.

In the case of critical habitat, this determination has been made because the summer flounder, scup, and black sea bass fisheries will not affect the essential physical and biological features of North Atlantic right whale or loggerhead (Northwest Atlantic Ocean Distinct Population Segment, or DPS) critical habitat and, and therefore, will not result in the destruction or adverse modification of critical habitat (NMFS 2014a; NMFS 2015a,b).

6.4.2. Protected Species Potentially Affected by the Proposed Action

Table 25 provides a list of protected species of sea turtle, marine mammal, and fish species present in the affected environment of the summer flounder, scup, and black sea bass fisheries, and that may also be affected by the operation of this fishery; that is, have the potential to become entangled or bycaught in the fishing gear used to prosecute the fishery. To aid in the identification of MMPA protected species potentially affected by the action, the MMPA List of Fisheries and marine mammal stock assessment reports for the Atlantic Region were referenced (https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region;https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-protection-act-list-fisheries).

To aid in identifying ESA listed species potentially affected by the action, the 2013 Biological Opinion issued by NMFS on the operation of seven commercial fisheries, including the summer flounder, scup, and black sea bass FMP, and its impact on ESA listed species was referenced (NMFS 2013). The 2013 Opinion, which considered the best available information on ESA listed species and observed or documented ESA listed species interactions with gear types used to prosecute the 7 FMPs (e.g., gillnet, bottom trawl, and pot/trap), concluded that the seven fisheries may adversely affect, but are not likely to jeopardize the continued existence of any ESA listed species. The Opinion included an incidental take statement (ITS) authorizing the take of specific numbers of ESA listed species of sea turtles, Atlantic salmon, and Atlantic sturgeon.[7] Reasonable and prudent measures and terms and conditions were also issued with the ITS to minimize impacts of any incidental take

Until recently, the 2013 Opinion remained in effect; however, new information on North Atlantic right whales may reveal effects of the fisheries analyzed in the 2013 Opinion that may not have been previously considered (Pettis et al. 2018; Pace et al. 2017). As a result, per an October 17, 2017, ESA 7(a)(2)/7(d) memo issued by NMFS, the 2013 Opinion has been reinitiated. However, the October 17, 2017 memo concludes that allowing these fisheries to continue during the reinitiation period will not increase the likelihood of interactions with ESA listed species above the amount that would otherwise occur if consultation had not been reinitiated, and therefore, the continuation of these fisheries during the reinitiation period would not be likely to jeopardize the continued existence of any ESA listed species.

The primary concern for both MMPA protected and ESA listed species is the potential for the fishery to interact (e.g., bycatch, entanglement) with these species; thus, it is necessary to consider (1) species occurrence in the affected environment of the fishery and how the fishery

[7] The 2013 Opinion did not authorize take of ESA listed species of whales because (1) an incidental take statement cannot be lawfully issued under the ESA for a marine mammal unless incidental take authorization exists for that marine mammal under the MMPA (see 16 U.S.C. § 1536(b)(4)(C)), and (2) the incidental take of ESA- listed whales by the black seabass fishery has not been authorized under section 101(a)(5) of the MMPA. However, the 2013 BiOp assessed interaction risks to these species and concluded that 7 FMPs assessed, may affect but would not jeopardize the continued existence of any ESA listed species of whales (NMFS 2013).

will overlap in time and space with this occurrence; and (2) data and observed records of protected species interaction with particular fishing gear types, in order to understand the potential risk of an interaction. Information on species occurrence in the affected environment of the summer flounder, scup, and black sea bass fisheries and on protected species interactions with specific fishery gear is provided below.

6.4.2.1. Sea Turtles

This section contains a brief summary of the occurrence and distribution of sea turtles in the affected environment of the summer flounder, scup, and black sea bass fisheries. Additional background information on the range-wide status of affected sea turtles species, as well as a description and life history of each of these species, can be found in a number of published documents, including sea turtle status reviews and biological reports (NMFS and USFWS 1995; Hirth 1997; Turtle Expert Working Group [TEWG] 1998, 2000, 2007, 2009; NMFS and USFWS 2007a, 2007b; Conant et al. 2009; NMFS and USFWS 2013b; NMFS and USFWS 2015; Seminoff et al. 2015), and recovery plans for the loggerhead sea turtle (Northwest Atlantic DPS; NMFS and USFWS 2008), leatherback sea turtle (NMFS and USFWS 1992, 1998a), Kemp's ridley sea turtle (NMFS *et al.* 2011), and green sea turtle (NMFS and USFWS 1991, 1998b).

A general overview of sea turtle occurrence and distribution in waters of the Northwest Atlantic Ocean is provided below to assist in understanding how the summer flounder fishery may overlap in time and space with sea turtles. Maps depicting the range wide distribution and occurrence of sea turtles in the Greater Atlantic Region can be found at the following websites: https://www.greateratlantic.fisheries.noaa.gov/protected/section7/listing/index.html; http://marinecadastre.gov/; and, http://seamap.env.duke.edu/.

Hard-shelled Sea Turtles

In U.S. Northwest Atlantic waters, hard-shelled turtles commonly occur throughout the continental shelf from Florida to Cape Cod, Massachusetts, although their presence varies with the seasons due to changes in water temperature (Shoop and Kenney 1992; Epperly *et al.* 1995a, 1995b; Braun and Epperly 1996; Mitchell *et al.* 2003; Braun-McNeill *et al.* 2008; TEWG 2009). While hard-shelled turtles are most common south of Cape Cod, MA, they are known to occur in the Gulf of Maine. Loggerheads, the most common hard-shelled sea turtle in the Greater Atlantic Region, feed as far north as southern Canada. Loggerheads have been observed in waters with surface temperatures of 7 °C to 30 °C, but water temperatures ≥11 °C are most favorable (Shoop and Kenney 1992; Epperly *et al.* 1995b). Sea turtle presence in U.S. Atlantic waters is also influenced by water depth. While hard-shelled turtles occur in waters from the beach to beyond the continental shelf, they are most commonly found in neritic waters of the inner continental shelf (Mitchell *et al.* 2003; Braun-McNeill and Epperly 2002; Morreale and Standora 2005; Blumenthal *et al.* 2006; Hawkes *et al.* 2006; McClellan and Read 2007; Mansfield *et al.* 2009; Hawkes *et al.* 2011; Griffin *et al.* 2013).

Hard-shelled sea turtles occur year-round in waters off Cape Hatteras, North Carolina and south. As coastal water temperatures warm in the spring, loggerheads begin to migrate to inshore waters of the southeast United States and also move up the Atlantic Coast (Epperly *et al.* 1995a, 1995b, 1995c; Braun-McNeill and Epperly 2002; Morreale and Standora 2005; Griffin *et al.* 2013), occurring in Virginia foraging areas as early as late April and on the most northern foraging grounds in the Gulf of Maine in June (Shoop and Kenney 1992). The trend is reversed in the fall as water temperatures cool. The large majority leave the Gulf of Maine by September,

but some remain in Mid-Atlantic and Northeast areas until late fall. By December, sea turtles have migrated south to waters offshore of NC, particularly south of Cape Hatteras, and further south (Shoop and Kenney 1992; Epperly *et al.* 1995b; Hawkes *et al.* 2011; Griffin *et al.* 2013).

Leatherback Sea Turtles

Leatherbacks, a pelagic species, are known to use coastal waters of the U.S. continental shelf and to have a greater tolerance for colder water than hard-shelled sea turtles (James *et al.* 2005; Eckert *et al.* 2006; Murphy *et al.* 2006; NMFS and USFWS 2013b; Dodge *et al.* 2014). Leatherback sea turtles engage in routine migrations between northern temperate and tropical waters (NMFS and USFWS 1992; James *et al.* 2005; James *et al*. 2006; Dodge *et al.* 2014). They are found in more northern waters (i.e., Gulf of Maine) later in the year (i.e., similar time frame as hard-shelled sea turtles), with most leaving the Northwest Atlantic shelves by mid-November (James *et al.* 2005; James *et al*. 2006; Dodge *et al.* 2014).

6.4.2.2. Large Whales

Large whales, such as humpback, North Atlantic right, fin, sei, and minke whales are found throughout the waters of the Northwest Atlantic Ocean. In general, these species follow an annual pattern of migration between low latitude (south of 35°N) wintering/calving grounds and high latitude spring/summer foraging grounds (primarily north of 41°N; Hayes et al. 2017; Hayes et al. 2018; NMFS 1991, 2005, 2010, 2011a, 2012). This is a simplification of whale movements, particularly as it relates to winter movements. It is unknown if all individuals of a population migrate to low latitudes in the winter, although increasing evidence suggests that for some species (e.g., right and humpback whales), some portion of the population remains in higher latitudes throughout the winter (Brown et al. 2002; Clapham et al. 1993; Cole et al. 2013; Khan et al. 2010, 2011, 2012; Khan et al. 2009; NOAA 2008; Swingle et al. 1993; Vu et al. 2012; Hayes et al. 2017; Hayes et al. 2018). Although further research is needed to provide a clearer understanding of large whale movements and distribution in the winter, the distribution and movements of large whales to foraging grounds in the spring/summer is well understood. Large whales consistently return to these foraging areas each year, therefore these areas can be considered important areas for whales (Baumgartner et al. 2003; Baumgartner & Mate 2003; Brown et al. 2002; Kenney & Hartley 2001; Kenney et al. 1986; Kenney et al. 1995; Mayo & Marx 1990; Payne et al. 1986; Payne et al. 1990; Schilling et al. 1992). For additional information on the biology, status, and range wide distribution of whale species, see the marine mammal stock assessment reports provided at: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region.

6.4.2.3. Small Cetaceans and Pinnipeds

Table 25 lists the small cetaceans and pinnipeds that may occur in the affected environment of the summer flounder, scup, and black sea bass fisheries. Small cetaceans can be found throughout the year in the Northwest Atlantic Ocean; however, within this range, there are seasonal shifts in species distribution and abundance. Pinnipeds are primarily found throughout the year or seasonally from New Jersey to Maine; however, increasing evidence indicates that some species (e.g., harbor seals) may be extending their range seasonally into waters as far south as Cape Hatteras, North Carolina (35°N). For additional information on the biology and range wide distribution of each species of small cetacean and pinniped in Table 25, see the marine mammal stock assessment reports provided at:

https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region.

6.4.2.4. Atlantic Sturgeon

The marine range of U.S. Atlantic sturgeon extends from Labrador, Canada, to Cape Canaveral, Florida. All five DPSs of Atlantic sturgeon have the potential to be located anywhere in this marine range (ASSRT 2007; Dovel and Berggren 1983; Dadswell et al. 1984; Kynard et al. 2000; Stein et al. 2004a; Dadswell 2006; Laney et al. 2007; Dunton et al. 2010, 2015; Erickson et al. 2011; Wirgin et al. 2012; Waldman et al. 2013; O'Leary et al. 2014; Wirgin et al. 2015a,b; ASMFC 2017b). Based on fishery-independent and dependent data, as well as data collected from tracking and tagging studies, in the marine environment, Atlantic sturgeon appear to primarily occur inshore of the 50 meter depth contour (Stein et al. 2004 a,b; Erickson et al. 2011; Dunton et al. 2010); however, Atlantic sturgeon are not restricted to these depths, as excursions into deeper continental shelf waters have been documented (Timoshkin 1968; Collins and Smith 1997; Stein et al. 2004a,b; Dunton et al. 2010; Erickson et al. 2011). Data from fishery-independent surveys and tagging and tracking studies also indicate that Atlantic sturgeon may undertake seasonal movements along the coast (Dunton et al. 2010; Erickson et al. 2011; Wipplehauser 2012); however, there is no evidence to date that all Atlantic sturgeon make these seasonal movements and therefore, may be present throughout the marine environment throughout the year. For additional information on the biology, status, and range wide distribution of each distinct population segment (DPS) of Atlantic sturgeon please refer to 77 FR 5880 and 77 FR 5914, as well as the Atlantic Sturgeon Status Review Team's (ASSRT) 2007 status review of Atlantic sturgeon (ASSRT 2007) and the Atlantic States Marine Fisheries Commission 2017 Atlantic Sturgeon Benchmark Stock Assessment and Peer Review Report (ASMFC 2017b).

6.4.2.5. Atlantic Salmon

The wild populations of Atlantic salmon are listed as endangered under the ESA. Their freshwater range occurs in the watersheds from the Androscoggin River northward along the Maine coast to the Dennys River, while the marine range of the GOM DPS extends from the GOM (primarily northern portion of the GOM), to the coast of Greenland (NMFS and USFWS 2005, 2016; Fay et al. 2006). In general, smolts, post-smolts, and adult Atlantic salmon may be present in the GOM and coastal waters of Maine in the spring (beginning in April), and adults may be present throughout the summer and fall months (Baum 1997; Fay et al. 2006; USASAC 2013; Hyvarinen et al. 2006; Lacroix and McCurdy 1996; Lacroix et al. 2004, 2005; Reddin 1985; Reddin and Short 1991; Reddin and Friedland 1993; Sheehan et al. 2012; NMFS and USFWS 2005, 2016; Fay et al. 2006). For additional information on the on the biology, status, and range wide distribution of the GOM DPS of Atlantic salmon please refer to NMFS and USFWS 2005, 2016; and Fay et al. 2006.

6.4.3. Gear Interactions with Protected Species

Protected species are vulnerable to interactions with various types of fishing gear, with interaction risks associated with gear type, quantity, and soak or tow time. Available information on gear interactions with a given species (or species group) is provided in the sections below. These sections are not a comprehensive review of all fishing gear types known to interact with a given species; emphasis is only being placed on the primary gear types used to prosecute the

summer flounder, scup, and black sea bass fisheries (i.e., recreational: hook and line; commercial: bottom trawl gear, for all three species and pot/trap gear for black sea bass).

6.4.3.1. Recreational Fisheries Interactions

Recreational summer flounder, scup, and black sea bass fisheries are primarily prosecuted with rod and reel and handline (i.e., hook and line gear). In the absence of an observer program for recreational fisheries, records of recreational hook and line interactions with protected resources are limited. However, as a dedicated observer program exists for all commercial fisheries, there is a wealth of information on observed protected species interactions with all fishing gear types and years of data assessing resultant population level effects of these interactions. Other sources of information, such as state fishing records, stranding databases, and marine mammal stock assessment reports, provide additional information that can assist in better understanding hook and line interaction risks to protected species.

Large whales are known to interact with hook and line gear; however, in the most recent (2011-2015) mortality and serious injury determinations for baleen whales, the majority of cases identified with confirmed hook and line or monofilament entanglement did not result in the serious injury or mortality to the whale (89.3% observed/reported whales had a serious injury value of 0; 10.7% had a serious injury value of 0.75; none of the cases resulted in mortality; Henry et al. 2017).[8] In fact, 85.7% of the whales observed or reported with a hook/line or monofilament entanglement were resighted gear free and healthy; confirmation of the health of the other remaining whales remain unknown as no resightings had been made over the timeframe of the assessment (Henry et al. 2017). Based on this information, while large whale interactions with hook and line gear are possible, there is a low probability that an interaction will result in serious injury or mortality to any large whale species. Therefore, relative to other gear types, such as fixed gear, hook and line gear represents a low source serious injury or mortality to any large whale (Henry *et al*. 2017).

Table 25 provides a list of small cetaceans and pinnipeds that will occur in the affected environment of the relevant fisheries. Of these species, only bottlenose dolphin stocks have been identified (primarily through stranding records/data) as entangled in hook and line gear. In some cases, these entanglements have resulted in the serious injury or mortality to the animal. Specifically, based on stranding data from 2007-2013, estimated mean annual mortality for each bottlenose stock due to interactions with hook and line gear was approximately one animal (Waring et al. 2014; Waring et al. 2016; Palmer 2017).[9] Based on this, although interactions with

[8] Any injury leading to a significant health decline (e.g., skin discoloration, lesions near the nares, fat loss, increased cyamid loads) is classified as a serious injury (SI) and will result in a SI value set at 1 (Henry *et al*. 2017).

[9] Stranding data provided in Waring et al. (2015); Hayes et al. 2017; and Hayes et al. (2018) were not considered in estimating mean annual mortality as not all bottlenose dolphin stocks are addressed in these stock assessment reports. As all bottlenose dolphin stocks are considered in Waring et al. (2014a) and Waring et al. (2016), these stock assessment reports were used to estimate mean annual mortality. Estimates of mean annual mortality were calculated based on the total number of animals that stranded between 2007-2013, and that were determined to have incurred serious injuries or mortality as result of interacting with hook and line gear. In addition, any animals released alive with no serious injuries were not included in the estimate. Also, if maximum or minimum number of animals stranded were provided, to be conservative, we considered the maximum estimated number in calculating our mean annual estimate of mortality.

hook and line gear are possible, relative to other gear types, such as trawl gear, hook and line gear represents a low source serious injury or mortality to any bottlenose dolphin stock.

ESA listed species of sea turtles are known to interact with hook and line gear, particularly in nearshore southern waters (e.g., Virginia, south; NMFS 2013; STDN 2016; Palmer 2017). The impacts of these interactions on sea turtle populations is still under investigation, thus no conclusions can currently be made on the impact of hook and line gear on the continued survival of sea turtle populations. However, as serious injury and mortality to sea turtles can be incurred by hook and line gear interactions, hook and line gear does pose a risk to these species.

ESA-listed species of Atlantic sturgeon are known to interact with hook and line gear, particularly in nearshore waters from the Gulf Maine to Southern New England (NMFS 2013; ASMFC 2017). Injury and mortality to Atlantic sturgeon can be incurred by hook and line gear interactions, and therefore, can pose a risk to these species. However, the extent to which these interactions are impacting Atlantic sturgeon DPSs is still under investigation and therefore, no conclusions can currently be made on the impact of hook and line gear on the continued survival of Atlantic sturgeon DPSs (NMFS 2013; NMFS 2011b; ASMFC 2017).

There have been no observed/documented interactions between Atlantic salmon and hook and line gear (NMFS NEFSC FSB 2018). Based on this information, hook and line gear are not expected to pose an interaction risk to any Atlantic salmon and therefore, are not expected to be source of injury or mortality to this species.

6.4.3.2. Commercial Fisheries Interactions

According to NMFS VTR data, the commercial summer flounder, scup, and black sea bass fisheries are fishery is primarily prosecuted with bottom trawl gear (about 96% from bottom trawls for summer flounder, about 97% for scup, and about 73% for black sea bass). For summer flounder and scup, other commercial gear types account for very little landings (1% or less of the coastwide annual landings for each other gear type). For black sea bass, other gear types are more common, including about 21% of the landings originating from pot/trap gear, and about 4% from handline gear.

Available information on gear interactions with a given species (or species group) is provided in the sections below. These sections are not a comprehensive review of all fishing gear types known to interact with a given species; emphasis is only being placed on the primary gear types used in the summer flounder, scup, and black sea bass fisheries and their associated interaction risk to the species under consideration.

6.4.3.2.1. Sea Turtles

Bottom Trawl Gear: Sea turtles are known to interact with bottom trawl gear. Most of the observed sea turtle interactions with bottom trawl gear have occurred in the Mid-Atlantic, although there have been some sea turtle interactions with trawl gear observed on Georges Bank. As few sea turtle interactions have been observed outside the Mid-Atlantic, there is insufficient data available to conduct a robust model-based analysis of sea turtle interactions with trawl gear to produce a bycatch estimate for these regions. As a result, the following bycatch estimates are based on observed sea turtle interactions in trawl gear in the Mid-Atlantic.

Green, Kemp's ridley, leatherback, loggerhead, and unidentified sea turtles have been documented interacting with bottom trawl gear. However, estimates are available only for loggerhead sea turtles. Warden (2011a) estimated that from 2005-2008, the average annual

loggerhead interactions in bottom trawl gear in the Mid-Atlantic[10] was 292 (CV=0.13, 95% CI=221-369), with an additional 61 loggerheads (CV=0.17, 95% CI=41-83) interacting with trawls, but released through a Turtle Excluder Device (TED). Of the 292 average annual observable loggerhead interactions, approximately 44 of those were adult equivalents (Warden 2011a).[11] Most recently, Murray (2015) estimated that from 2009-2013, the total average annual loggerhead interactions in bottom trawl gear in the Mid-Atlantic[12] was 231 (CV=0.13, 95% CI=182-298). Of the 231 average annual observable loggerhead interactions, approximately 33 of those were adult equivalents (Murray 2015). Bycatch estimates provided in Warden (2011a) and Murray (2015) represent a decrease from the average annual loggerhead bycatch in bottom otter trawls during 1996-2004, which Murray (2008) estimated at 616 sea turtles (CV=0.23, 95% CI over the nine-year period: 367-890). This decrease is likely due to decreased fishing effort in high-interaction areas (Warden 2011a). Warden (2011b), also estimated total loggerhead interactions (with bottom otter trawl gear) attributable to managed species from 2005-2008. Using NEFOP data, Warden (2011b) developed a generalized additive model of loggerhead interaction rates, which were then applied to VTRs to estimate total interactions on each VTR trip. The total loggerhead interactions on each trip were then assigned to the individual managed species that were landed on the trip (as reported in VTR data; Warden 2011b). For instance, an estimated average annual take of one loggerhead (95% CI=1-3; estimated observable, and unobservable but quantifiable) was attributed to the scup fishery, 108 loggerheads were attributed to the summer flounder fishery (95% CI=81-136), and one loggerhead was attributed to the black sea bass fishery (95% CI=0-1). Murray (2015) also provided estimates of loggerhead interactions by managed fished species from 2009-2013. Specifically, an estimated average annual take of four loggerheads (95% CI=2-7) were attributed to the scup fishery, one loggerhead was attributed to the black sea bass fishery (95% CI=1-2), and 50 loggerheads were attributed to the summer flounder fishery (95% CI=26-84) (Murray 2015).

As described above, the summer flounder fishery has a high incidence of sea turtle takes in bottom trawl gear, particularly in waters off Virginia and North Carolina. To address this issue, Turtle Excluder Devices (TEDs) have been required in the summer flounder fishery since 1992, specifically in the summer flounder fishery sea turtle protection area.[13] This area is bounded on the north by a line extending along 37°05'N (Cape Charles, VA) and on the south by a line extending out from the North Carolina-South Carolina border. Vessels north of Oregon Inlet, NC, are exempt from the TED requirement from January 15 through March 15 each year (50 CFR 223.206); while vessels operating south of Oregon Inlet, NC, are required to have TEDs year round.[14] In 2003, NMFS issued a final rule to amend the TED regulations to enhance their effectiveness in the Atlantic and Gulf Areas of the southeastern United States by requiring an

[10] Warden (2011a) defined the Mid-Atlantic as south of Cape Cod, Massachusetts, to approximately the North Carolina/South Carolina border.

[11] Adult equivalence considers the reproductive value (i.e., expected reproductive output) of the animal (Warden 2011a.b, Murray 2013, Wallace et al. 2008).

[12] Murray (2015) defined the Mid-Atlantic as the boundaries of the Mid-Atlantic Ecological Production; roughly waters west of 71°W to the North Carolina/South Carolina border)

[13] TEDs allow sea turtles to escape the trawl net, reducing injury and mortality resulting from capture in the net.

[14] For a map delineating the summer flounder fishery-sea turtle protection area, please see: http://www.greateratlantic.fisheries.noaa.gov/educational_resources/gis/data/shapefiles/Summer_Flounder_Fishery-Sea_Turtle_Protection_Area/Summer_Flounder_Fishery-Sea_Turtle_Protection_Area_MAP.pdf.

escape opening designed to exclude leatherbacks as well as large loggerhead and green turtles (68 FR 8456).

Pot/Trap Gear: Leatherback, loggerhead, green and Kemp's ridley sea turtles are known to interact with trap/pot gear. Interactions are primarily associated with entanglement in vertical lines, although sea turtles can also become entangled in groundline or surface systems. Records of stranded or entangled sea turtles indicate that fishing gear can wrap around the neck, flipper, or body of the sea turtle and severely restrict swimming or feeding (Balazs 1985; Sea Turtle Disentanglement Network and Sea Turtle Stranding and Salvage Network (STSSN) unpublished data). As a result, sea turtles can incur serious injuries and in some cases, mortality immediately or at a later time.

NMFS Northeast Region Sea Turtle Disentanglement Network's database, a component of the Sea Turtle Stranding and Salvage Network, provides the most complete dataset of sea entanglements. Based on information provided in this database, a total of 333 sea turtle entanglements in vertical line gear were reported to the Sea Turtle Disentanglement Network and NMFS GARFO between 2002 and 2016 (STDN 2016).[15] Of the 333 reports, 316 were classified as probable or confirmed vertical line gear entanglement. Out of the 316 confirmed and probable entanglement events, there were 147 cases in which the gear type associated with the entanglement could be assigned to a specific fishery. The majority of interactions involved leatherback sea turtles (130) followed by loggerhead (16), and green (1) sea turtles. Of the 130 leatherbacks, 68.5 % of the vertical line interactions involved gear associated with the lobster fishery (vertical line), 17.7 % the whelk fishery, 7.7% the sea bass fishery, 2.3 % the crab fishery, 1.5 % the conch fishery, 1.5% research, and 0.77 % whelk and lobster fishery (both trap/pots present). Of the 16 loggerheads, 56.3% involved interactions with vertical line associated with the whelk fishery and 43.8% the crab fishery. The one green sea turtle case involved an interaction with vertical line associated with the whelk fishery.

6.4.3.2.2. Atlantic Sturgeon

Bottom Trawl Gear: Atlantic sturgeon are known to interact with bottom trawl gear and have been observed (NEFOP and At-Sea Monitoring Program (ASM)) in this gear type over the last 28 years (NMFS NEFSC FSB 2018). Reviewing NEFOP observed data, since 1989, five confirmed Atlantic sturgeon have been observed in bottom otter trawl gear where the primary species being targeted was scup, seven Atlantic sturgeon have been observed in bottom otter trawl gear where the primary species being targeted was black sea bass, and 272 Atlantic sturgeon have been observed in bottom otter trawl gear where the primary species being targeted was summer flounder (NMFS NEFSC FSB 2018).

To understand the interaction risk between bottom otter trawls and Atlantic sturgeon, there are three documents that use data collected by the NEFOP to describe bycatch of Atlantic sturgeon: Stein et al. (2004b); ASMFC (2007); and Miller and Shepard (2011). None of these provide estimates of Atlantic sturgeon bycatch by DPS. Information provided in all three documents indicate that sturgeon bycatch occurs in bottom otter trawl gear, with the most recent document estimating, based on fishery observer data and VTR data from 2006-2010, that annual bycatch of Atlantic sturgeon in bottom trawl gear was 1,342 animals (Miller and Shepard 2011). Specifically, Miller and Shepard (2011) observed Atlantic sturgeon interactions in trawl gear

[15] Data for 2016 was only available through September; data through the remainder of 2016 is still being processed.

with small (< 5.5 inches) and large (≥ 5.5 inches) mesh sizes.[16] Although Atlantic sturgeon were observed to interact with trawl gear with various mesh sizes, based on observer data, Miller and Shepard (2011) concluded that, in general, trawl gear posed less of a mortality risk to Atlantic sturgeon than gillnet gear. Estimated mortality rates in gillnet gear were 20.0%, while those in otter trawl gear were 5.0% (Miller and Shepard 2011; NMFS 2013). Similar conclusions were reached in Stein et al. 2004b and ASMFC 2007. However, an important consideration to the findings of Stein *et al*. (2004b), ASMFC (2007), and Miller and Shepard (2011) is that observed mortality is considered a minimum of what actually occurs and therefore, the conclusions reached by Stein *et al*. (2004b), ASMFC (2007), and Miller and Shepard (2011) are not reflective of the total mortality associated with either gear type. As a result, until additional studies are conducted, it is remains uncertain what the overall impacts to Atlantic sturgeon survival are from trawl interactions (Beardsall et al. (2013) and therefore, trawls should not be discounted as a form of gear that poses a mortality risk to Atlantic sturgeon. Further, even if an animal is released alive, pursuant to the ESA, any Atlantic sturgeon interaction with fishing gear is considered take.

Pot/Trap Gear: To date, there have been no documented pot/trap interactions with Atlantic sturgeon (NMFS NEFSC FSB 2018).

6.4.3.2.3. Atlantic Salmon

Bottom Trawl Gear: The NEFOP and ASM Program documented a total of 15 individual salmon incidentally caught on over 60,000 observed commercial fishing trips from 1989 through August 2013 (NMFS 2013; Kocik et al. 2014). Four out of the 15 individual salmon were observed bycaught in bottom otter trawl gear, the remainder were observed in gillnet gear (Kocik, personal communication; NMFS 2013). This suggests that interactions with Atlantic salmon are rare events (NMFS 2013; Kocik et al. 2014).

Pot/Trap Gear: To date, there have been no documented pot/trap interactions with Atlantic salmon (NMFS NEFSC FSB 2018).

6.4.3.2.4. Marine Mammals

Some species of marine mammals have also been observed seriously injured or killed in trap/pot or bottom trawl gear. Pursuant to the MMPA, NMFS publishes a List of Fisheries (LOF) annually, classifying U.S. commercial fisheries into one of three categories based on the relative frequency of incidental serious injuries and/or mortalities of marine mammals in each fishery (i.e., Category I=frequent; Category II=occasional; Category III=remote likelihood or no known interactions; 83 Federal Register 5349, February 7, 2018). In the Northwest Atlantic, the 2018 LOF (83 Federal Register 5349, February 7, 2018) categorizes the commercial scup fishery as a Category II bottom trawl (Northeast and Mid-Atlantic) fishery (Table 26).

[16] The minimum mesh size bottom otter trawls targeting summer flounder, scup, and black sea bass are 5.5", 5.0", and 4.5" respectively.

Table 26: Commercial Fisheries Classification based on 2018 List of Fisheries (83 Federal Register 5349, February 7, 2018). An (*) indicates those species driving the fisheries classification.

Resource	Gears	LOF	Species Observed Seriously Injured/Killed
Summer flounder, scup, and black sea bass	Mid-Atlantic bottom trawl fishery	Cat. II	Bottlenose (offshore stock), short beaked common*, Risso's*, and white-sided dolphins; gray and harbor seals
	Northeast bottom trawl	Cat. II	Bottlenose (offshore stock), Risso's, short beaked common, and white-sided* dolphins; harbor porpoise; harbor, gray, and harp seals; long-finned pilot whales
Scup and black sea bass	Atlantic mixed species trap/pot fishery	Cat. II	Fin and humpback whales

6.4.3.2.4.1. Large Whales

Bottom Trawl Gear: With the exception of one species, there have been no observed interactions with large whales and trawl gear. The one exception is minke whales, which have been observed seriously injured and killed in bottom trawl gear. In bottom trawl gear, to date, interactions have only been observed in the northeast bottom trawl fisheries. From the period of 2008-2012, the estimated annual mortality attributed to this fishery was 7.8 minke whales for 2008 and zero minke whales from 2009-2012; no serious injuries were reported during this time (Waring *et al*. 2015). Based on this information, from 2008-2012, the estimated annual average minke whale mortality and serious injury attributed to the northeast bottom trawl fishery was 1.6 (CV=0.69) whales (Waring *et al*. 2015). Lyssikatos (2015) estimated that from 2008-2013, mean annual serious injuries and mortalities from the northeast bottom trawl fishery were 1.40 (CV=0.58) minke whales. Serious injury and mortality records for minke whales in U.S. waters from 2010-2015 showed zero interactions with bottom trawl (Northeast or Mid-Atlantic) gear (Henry *et al*. 2016, 2017; Hayes *et al*. 2017; Hayes et al. 2018).

Based on above information, trawl gear is likely to pose a low interaction risk to any large whale species. Should an interaction occur, serious injury or mortality to any large whale is possible; however, relative to other gear types (i.e., fixed gear), trawl gear represents a low source of serious injury or mortality to any large whale (Henry *et al*. 2016, 2017; Hayes *et al*. 2017; Palmer 2017; Hayes et al. 2018).

Pot/Trap Gear: The greatest entanglement risk to large whales is posed by fixed fishing gear (e.g., trap/pot gear, sink gillnet gear) with vertical or ground lines that rise into the water column (Johnson *et al*. 2005; NMFS 2014b; Kenney and Hartley 2001; Hartley *et al*. 2003; Whittingham *et al*. 2005a,b; Hayes et al. 2017; Hayes et al. 2018). The effects of entanglement to large whales range from no injury to death (NMFS 2014b; Johnson *et al*. 2005; Angliss and Demaster 1998; Moore and Van der Hoop 2012; Hayes et al. 2017; Hayes et al. 2018; Henry et al. 2017). Table

27 has confirmed human-caused injury and mortality to humpback, fin, sei, minke, and North Atlantic right whales along the Gulf of Mexico Coast, U.S. East Coast, and Atlantic Canadian Provinces from 2011 to 2015 (Henry et al. 2017). The data are specific to confirmed injury or mortality to whales from entanglement in fishing gear. As many entanglement events go unobserved, and because the gear type, fishery, and/or country of origin for reported entanglement events are often not traceable, it is important to recognize that the information likely underestimates the rate of large whale serious injury and mortality due to entanglement. Further studies looking at scar rates for right whales and humpbacks suggests that entanglements may be occurring more frequently than the observed incidences indicate (NMFS 2014b; Robbins 2009; Knowlton et al. 2012).

Table 27: Summary of confirmed human-caused injury or mortality to fin, minke, humpback, sei, and North Atlantic right whales from 2011-2015 due to entanglement in fishing gear.

Species	Total Confirmed Entanglement: Serious Injury[2]	Total Confirmed Entanglement: Non-Serious Injury	Total Confirmed Entanglement: Mortality	Entanglement Events: Total Average Annual Injury and Mortality Rate (US waters/Canadian waters/unassigned waters)
North Atlantic Right Whale	19	35	5	4.55 (0.4/0/4.15)
Humpback Whale	32	61	5	6.45 (1.5/0.3/4.65)
Fin Whale	6	2	4	1.85 (0.2/0.8/0.85)
Sei Whale	0	0	0	0
Minke Whale	20	12	22	7.75 (1.9/3.25/2.6)

Information is based on confirmed human-caused injury and mortality events along the Gulf of Mexico Coast, US East Coast, and Atlantic Canadian Provinces; it is not specific to US waters only.
[2] NMFS defines a serious injury as an injury that is more likely than not to result in mortality (http://www.nmfs.noaa.gov/pr/pdfs/serious_injury_procedure.pdf).
***Source*:** Henry *et al.* (2017)

Pursuant to the MMPA, NMFS publishes a LOF annually, classifying U.S. commercial fisheries into one of three categories based on the relative frequency of incidental serious injurious and mortalities of marine mammals in each fishery. Large whales, especially humpback, fin, minke, and North Atlantic right whales, are known to interact with Category I and II fisheries in the (Northwest) Atlantic Ocean. As fin and North Atlantic right whales are listed as endangered under the ESA, these species are considered strategic stocks under the MMPA. MMPA Section 118(f)(1) requires the preparation and implementation of a Take Reduction Plan (TRP) for any strategic marine mammal stock that interacts with Category I or II fisheries. In response to its obligations under the MMPA, in 1996, NMFS established the Atlantic Large Whale Take Reduction Team (ALWTRT) to develop a plan (Atlantic Large Whale Take Reduction Plan (ALWTRP or Plan)) to reduce serious injury to, or mortality of large whales, specifically, humpback, fin, and North Atlantic right whales, due to incidental entanglement in U.S. commercial fishing gear.[3] In 1997, the ALWTRP was implemented; however, since 1997, the Plan has been modified; recent adjustments include the Sinking Groundline Rule and Vertical Line Rules (72 FR 57104, October 5, 2007; 79 FR 36586, June 27, 2014; 79 FR 73848, December 12, 2014; 80 FR 14345, March 19, 2015; 80 FR 30367, May 28, 2015).

The ALWTRP identifies gear modification requirements and restrictions for Category I and II trap/pot fisheries in the Northeast, Mid-Atlantic, and Southeast regions of the U.S. (designated management areas); these fisheries must comply with all regulations of the ALWTRP.[17] For further details on the gear modification requirements, restrictions, and management areas under the ALWTRP see: http://www.greateratlantic.fisheries.noaa.gov/Protected/whaletrp/.

6.4.3.2.4.2. Small Cetaceans And Pinnipeds

Bottom Trawl Gear: Small cetaceans and pinnipeds are vulnerable to interactions with bottom trawl gear (Lyssikatos 2015; Chavez-Rosales et al. 2017; Hayes et al. 2017; Hayes et al. 2018; 83 Federal Register 5349 (February 7, 2018)). Based on the most recent Marine Mammal List of Fisheries (LOF) issued on February 7, 2018 (83 Federal Register 5349), Table 25 provides a list of species that have been observed (incidentally) seriously injured and/or killed by MMPA LOF Category II (occasional interactions) bottom trawl fisheries that operate in the affected environment of the summer flounder, scup, and black sea bass fisheries (Hayes et al. 2017; 83 Federal Register 5349 (February 7, 2018)).

In 2006, the Atlantic Trawl Gear Take Reduction Team was convened to address the incidental mortality and serious injury of long-finned pilot whales (*Globicephala melas*), short-finned pilot whales (*Globicephala macrorhynchus*), common dolphins (*Delphinus delphis*), and white-sided dolphins (*Lagenorhynchus acutus*) incidental to bottom and mid-water trawl fisheries operating in both the Northeast and Mid-Atlantic regions. Because none of the marine mammal stocks of concern to the Team are classified as a "strategic stock," nor do they currently interact with a Category I fishery, a take reduction plan was not necessary.[18]

In lieu of a take reduction plan, the Team agreed to develop an Atlantic Trawl Gear Take Reduction Strategy. The Strategy identifies informational and research tasks, as well as education and outreach needs the Team believes are necessary, to decrease mortalities and serious injuries of marine mammals to insignificant levels approaching zero. The Strategy also identifies several voluntary measures that can be adopted by certain trawl fishing sectors to potentially reduce the incidental capture of marine mammals. For additional details on the Strategy, please visit: http://www.greateratlantic.fisheries.noaa.gov/Protected/mmp/atgtrp/

Pot/Trap Gear: Over the past several years, observer coverage has been limited for trap/pot fisheries. In the absence of extensive observer data for these fisheries, stranding data provides the next best source of information on species interactions with trap/pot gear. Stranding data underestimates the extent of human-related mortality and serious injury because not all of the marine mammals that die or are seriously injured in human interactions are discovered, reported, or show signs of entanglement. Additionally, if gear is present, it is often difficult to definitively

[17] The fisheries currently regulated under the ALWTRP include: Northeast/Mid-Atlantic American lobster trap/pot; Atlantic blue crab trap/pot; Atlantic mixed species trap/pot; Northeast sink gillnet; Northeast anchored float gillnet; Northeast drift gillnet; Mid-Atlantic gillnet; Southeastern U.S. Atlantic shark gillnet; and Southeast Atlantic gillnet (NMFS 2014b).

[18] A strategic stock is defined under the MMPA as a marine mammal stock: for which the level of direct human-caused mortality exceeds the potential biological removal level; which, based on the best available scientific information, is declining and is likely to be listed as a threatened species under the ESA within the foreseeable future; or which is listed as a threatened or endangered species under the ESA, or is designated as depleted under the MMPA.

attribute the animal's death or serious injury to the gear interaction, or to a specific fishery. Therefore, the conclusions below should be taken with these considerations in mind.

Table 25 provides the list of small cetacean and pinniped species that may occur and be affected by the summer flounder, scup, and black sea bass fisheries. Of these species, only several bottlenose dolphin stocks have been identified as species at risk of becoming seriously injured or killed by trap/pot gear. Stranding data provides the best source of information on species interaction history with these gear types. Based on stranding data from 2007-2013, estimated mean annual mortality for each stock was less than one animal (Waring et al. 2014; Waring et al. 2016).[19] Interactions with trap/pot gear, resulting in the serious injury or mortality to small cetaceans or pinnipeds are believed to be infrequent (for bottlenose dolphin stocks) to non-existent (for all other small cetacean and pinniped species).

7. Environmental Consequences Of Alternatives

This EA analyzes the expected impacts of the alternatives on each VEC. The alternatives are compared to the current conditions of the VECs and to each other. The current conditions of the VECs are summarized in Table 28 and described in more detail in section 6. Impacts are described both in terms of their direction (negative, positive, or negligible/no impact) and their magnitude (slight, moderate, or high) based on the guidelines shown in Table 29.

As described in section 5, this action considers alternatives for recreational conservation equivalency, Block Island Sound transit, and slot limits. Given the distinct nature of these three types of management tools, the alternatives are compared within each alternative set and not across alternative sets. For example, the Block Island Sound transit alternatives are compared against each other but not against the slot limit alternatives.

The alternatives are not compared to a theoretical condition where the fisheries are not operating. These fisheries have occurred for many decades and are expected to continue into the foreseeable future. The nature and extent of the management programs for these fisheries have been examined in detail in EAs and Environmental Impact Statements (EISs) prepared for previously implemented management actions.

In general, alternatives which may result in or contribute to overfishing or an overfished status for target or non-target species are considered to have negative impacts for those species. Conversely, alternatives which maintain a positive stock status, result in decreased fishing mortality, ending overfishing, and/or rebuilding to the biomass target are considered to have positive impacts (Table 29).

[19] Stranding data provided in Waring *et al*. (2015a), Hayes et al. (2017), and Hayes et al. (2018), were not considered in estimating mean annual mortality as not all bottlenose dolphin stocks are addressed in this stock assessment report. As all bottlenose dolphin stocks are considered in Waring *et al.* (2014a) and Waring *et al*. (2016), these stock assessment reports were used to estimate mean annual mortality. Estimates of mean annual mortality were calculated based on the total number of animals that stranded between 2007-2013, and that were determined to have incurred serious injuries or mortality as result of interacting with trap/pot gear. Please note, for bottlenose dolphin stocks, Waring *et al*. (2014a) and Waring *et al*. (2016) provides two categories for trap/pot gear: (Atlantic blue) crab pot, and other pot gear. We combined the two to get an overall number of interactions associated with trap/pot gear in general. In addition, any animals released alive with no serious injuries were not included in the estimate. Also, if maximum or minimum number of animals stranded were provided, to be conservative, we considered the maximum estimated number in calculating our mean annual estimate of mortality.

Socioeconomic impacts are considered in relation to potential changes in landings, prices, revenues, fishing opportunities, and angler satisfaction. Alternatives which could lead to increased availability of target species and/or increased catch per unit effort (CPUE) could lead to increased landings. Increased landings are generally considered to have positive socioeconomic impacts because they could result in increased revenues (for commercial and/or for-hire vessels) and angler satisfaction (for recreational fishery participants); however, if an increase in landings leads to a decrease in price or a decline in SSB for any of the landed species, then negative socioeconomic impacts could also occur.

As previously stated, bottom trawls are the predominant gear type in the commercial summer flounder, scup, and black sea bass fisheries. Fish pots/traps are also important in the commercial black sea bass fishery. The recreational fisheries use hook and line almost exclusively. As described in sections 6.3.2 and 6.4.3, bottom trawl gear has a much greater potential for impacts to habitat and protected species than hook and line gear.

Alternatives that improve the quality or quantity of habitat or allow for recovery are expected to have positive impacts on habitat. Alternatives that degrade the quality or quantity, or increase disturbance of habitat are expected to have negative impacts (Table 29). A reduction in fishing effort is likely to decrease the time that fishing gear is in the water, thus reducing the potential for interactions between fishing gear and habitat. However, most areas where summer flounder, scup, and black sea bass are fished have been fished by multiple fishing fleets over many decades and are unlikely to see a measurable improvement in their condition in response to a decrease in effort for an individual fishery.

The impacts of the alternatives on protected species take into account impacts to ESA-listed species, impacts on marine mammal stocks in good condition (i.e., PBR level has not been exceeded), and marine mammal stocks that have exceeded or are in danger of exceeding their PBR level. For ESA-listed species, any action that results in interactions or take is expected to have negative impacts, including actions that reduce interactions. Actions expected to result in positive impacts on ESA-listed species include only those that contain specific measures to ensure no interactions (i.e., no take). By definition, all ESA-listed species are in poor condition and any take can negatively impact that species' recovery. The stock conditions for marine mammals not listed under the ESA varies by species; however, all are in need of protection. For marine mammal stocks that have their PBR level reached or exceeded, negative impacts would be expected from alternatives that result in the potential for interactions between fisheries and those stocks. For species that are at more sustainable levels (i.e., PBR levels have not been reached or exceeded), alternatives not expected to change fishing behavior or effort may have positive impacts by maintaining takes below the PBR level and approaching the zero mortality rate goal (Table 29).

Table 28: Recent conditions of VECs (described in more detail in section 6).

VEC		**Condition**	
		Overfishing?	**Overfished?**
Target species (section 6.1)	Summer flounder	No	No
	Scup	No	No
	Black sea bass	No	No
Non-target species (section 6.1)	Spiny dogfish	No	No
	Black sea bass	No	No
	Summer flounder	No	No
	Little skate	No	No
	Winter skate	No	No
	Clearnose skate	No	No
	Barndoor skate	No	No
	Northern sea robin	Unknown	Unknown
	Striped sea robin	Unknown	Unknown
	Tautog	No (MA/RI; DE/MD/VA) Yes (Long Island Sound; NJ/NY Bight)	No (MA/RI) Yes (Long Island Sound; NJ/NY Bight; DE/MD/VA)
	Atlantic croaker	Unknown	Unknown
	Bluefish	No	No
Human communities (section 6.2)	*Summer flounder:* Commercial and recreational landings generally declined during 2013-2017, partially in response to declining landings limits. Commercial landings averaged 9.57 million pounds during 2013-2017, with $28.37 million average ex-vessel value and an average ex-vessel price of $3.15 per pound. Recreational landings during 2013-2017 averaged 14.04 million pounds per year.* *Scup:* Commercial and recreational landings were generally stable during 2013-2017, despite variable landings limits. Commercial landings averaged 16.41 million pounds, with $10.12 million average ex-vessel value and an average ex-vessel price of $0.62 per pound. Recreational landings during 2013-2017 averaged 11.58 million pounds per year.* *Black sea bass:* Commercial and recreational landings have generally increased over the past several years. Commercial landings averaged 2.74 million pounds during 2013-2017, with $8.91 million average ex-vessel value and an average ex-vessel price of $3.27 per pound. Recreational landings during 2013-2017 averaged 8.79 million pounds per year.*		
Habitat (section 6.3)	Commercial fishing impacts are complex, variable, and typically adverse. Recreational fishing has minimal impacts. Non-fishing activities had historically negative but site-specific effects.		
Protected species (section 6.4)	Sea turtles	Leatherback and Kemp's ridley sea turtles are endangered. Loggerhead (NW Atlantic DPS) and green (North Atlantic DPS) sea turtles are threatened.	
	Fish	Atlantic salmon, shortnose sturgeon, and the New York Bight, Chesapeake, Carolina, and South Atlantic DPSs of Atlantic sturgeon are endangered. Atlantic sturgeon Gulf of Maine DPS are threatened. Cusk, alewife, and blueback herring are candidate species.	
	Large whales	All are protected under the MMPA. North Atlantic right, fin, blue, sei, and sperm whales are endangered. The ALWTRP was implemented to reduce humpback, North Atlantic right, and fin whale entanglement in sink gillnet and trap/pot vertical lines and sinking groundlines.	
	Small cetaceans	Pilot whales, dolphins, and harbor porpoise are protected under the MMPA. The Harbor Porpoise Take Reduction Plan and Bottlenose Dolphin Take Reduction Plan were implemented to reduce bycatch of these species in gillnet gear.	
	Pinnipeds	Gray, harbor, hooded, and harp seals are protected under the MMPA.	
*****According to the revised/calibrated MRIP data accessed March 2019.			

Table 29: Guidelines for defining the direction and magnitude of the impacts of alternatives on the VECs.

General Definitions				
VEC	**Resource Condition**	**Direction of Impact of Action**		
		Positive (+)	Negative (-)	No Impact (0)
Target and non-target species	Overfished status defined by the MSA	Alternatives expected to maintain biomass above the overfished threshold*	Alternatives expected to maintain or result in biomass below the overfished threshold*	Alternatives that do not impact stock status
ESA-listed protected species (endangered or threatened)	Populations at risk of extinction (endangered) or endangerment (threatened)	Alternatives that contain specific measures to ensure no interactions with protected species (i.e., no take)	Alternatives that result in interactions/take of listed species, including actions that reduce interactions	Alternatives that do not impact ESA listed species
MMPA protected species (not also ESA listed)	Stock health varies by species	Alternatives that maintain takes below PBR and approaching the Zero Mortality Rate Goal	Alternatives that result in interactions with/take of marine mammals that could result in takes above PBR	Alternatives that do not impact MMPA protected species
Physical environment / habitat	Many habitats degraded from historical effort and slow recovery time	Alternatives that improve the quality or quantity of habitat or allow for recovery	Alternatives that degrade the quality/quantity or increase disturbance of habitat	Alternatives that do not impact habitat quality
Human communities	Varies by fishery and community (some landings stable, some decreasing, some increasing)	Alternatives that increase revenue and social well-being of fishermen and/or communities	Alternatives that decrease revenue and social well-being of fishermen and/or communities	Alternatives that do not impact revenue or social well-being of fishermen and/or communities

	Magnitude of Impact	
A range of impact qualifiers is used to indicate any existing uncertainty	Negligible	To such a small degree to be indistinguishable from no impact
	Slight (sl), as in slight positive or slight negative	To a lesser degree / minor
	Moderate positive or negative	To an average degree (i.e., more than “slight”, but not “high”)
	High, as in high positive or high negative	To a substantial degree (not significant unless stated)
	Significant (in the case of an EIS)	Affecting the resource condition to a great degree, see 40 CFR 1508.27.
	Likely	Some degree of uncertainty associated with the impact

*Actions that will substantially increase or decrease stock size, but do not change a stock status may have different impacts depending on the particular action and stock. Meaningful differences between alternatives may be illustrated by using another resource attribute aside from the overfished status, but this must be justified within the impact analysis.

7.1. Impacts Of The Alternatives On Target And Non-Target Species

This section summarizes the potential impacts of the alternatives on summer flounder, scup, and/or black sea bass (depending on the alternative), as well as the non-target species in those fisheries (section 6.1.4).

7.1.1. Impacts Of Conservation Equivalency Alternatives On Target And Non-Target Species

Five alternatives related to recreational conservation equivalency were considered (alternatives 1A-1C for black sea bass and 2A-2B for summer flounder). As described in the following sections, none of these alternatives are expected to have different impacts on target and non-target species than the impacts of the RHL. There are no differences among the five conservation equivalency alternatives in terms of their impacts on target and non-target species.

7.1.1.1. Impacts of Alternative 1A (No Action On Black Sea Bass Conservation Equivalency) On Black Sea Bass And Non-Target Species

Under alternative 1A, no changes would be made to the current regulations regarding recreational black sea bass conservation equivalency. Under all black sea bass conservation equivalency alternatives (i.e., alternatives 1A - 1C), fishing effort and fishing mortality will continue to be constrained primarily by the RHL. Therefore, the impacts of these alternatives on black sea bass are not expected to be different than the impacts of the annual RHL. The expected impacts of the RHL are analyzed in a specifications document prepared by the Council each time an RHL is implemented or revised (e.g., MAFMC 2018). The RHL is based on the best available science and is intended to prevent overfishing. The black sea bass stock is currently not overfished or experiencing overfishing (section 6.1.3). As such, the RHL is expected to maintain this positive stock status and have moderate positive impacts on black sea bass. These positive impacts are expected to be maintained under all black sea bass conservation equivalency alternatives, including the no action alternative. These impacts are not expected to be different (i.e., not more positive) than the impacts of the RHL on the stock in recent years.

The impacts of the RHL on non-target species vary by species. As described in section 6.1.4, with the exception of some tautog stocks, non-target species in the recreational black sea bass fishery are not overfished and overfishing is not occurring. The status of Atlantic croaker and sea robins is unknown. In general, the RHL is not expected to impact the stock status of any non-target species. As such, alternative 1A is expected to have slight positive impacts for most non-target species, as most are not overfished or experiencing overfishing. It is expected to have slight negative impacts on the stocks of tautog that are overfished and experiencing overfishing by maintaining that stock status. These impacts are expected to be slight, as opposed to moderate or high negative because non-target species generally make up a small proportion of the recreational catch in the recreational black sea bass fishery and because recreational discard mortality rates are generally low (section 6.1.4).

The impacts of alternatives 1A-1C on black sea bass and non-target species are expected to be largely identical. Under all three alternatives, recreational management measures at the state and federal level will be developed to ensure that recreational black sea bass harvest from Maine through Cape Hatteras, North Carolina does not exceed the RHL. As shown in Table 18, recreational harvest has been close to or exceeded the RHL in most recent years. An increase in fishing effort and fishing mortality is not expected under any of the conservation equivalency

alternatives, compared to current conditions, because this could lead to an RHL overage. Under all conservation equivalency alternatives, state and federal recreational minimum fish size, possession limit, and season regulations will be implemented to help ensure that the RHL is not exceeded.

7.1.1.2. Impacts of Alternative 1B (Black Sea Bass Conservation Equivalency Using the Current Summer Flounder Process; Preferred) On Target And Non-Target Species

Alternative 1B proposes updating the Council and Commission FMPs to allow conservation equivalency to be used for the recreational black sea bass fishery in future years based on the process currently used for summer flounder (section 5.1.2). This is a preferred alternative.

As previously stated, under all black sea bass conservation equivalency alternatives (i.e., alternatives 1A - 1C), fishing effort and fishing mortality will continue to be constrained primarily by the RHL. Therefore, the impacts of these alternatives on black sea bass and non-target species are not expected to be different than the impacts of the RHL, which are analyzed in a specifications document prepared by the Council each time an RHL is implemented or revised (e.g., MAFMC 2018). The RHL is based on the best available science and is intended to prevent overfishing. The black sea bass stock is currently not overfished or experiencing overfishing (section 6.1.3). As such, the RHL is expected to maintain this positive stock status and have moderate positive impacts on black sea bass. These moderate positive impacts are expected to be maintained under all black sea bass conservation equivalency alternatives.

The impacts of the RHL on non-target species vary by species. As described in section 6.1.4, with the exception of some tautog stocks, non-target species in the recreational black sea bass fishery are not overfished and overfishing is not occurring. The status of Atlantic croaker and sea robins is unknown. The RHL is generally not expected to impact the stock status of any non-target species. As such, alternative 1B is expected to have slight positive impacts for most non-target species, as most are not overfished or experiencing overfishing. It is expected to have slight negative impacts on the stocks of tautog that are overfished and experiencing overfishing by maintaining that stock status. These impacts are expected to be slight, as opposed to moderate or high negative because non-target species generally make up a small proportion of the recreational catch in the recreational black sea bass fishery and because recreational discard mortality rates are generally low (section 6.1.4).

The impacts of alternatives 1A-1C on black sea bass and non-target species are expected to be largely identical. Under all three alternatives, recreational management measures at the state and federal level will be developed to ensure that recreational black sea bass harvest from Maine through Cape Hatteras, North Carolina does not exceed the RHL. As shown in Table 18, recreational harvest has been close to or exceeded the RHL in most recent years. An increase in fishing effort and fishing mortality is not expected under any of the conservation equivalency alternatives, compared to current conditions, because this could lead to an RHL overage. Under all conservation equivalency alternatives, state and federal recreational minimum fish size, possession limit, and season regulations will be implemented to help ensure that the RHL is not exceeded.

7.1.1.3. Impacts Of Alternative 1C (Black Sea Bass Conservation Equivalency Using The Current Summer Flounder Process With Rollover) On Target And Non-Target Species

Alternative 1C proposes updating the Council and Commission FMPs to allow conservation equivalency to be used for the recreational black sea bass fishery in future years based on the process currently used for summer flounder. Alternative 1C would also allow conservation equivalency to roll over from one year to the next, when appropriate (section 5.1.3).

As previously stated, under all black sea bass conservation equivalency alternatives (i.e., alternatives 1A - 1C), fishing effort and fishing mortality will continue to be constrained primarily by the RHL. Therefore, the impacts of these alternatives on black sea bass and non-target species are expected to derive primarily from the RHL. The impacts of the RHL are analyzed in a specifications document prepared by the Council each time an RHL is implemented or revised (e.g., MAFMC 2018). The RHL is based on the best available science and is intended to prevent overfishing. The black sea bass stock is currently not overfished or experiencing overfishing (section 6.1.3). As such, the RHL is expected to maintain this positive stock status and have moderate positive impacts on black sea bass. These moderate positive impacts are expected to be maintained under all black sea bass conservation equivalency alternatives. The impacts on non-target species range from slight negative to slight positive and vary by species and expected changes in fishing effort under the RHL, as described in more detail in section 7.1.1.1.

Alternative 1C would allow for conservation equivalency rollover. When considered separately from the use of conservation equivalency itself, conservation equivalency rollover is largely administrative in nature. As such, it is not expected to result in any changes in fishing effort or fishing mortality and is not expected to have any direct impacts on black sea bass or non-target species. There may be some slight negative indirect impacts if conservation equivalency rollover creates challenges for constraining harvest to the RHL in the event that the precautionary default measures are needed, as described in more detail in section 5.1.3. This is expected to be a rare occurrence based on the history of summer flounder conservation equivalency (i.e., precautionary default measures have never been used for summer flounder).

The impacts of alternatives 1A-1C on black sea bass and non-target species are expected to be largely identical. Under all three alternatives, recreational management measures at the state and federal level will be developed to ensure that recreational black sea bass harvest from Maine through Cape Hatteras, North Carolina does not exceed the RHL. As shown in Table 18, recreational harvest has been close to or exceeded the RHL in most recent years. An increase in fishing effort and fishing mortality is not expected under any of the conservation equivalency alternatives, compared to current conditions, because this could lead to an RHL overage. Under all conservation equivalency alternatives, state and federal recreational minimum fish size, possession limit, and season regulations will be implemented to help ensure that the RHL is not exceeded.

7.1.1.4. Impacts of Alternative 2A (No Action On Summer Flounder Conservation Equivalency Rollover; Preferred) On Target And Non-Target Species

When considered separately from the use of conservation equivalency itself, the alternatives for conservation equivalency rollover for summer flounder (alternatives 2A and 2B) are both administrative in nature. As such, they are not expected to result in any changes in fishing effort

or fishing mortality and are not expected to have any direct or indirect impacts on summer flounder or non-target species.

7.1.1.5. Impacts Of Alternative 2B (Summer Flounder Conservation Equivalency Rollover) On Target And Non-Target Species

When considered separately from the use of conservation equivalency itself, the alternatives for conservation equivalency rollover for summer flounder (alternatives 2A and 2B) are both administrative in nature. As such, they are not expected to result in any changes in fishing effort or fishing mortality and are not expected to have any direct or indirect impacts on summer flounder or non-target species.

7.1.2. Impacts Of Block Island Sound Transit Alternatives On Target And Non-Target Species

The Council considered two alternatives for Block Island Sound transit provisions, one of which includes four sub-alternatives. All but the no action alternative (3A) could lead to a slight increase in fishing effort and fishing mortality in the Rhode Island state waters around Block Island, compared to current conditions. The following list ranks all possible combinations of sub-alternatives from the highest potential increase in fishing effort to the lowest.

- Alternatives 3B (allow transit), 3B-2 (in the striped bass transit area), and 3B-4 (for commercial and recreational fishermen/vessels) - this is the preferred combination of Block Island Sound transit alternatives.
- Alternatives 3B (allow transit), 3B-2 (in the striped bass transit area), and 3B-3 (for recreational fisheries only).
- Alternatives 3B (allow transit), 3B-1 (in RI-specific area) and 3B-4 (for commercial and recreational fishermen/vessels).
- Alternatives 3B (allow transit), 3B-1 (in RI-specific area) and 3B-3 (for recreational fisheries only).
- Alternative 3A (no action).

There is some uncertainty regarding the relative ranking of the combination of alternatives 3B, 3B-2, and 3B-3 (allow transit in the striped bass transit area for recreational fisheries only) compared to the combination of alternatives 3B, 3B-1, and 3B-4 (allow transit in the RI-specific area for commercial and recreational fishermen/vessels). Specifically, there is some uncertainty regarding the relative importance of the transit area compared to which fisheries could operate under the transit provisions. A larger transit area for recreational fisheries only could impact a greater number of vessels compared to the smaller transit area for commercial and recreational fisheries. Consideration should also be given to different catch and discard rates on different types of vessels (e.g., private recreational vs. party boats vs. commercial boats) and different discard mortality rates for different gear types. For example, scup and black sea bass are assumed to have 100% discard mortality and summer flounder 80% discard mortality when caught with bottom trawl gear (the dominant gear type in the commercial fisheries) and 10-15% discard mortality rates in the recreational fisheries (i.e., 10% for summer flounder and 15% for scup and black sea bass; NEFSC 2015, NEFSC 2017, NEFSC 2019). The number of potentially impacted vessels and differing catch and discard rates have not been precisely quantified. Depending on the alternative, the potentially impacted vessels would include recreational, or recreational and commercial, vessels permitted to fish in the state waters of Rhode Island, Massachusetts, Connecticut, and/or New York and not also permitted to fish in federal waters for

summer flounder, scup, and black sea bass. For recreational vessels, this number can vary throughout the year as the federal party/charter permits for these species are open access and can be dropped and later reobtained throughout the year.

Although slight differences in fishing effort are possible under the various combinations of alternatives, fishing effort and fishing mortality will continue to be constrained primarily by the RHL and commercial quota under all alternatives. Therefore, the impacts of these alternatives on target and non-target species are not expected to be notably different than the impacts of the RHL and commercial quota, which are analyzed in a specifications document prepared by the Council each time they are implemented or revised (e.g., MAFMC 2018). These measures are based on the best available science and are intended to prevent overfishing; thus, they are generally expected to have positive impacts on target species. The potential impacts to non-target species vary by species and the direction and magnitude of any expected changes in fishing effort. None of the Block Island Sound transit alternatives are expected to change these impacts.

The expected impacts of each sub-alternative on target and non-target species are summarized below.

7.1.2.1. Impacts Of Alternative 3A (No Action On Block Island Sound Transit) On Target And Non-Target Species

Under alternative 3A, no changes would be made to current regulations. Fishing effort and fishing mortality would be expected to be similar to recent levels and would continue to be constrained primarily by the RHL and commercial quota. Fishing effort and fishing mortality may change in the future in response to changes in the RHL and quota, and other factors (e.g., weather, market factors, regulations in other fisheries). The impacts of any changes to the RHL and quota will be analyzed in future specifications documents.

As previously stated, the RHL and commercial quota for all three species are based on the best available science and are intended to prevent overfishing. According to the most recent stock assessment products, none of these three species are overfished or experiencing overfishing (section 6.1). The positive stock status of all three species are expected to be maintained under alternative 3A. As such, alternative 3A is expected to have moderate positive impacts on target species.

Impacts to non-target species vary by species and are expected to be slight positive for most non-target species, as most are currently not overfished or experiencing overfishing and alternative 3A is not expected to change that stock status. Impacts may be slight negative for those non-target species which do not have a positive stock status. These impacts are expected to be slight, as opposed to moderate or high, negative because non-target species generally make up a small proportion of the catch in summer flounder, scup, and black sea bass fisheries (section 6.1.4) and because the Block Island Sound transit alternatives only impact the fisheries in the Rhode Island state waters around Block Island.

7.1.2.2. Impacts Of Alternative 3B (Block Island Sound Transit; Preferred) On Target And Non-Target Species

Alternative 3B would allow certain vessels to transit a defined area in Block Island Sound while complying with state regulations for summer flounder, scup, and black sea bass (section 5.3.2). In situations where federal waters regulations are more restrictive that state waters regulations, this would allow for increased opportunities for fishermen to retain summer flounder, scup, and

black sea bass caught in the Rhode Island state waters off Block Island, compared to the no action alternative (alternative 3A). As such, compared to the no action alternative, alternative 3B could lead to a slight increase in fishing effort in the Rhode Island state waters around Block Island.

The degree of this increase in fishing effort depends on the sub-alternatives chosen. Specifically, the combination of sub-alternatives 3B-2 (transit in the striped bass transit area) and 3B-4 (for commercial and recreational fisheries) will result in the greatest potential increase in fishing effort and the combination of sub-alternatives 3B-1 (transit in the RI-specific area) and 3B-3 (for recreational fisheries only) will result in the lowest potential increase in fishing effort (section 7.1.2).

As previously stated, fishing effort and fishing mortality will continue to be constrained primarily by the RHL and commercial quota under this alternative. The RHLs and commercial quotas for all three species are based on the best available science and are intended to prevent overfishing. According to the most recent stock assessment products, none of these three species are overfished or experiencing overfishing (section 6.1). The positive stock status of all three species are expected to be maintained under alternative 3B. As such, alternative 3B is expected to have moderate positive impacts on target species.

Impacts to non-target species vary by species and are expected to be slight positive for most non-target species, as most are currently not overfished or experiencing overfishing (section 6.1.4). The potential increase in fishing effort under alternative 3B is not expected to be great enough to change the stock status of any non-target species. Impacts may be slight negative for those non-target species which do not have a positive stock status. These impacts are expected to be slight, as opposed to moderate or high negative because non-target species generally make up a small proportion of the catch in summer flounder, scup, and black sea bass fisheries (section 6.1.4) and because the potential increase in fishing effort under this alternative will take place only in the Rhode Island state waters around Block Island.

7.1.2.2.1. Impacts Of Alternative 3B-1 (Block Island Sound Transit In Rhode Island Specific Area) On Target And Non-Target Species

Sub-alternative 3B-1 assumes that alternative 3B (allow transit in Block Island Sound) is selected as a preferred alternative. The impacts of alternative 3B on target and non-target species are described in section 7.1.2.2. Sub-alternative 3B-1 would allow transit in a small corridor connecting Block Island to mainland Rhode Island, as shown in Figure 2 in section 5.3.2.1. Given the size and location of this transit area, it would likely be used mostly by vessels returning to mainland Rhode Island. This transit area is not conveniently placed for vessels returning to Connecticut, New York, or Massachusetts. For this reason, sub-alternative 3B-1 is expected to lead to a lesser increase in fishing effort compared to sub-alternative 3B-2, which includes a larger transit area which could more easily be used by vessels returning to Connecticut, New York, or Massachusetts (section 5.3.2.2).

As stated in previous sections, fishing effort and fishing mortality will continue to be constrained primarily by the RHL and commercial quota under this alternative. The RHLs and commercial quotas for all three species are based on the best available science and are intended to prevent overfishing. According to the most recent stock assessment products, none of these three species are overfished or experiencing overfishing (section 6.1). The positive stock status of all three

species are expected to be maintained under alternative 3B-1. As such, alternative 3B-1 is expected to have moderate positive impacts on target species.

Impacts to non-target species vary by species and are expected to be slight positive for most non-target species, as most are currently not overfished or experiencing overfishing. The potential increase in fishing effort under alternative 3B-1 is not expected to be great enough to change the stock status of any non-target species. Impacts may be slight negative for those non-target species which do not have a positive stock status. These impacts are expected to be slight, as opposed to moderate or high, negative because non-target species generally make up a small proportion of the catch in summer flounder, scup, and black sea bass fisheries (section 6.1.4) and because the potential increase in fishing effort under this alternative will take place only in the Rhode Island state waters around Block Island.

7.1.2.2.2. Impacts Of Alternative 3B-2 (Block Island Sound Transit In Striped Bass Transit Area; Preferred) On Target And Non-Target Species

Sub-alternative 3B-2 assumes that alternative 3B (allow transit in Block Island Sound) is selected as a preferred alternative. The impacts of alternative 3B on target and non-target species are described in section 7.1.2.2. Sub-alternative 3B-2 would allow transit in the same area where transit is currently allowed for striped bass (Figure 3, section 5.3.2.2). This is a preferred alternative. This transit area could easily be used by vessels returning to Rhode Island, Connecticut, New York, or Massachusetts. For this reason, sub-alternative 3B-2 is expected to lead to a greater increase in fishing effort compared to sub-alternative 3B-1, which includes a much smaller transit area which could not easily be used by vessels returning to states other than Rhode Island (section 5.3.2.1).

As stated in previous sections, fishing effort and fishing mortality will continue to be primarily constrained by the RHL and commercial quota under this alternative. The RHLs and commercial quotas for all three species are based on the best available science and are intended to prevent overfishing. According to the most recent stock assessment products, none of these three species are overfished or experiencing overfishing (section 6.1). The positive stock status of all three species are expected to be maintained under alternative 3B-2. As such, alternative 3B-2 is expected to have moderate positive impacts on target species.

Impacts to non-target species vary by species and are expected to be slight positive for most non-target species, as most are currently not overfished or experiencing overfishing. The potential increase in fishing effort under alternative 3B-2 is not expected to be great enough to change the stock status of any non-target species. Impacts may be slight negative for those non-target species which do not have a positive stock status. These impacts are expected to be slight, as opposed to moderate or high, negative because non-target species generally make up a small proportion of the catch in summer flounder, scup, and black sea bass fisheries (section 6.1.4) and because the potential increase in fishing effort under this alternative will take place only in the Rhode Island state waters around Block Island.

7.1.2.2.3. Impacts Of Alternative 3B-3 (Transit For Recreational Fisheries) On Target And Non-Target Species

Sub-alternative 3B-3 assumes that alternative 3B (allow transit in Block Island Sound) is selected as a preferred alternative. The impacts of alternative 3B on target and non-target species are described in section 7.1.2.2. Under sub-alternative 3B-3, transit through a defined area will

be allowed only for recreational fisheries. This is expected to lead to a slight increase in fishing effort in the Rhode Island state waters around Block Island compared to the no action alternative (alternative 3A). The increase in fishing effort is expected to be smaller than under sub-alternative 3B-4, which would allow transit for recreational and commercial fisheries.

As stated in previous sections, fishing effort and fishing mortality will continue to be constrained primarily by the RHL under this alternative. The RHLs for all three species are based on the best available science and are intended to prevent overfishing. According to the most recent stock assessment products, none of these three species are overfished or experiencing overfishing (section 6.1). The positive stock status for all three species is expected to be maintained under alternative 3B-3. As such, alternative 3B-3 is expected to have moderate positive impacts on target species.

Impacts to non-target species vary by species and are expected to be slight positive for most non-target species, as most are currently not overfished or experiencing overfishing. The potential increase in fishing effort under alternative 3B-3 is not expected to be great enough to change the stock status of any non-target species. Impacts may be slight negative for those non-target species which do not have a positive stock status. These impacts are expected to be slight, as opposed to moderate or high negative because non-target species generally make up a small proportion of the catch in summer flounder, scup, and black sea bass fisheries (section 6.1.4) and because the potential increase in fishing effort under this alternative will take place only in the Rhode Island state waters around Block Island.

7.1.2.2.4. Impacts Of Alternative 3B-4 (Transit For Recreational And Commercial Fisheries; Preferred) On Target And Non-Target Species

Sub-alternative 3B-4 assumes that alternative 3B (allow transit in Block Island Sound) is selected as a preferred alternative. The impacts of alternative 3B on target and non-target species are described in section 7.1.2.2. Under sub-alternative 3B-4, transit through a defined area will be allowed for recreational and commercial fisheries. This is expected to lead to a slight increase in fishing effort in the Rhode Island state waters around Block Island compared to the no action alternative (alternative 3A). The increase in fishing effort is expected to be greater in magnitude than under sub-alternative 3B-3, which would allow transit only for recreational fisheries.

As stated in previous sections, fishing effort and fishing mortality will continue to be constrained primarily by the RHL and commercial quota under this alternative. The RHLs and commercial quotas for all three species are based on the best available science and are intended to prevent overfishing. According to the most recent stock assessment products, none of these three species are overfished or experiencing overfishing (section 6.1). The positive stock status of all three species are expected to be maintained under alternative 3B-4. As such, alternative 3B-4 is expected to have moderate positive impacts on target species.

Impacts to non-target species vary by species and are expected to be slight positive for most non-target species, as most are currently not overfished or experiencing overfishing. The potential increase in fishing effort under alternative 3B-4 is not expected to be great enough to change the stock status of any non-target species. Impacts may be slight negative for those non-target species which do not have a positive stock status. These impacts are expected to be slight, as opposed to moderate or high, negative because non-target species generally make up a small proportion of the catch in summer flounder, scup, and black sea bass fisheries (section 6.1.4) and

because the potential increase in fishing effort under this alternative will take place only in the Rhode Island state waters around Block Island.

7.1.3. Impacts Of Slot Limit Alternatives On Target And Non-Target Species

Three alternatives regarding recreational slot limits were analyzed. The impacts of these alternatives on target and non-target species are described in the following sections. As previously stated, these alternatives do not implement slot limits but rather update the Council's FMP to allow slot limits to be used in future years. In this sense, the alternatives are largely administrative in nature. The following sections describe the likely impacts of using (or not using) slot limits in the recreational summer flounder, scup, and black sea bass fisheries. As described in the following sections, alternative 4A (no action) is generally expected to have the most positive impacts on target and non-target species, followed by alternative 4C (allow use of a maximum size limit for scup), and alternative 4B (allow use of a maximum size limit for summer flounder and black sea bass). The impacts of any particular slot limits may vary. If the Council wishes to use a particular slot limit in an upcoming year, that slot limit will be analyzed in a future specifications package.

7.1.3.1. Impacts Of Alternative 4A (No Action On Slot Limits) On Target And Non-Target Species

Under alternative 4A, no action on slot limits would be taken. The Council would not be able to use regular slot limits, split slot limits, or a trophy fish category because the Council's FMP does not allow for use of a maximum size limit. A maximum size limit could be used in state waters for all three species and for the recreational summer flounder fishery in years when federal waters measures are waived in favor of state waters measures through conservation equivalency.

The Monitoring Committee has concluded in the past that standard minimum fish size limits are one of the most powerful tools to constrain harvest to the RHL. In years when a decrease in harvest is needed, increasing the minimum size limit can have a greater impact on harvest than decreasing the season or possession limit. For this reason, use of a standard minimum size limit can have moderate positive impacts on the summer flounder, scup, and black sea bass stocks as it can be an effective tool to constrain harvest and prevent overfishing. Some negative impacts are possible due to the potential to concentrate fishing effort on larger, older fish which, depending on the species, may have greater contributions to spawning than smaller fish at an individual level (though the impacts at a population level may not be notable as described in the next sections). In general, the impacts of traditional minimum size limits on summer flounder, scup, and black sea bass are mostly moderate positive. The no action alternative (alternative 4A) would represent a continuation of these moderate positive impacts.

As with other alternatives in this document, the greatest impact on fishing effort and fishing mortality under this alternative (and thus impacts to target and non-target species), is expected to continue to result from the RHL. As previously stated, the RHLs for all three species are based on the best available science and are intended to prevent overfishing. According to the most recent stock assessment products, none of these three species are overfished or experiencing overfishing (section 6.1). The positive stock status of all three species are expected to be maintained under alternative 4A. As such, alternative 4A is expected to have moderate positive impacts on target species.

Impacts to non-target species vary by species and are expected to be slight positive for most non-target species, as most are currently not overfished or experiencing overfishing. Impacts may be slight negative for those non-target species which do not have a positive stock status. These impacts are expected to be slight, as opposed to moderate or high negative because non-target species generally make up a small proportion of the recreational catch in summer flounder, scup, and black sea bass fisheries and because recreational discard mortality rates are generally low (section 6.1.4).

7.1.3.2. Impacts Of Alternative 4B (Allow Use Of A Maximum Size Limit For Summer Flounder And Black Sea Bass; Preferred) On Target And Non-Target Species

Alternative 4B would allow a maximum fish size to be specified for recreational summer flounder and black sea bass fisheries in federal waters. This would allow for the use of regular slot limits, split slots, and trophy fish. As previously stated, this framework does not consider implementing any specific slot limits. Rather, it proposes updating the Council's FMP to allow slot limits to be used in future years. The potential impacts of recreational slot limits on summer flounder, black sea bass, and non-target species are summarized below, but will vary depending on the particular slot limit used.

Slot limits are intended to reduce fishing mortality on larger fish. For some species, such as summer flounder, females reach larger sizes than males and bigger, older females tend to have greater egg viability and fecundity. Thus, in theory, by reducing fishing mortality on large females, slot limits could have positive impacts on recruitment. However, these impacts may not be borne out at the population level for the reasons described below.

In 2009, the Monitoring Committee analyzed a range of slot limit options for the recreational summer flounder fishery using for-hire catch data from 2008. The analysis also considered a range of bag limits and options for trophy fish in combination with slot limits. The results indicated that compared to a standard minimum size limit, the slot limit options considered would "certainly result in greatly increased numbers of fish harvested" due to the higher availability of smaller fish compared to larger fish. At the federal level, the RHL is managed in weight; therefore, an increase in harvest in numbers of fish under a slot limit may not lead to an increase in harvest in weight if the harvested fish are smaller than they would be under a standard minimum size limit. Although discards may decrease under certain slot limits, total removals (i.e., harvest and discards) would likely increase due to the increase in harvest. An increase in removals in numbers of fish would increase the fishing mortality rate. Under some slot limit options, marginal benefits to SSB were predicted; however, these benefits were eliminated when a trophy class was considered in combination with slot limits (Wong 2009).

A management strategy evaluation analysis by Wiedenmann et al. (2013) also found that slot limits could result in an increase in the number of summer flounder harvested per angler, as well as a small reduction in the total number of female summer flounder harvested. They found that slot limits generally resulted in lower harvest and more discards by weight, and higher and more frequent ACL overages, compared to minimum size limits.

More recent information is provided by the 2018 benchmark stock assessment. NEFSC trawl survey data indicates that the ratio of females to males among fish age 4 and older has declined over time, with sex ratios now close to 1:1. In addition, since the early 2000s, "smaller" fish (i.e., less than or equal to 20 inches) have made up about 60% of SSB, compared to 40% for "larger"

fish (i.e., greater than 20 inches in length; NEFSC 2019). Therefore, the assumption that larger summer flounder are more likely to be females than males, and the assumption larger females contribute more to spawning than smaller females at a population level are likely not valid assumptions under current stock conditions.

In summary, total summer flounder removals in numbers of fish may increase under slot limits, the fishing mortality rate may increase, any increases in summer flounder SSB may be minor, and the impacts may not affect the sexes disproportionately. As previously stated, the summer flounder stock is not overfished and overfishing is not occurring. SSB is 22% below the biomass target and the fishing mortality rate is 25% below the F reference point (NEFSC 2019). As such, an increase in F and a minor increase in SSB could still have slight positive impacts on the stock by helping to maintain the current positive stock status. If the increase in F is great enough to cause overfishing to occur or to cause SSB to decline further below the target, then slight negative impacts could occur.

An analysis of slot limits for black sea bass has not been performed. Most black sea bass transition from female to male when they reach about 7.5 inches in length; thus, larger, older fish tend to be males and slot limits could disproportionately impact males compared to females.

Multiple studies suggest that the black sea bass stock is somewhat resilient to the removal of large males due to the contribution of smaller, secondary males (i.e., mature males without the bright coloration or nuccal humps of dominant males) to spawning (NEFSC 2017a). For example, Blaylock and Shepherd (2016) concluded the black sea bass stock from Maine through Cape Hatteras, North Carolina is more resilient to exploitation than a typical protogynous hermaphrodite species (i.e., a species that transitions from female to male) because not all larger individuals are males and secondary males contribute to spawning. As such, a slot limit to protect larger, mostly male black sea bass may not have a notable positive impact on SSB.

Some Council, Board, Monitoring and Technical Committee, and Advisory Panel members have expressed concerns that larger black sea bass may experience higher mortality rates than smaller black sea bass due to barotrauma. Consequently, they have said the use of slot limits for black sea bass could lead to an increase in discard mortality because slot limits would increase discards of larger fish compared to traditional minimum size limits.

If slot limits lead to increased black sea bass harvest in numbers of fish, as suggested by Wong (2009) and Wiedenmann et al. (2013) for summer flounder, then slot limits could lead to an increased fishing mortality rate, compared to a traditional minimum size limit. The scale of this potential increase is unknown and will vary depending on the specific slot limit used.

According to the 2016 benchmark stock assessment, black sea bass SSB was more than double the target level in 2015 and the fishing mortality rate was 25% below the F reference point (NEFSC 2017a). If slot limits cause an increase in the discard or fishing mortality rates, then impacts to the black sea bass stock could range from slight negative (if stock status is negatively impacted) to slight positive (if the current positive stock status is maintained).

As described above, total recreational removals of summer flounder and black sea bass in numbers of fish could increase under alternative 4B, compared to the no action alternative (alternative 4A), with the degree of the increase dependent on the specific slot limit used in any particular year. This could lead to a decrease in recreational fishing effort for those anglers who fish in order to bring home summer flounder or black sea bass as they could retain smaller fish

under a slot limit than under a traditional minimum size limit. For those anglers who practice catch and release, it may not have a notable impact on fishing effort. If overall recreational fishing effort decreases, this could lead to slight positive impacts on non-target species, compared to the no action alternative (alternative 4A). If fishing effort remains unchanged, then impacts to non-target species would be expected to be identical to those of the no action alternative (i.e., slight negative to slight positive depending on the species; section 7.1.3.1).

As with other alternatives in this document, the greatest influence on fishing effort and fishing mortality (and thus impacts to non-target species), is expected to continue to result from the RHL. Impacts of the RHL on non-target species vary by species and are expected to be slight positive for most non-target species, as most are currently not overfished or experiencing overfishing. Impacts may be slight negative for those non-target species which do not have a positive stock status. These impacts are expected to be slight, as opposed to moderate or high negative because non-target species generally make up a small proportion of the catch of in the recreational summer flounder and black sea bass fisheries and recreational discard mortality rates tend to be low (section 6.1.4).

7.1.3.3. Impacts Of Alternative 4C (Allow Use Of A Maximum Size Limit For Scup) On Target And Non-Target Species

Alternative 4C would allow a maximum fish size to be specified for the recreational scup fishery in federal waters. This would allow for regular slot limits, split slots, and trophy fish. As previously stated, this action does not consider implementing any specific slot limits. Rather, it proposes updating the Council's FMP to allow slot limits to be used in future years. The potential impacts of slot limits are summarized below, but will vary depending on the particular slot limit used.

Scup reach a maximum length of at least 18 inches, a maximum age of at least 16 years, and the sexes have very similar growth rates (NEFSC 2015; M. Tercerio personal communication April 2019). Therefore, unlike summer flounder and black sea bass, slot limits would not have disproportionate impacts on one sex. An analysis of slot limits for scup has not been performed. However, if slot limits lead to increased harvest in numbers of fish, as suggested by Wong (2009) and Wiedenmann et a. (2013) for summer flounder, then slot limits could lead to an increased fishing mortality rate, compared to a traditional minimum size limit (alternative 4A). For these reasons, the scup stock may not notably benefit from slot limits. In addition, if slot limits lead to increased harvest in numbers of fish, as suggested by Wong (2009) and Wiedenmann et al. (2013) for summer flounder, then slot limits could lead to an increased fishing mortality rate, compared to a traditional minimum size limit (alternative 4A). Given that scup SSB was estimated at more than double the biomass target and the fishing mortality rate was 37% below the F reference point in 2016 (NEFSC 2017b), an increased fishing mortality rate may not have major negative impacts on the stock, depending on the degree of the increase. As such, the impacts of slot limits on the scup stock are likely to be slight to moderate positive, depending on the magnitude of any changes in fishing effort, because they will likely maintain the current positive stock status. If the fishing mortality rate increases to the extent that stock status worsens, then the impacts could be slight negative.

As described above, total recreational removals of scup in numbers of fish could increase under alternative 4C, compared to the no action alternative (alternative 4A), with the degree of the increase dependent on the specific slot limit used in any particular year. This could lead to a

decrease in recreational fishing effort for those anglers who fish in order to bring home scup as they could retain smaller fish under a slot limit than under a traditional minimum size limit. In recent years, availability of larger fish has been high. Thus, anglers may not change their behavior notably if allowed to retain smaller fish. For those anglers who practice catch and release, it may not have a notable impact on fishing effort. If overall recreational fishing effort decreases, this could lead to slight positive impacts on non-target species, compared to the no action alternative (alternative 4A). If fishing effort remains unchanged, then impacts to non-target species would be expected to be identical to those of the no action alternative (i.e., slight negative to slight positive depending on the species; section 7.1.3.1).

As with all other alternatives in this document, the greatest impact on recreational fishing effort and fishing mortality under this alternative (and thus impacts to non-target species), is expected to continue to result from the RHL. Impacts to non-target species vary by species and are expected to be positive for most non-target species, as most are currently not overfished or experiencing overfishing. Impacts may be slight negative for those non-target species which do not have a positive stock status. These impacts are expected to be slight, as opposed to moderate or high, negative because non-target species generally make up a small proportion of the catch of in the recreational scup fishery and because recreational discard mortality rates tend to be low (section 6.1.4).

7.2. Socioeconomic Impacts Of The Alternatives

The following sections summarize the expected socioeconomic impacts of each alternative.

7.2.1. Socioeconomic Impacts Of Conservation Equivalency Alternatives

Five alternatives related to recreational conservation equivalency were considered (alternatives 1A-1C for black sea bass and 2A-2B for summer flounder). When considering the black sea bass conservation equivalency alternatives, alternative 1C is expected to have the greatest socioeconomic benefits, followed by alternatives 1B and 1A. For the summer flounder conservation equivalency alternatives, alternative 2B is expected to have greater positive impacts than alternative 2A. These impacts are described in detail in the following sections.

7.2.1.1. Socioeconomic Impacts Of Alternative 1A (No Action On Black Sea Bass Conservation Equivalency)

Under alternative 1A, no changes would be made to the current regulations regarding recreational black sea bass conservation equivalency. As described in section 4.2, under current regulations, uniform coast-wide measures are required in federal waters for the recreational black sea bass fishery. In recent years, the states of Maine through New Jersey implemented state waters measures that differed from the federal measures. In some cases, the differences between state and federal waters measures resulted in angler confusion, noncompliance, and state/federal water transit issues (e.g., in Block Island Sound). These could be considered slight negative socio-economic impacts. These slight negative impacts would be expected to persist under the no action alternative.

7.2.1.2. Socioeconomic Impacts Of Alternative 1B (Black Sea Bass Conservation Equivalency Using The Current Summer Flounder Process; Preferred)

Alternative 1B proposes updating the Council and Commission FMPs to allow conservation equivalency to be used for the recreational black sea bass fishery in future years based on the process currently used for summer flounder (section 5.1.2). This is a preferred alternative.

If conservation equivalency were used for the black sea bass recreational fishery, then the federal waters measures could be waived in favor of the measures of the state where anglers land their catch. This would alleviate many issues associated with different state and federal waters measures (e.g., angler confusion, noncompliance, state/federal water transit issues; section 4.2). In addition, conservation equivalency would allow anglers in both state and federal waters to fish under regulations that are tailored to the relevant characteristics of the fishery in their area. This could result in socioeconomic benefits, compared to the no action alternative (alternative 1A), due to increased angler satisfaction and decreased noncompliance. As such, alternative 1B is expected to have overall moderate positive socioeconomic impacts.

Under this alternative, recreational black sea bass conservation equivalency could not roll over from year to year. Conservation equivalency would expire at the end of the year, but the federal waters measures would not be waived until the spring after NMFS receives a letter from the Commission certifying that the combination of state and regional measures will prevent harvest from exceeding the RHL (Table 2). Thus, from January 1 until NMFS completes the rule-making process to waive the federal waters measures, the non-preferred coastwide measures from the previous year would be in place in federal waters. This not only creates the potential for confusion but can also create a situation where federal waters measures are more restrictive than state waters measures. These could be considered slight negative socio-economic impacts. Alternative 1C would allow for conservation equivalency rollover, which would address these issues. As such, the socioeconomic benefits of alternative 1B are expected to be lesser in magnitude than the benefits of alternative 1C.

7.2.1.3. Socioeconomic Impacts Of Alternative 1C (Black Sea Bass Conservation Equivalency Using the Current Summer Flounder Process With Rollover)

Alternative 1C proposes updating the Council and Commission FMPs to allow conservation equivalency to be used for the recreational black sea bass fishery in future years based on the process currently used for summer flounder. Alternative 1C would also allow conservation equivalency to roll over from one year to the next, when appropriate (section 5.1.3).

If conservation equivalency were to be used for the black sea bass recreational fishery (alternatives 1B and 1C), then the federal waters measures could be waived in favor of the measures of the states where anglers land their catch. This would alleviate many issues associated with different state and federal waters measures (e.g., angler confusion, noncompliance, state/federal water transit issues; section 4.2). In addition, conservation equivalency would allow anglers in both state and federal waters to fish under regulations that are tailored to the relevant characteristics of the fishery in their area. This could result in socioeconomic benefits, compared to the no action alternative, due to increased angler satisfaction and decreased noncompliance. As such, alternative 1C is expected to have overall moderate positive socioeconomic impacts.

Under this alternative, recreational black sea bass conservation equivalency could roll over from year to year. This is in contrast to alternative 1B, under which conservation equivalency would expire at the end of the year, but the federal waters measures would not be waived until the spring after NMFS receives a letter from the Commission certifying that the combination of state and regional measures will prevent harvest from exceeding the RHL (Table 2). Thus, from January 1 until NMFS completes the rule-making process to waive the federal waters measures, the non-preferred coastwide measures from the previous year would be in place in federal waters

under alternative 1B. This not only creates the potential for confusion but can also create a situation where federal waters measures are more restrictive than state waters measures. These could be considered slight negative socio-economic impacts. Alternative 1C would allow for conservation equivalency rollover, which would address these issues. As such, the socioeconomic benefits of alternative 1C are expected to be greater in magnitude than the benefits of alternative 1B.

7.2.1.4. Socioeconomic Impacts Of Alternative 2A (No Action On Summer Flounder Conservation Equivalency Rollover; Preferred)

Under alternative 2A, no changes would be made to the current regulations for summer flounder conservation equivalency. Under these regulations, conservation equivalency expires at the end of the year, but the federal waters measures are not waived until the spring after NMFS receives a letter from the Commission certifying that the combination of state and regional measures will prevent harvest from exceeding the RHL (Table 2). Thus, from January 1 until NMFS completes the rule-making process to waive the federal waters measures, the non-preferred coastwide measures from the previous year are technically in place in federal waters. This not only creates the potential for confusion but can also create a situation where federal waters measures are more restrictive than state waters measures. These could be considered slight negative socioeconomic impacts. These slight negative impacts would be expected to persist under alternative 2A. Alternative 2B would allow conservation equivalency to rollover from one year to the next, when appropriate (section 5.2.2), which would help alleviate some of these issues. Therefore, alternative 2B would have positive socioeconomic impacts compared to alternative 2A.

7.2.1.5. Socioeconomic Impacts Of Alternative 2B (Summer Flounder Conservation Equivalency Rollover)

Alternative 2B would allow summer flounder conservation equivalency to roll over, when appropriate (section 5.2.2). As previously stated, under the current process for summer flounder (alternative 2A), conservation equivalency expires at the end of the year, but the federal waters measures are not waived until the spring after NMFS receives a letter from the Commission certifying that the combination of state and regional measures will prevent harvest from exceeding the RHL (Table 2). Thus, from January 1 until NMFS completes the rule-making process to waive the federal waters measures, the non-preferred coastwide measures from the previous year are technically in place in federal waters. This not only creates the potential for confusion but can also create a situation where federal waters measures are more restrictive than state waters measures. These could be considered slight negative socioeconomic impacts. The no action alternative (alternative 2A) would represent a continuation of these slight negative socioeconomic impacts.

Conservation equivalency rollover, as proposed under this alternative, could be beneficial for recreational fishermen as it would resolve these issues in years when conservation equivalency rollover is appropriate (see section 5.1.3 for more details) as the federal measures would remain waived from one year to the next. This could be considered a slight positive socioeconomic impact compared to current conditions and alternative 2A. As previously stated, NMFS raised concerns that the proposed timeline for conservation equivalency rollover could create challenges for constraining harvest to the RHL in years when the precautionary default measures are needed (section 5.1.3). If this causes the RHL to be exceeded, more restrictive measures may be needed in a future year to mitigate for the impacts of that overage. If this occurs, it could lead

to some slight negative socioeconomic impacts, depending on the scale of the overage and the changes needed. However, overall, the socioeconomic impacts of alternative 2B are expected to be slight positive as the need to implement the precautionary default measures should be a rare occurrence.

7.2.2. Socioeconomic Impacts Of Block Island Sound Transit Alternatives

The Council considered two alternatives for Block Island Sound transit provisions, one of which includes four sub-alternatives. All but the no action alternative (alternative 3A) could allow for increased fishing opportunities, harvest, revenues, and demand for for-hire trips in the Rhode Island state waters around Block Island, compared to current conditions. As such, they are all expected to have positive socioeconomic impacts. Some alternatives have a higher potential for socioeconomic benefits than others. The following list ranks all possible combinations of sub-alternatives from the highest to lowest potential for socioeconomic benefits.

- Alternatives 3B (allow transit), 3B-2 (in the striped bass transit area), and 3B-4 (for commercial and recreational fishermen/vessels) - this is the preferred combination of Block Island Sound transit alternatives.
- Alternatives (allow transit), 3B-2 (in the striped bass transit area), and 3B-3 (for recreational fisheries only),
- Alternatives 3B (allow transit), 3B-1 (in RI-specific area) and 3B-4 (for commercial and recreational fishermen/vessels)
- Alternatives 3B (allow transit), 3B-1 (in RI-specific area) and 3B-3 (for recreational fisheries only)
- Alternative 3A (no action).

As described in more detail in section 7.1.2, there is some uncertainty regarding the relative ranking of the combination of alternatives 3B, 3B-2, and 3B-3 (allow transit in the striped bass transit area for recreational fisheries only) compared to the combination of alternatives 3B, 3B-1, and 3B-4 (allow transit in the RI-specific area for commercial and recreational fishermen/vessels). A larger transit area for recreational fisheries only could impact a greater number of vessels compared to the smaller transit area for commercial and recreational fisheries. The number of potentially impacted vessels and potential changes in revenues have not been quantified. Depending on the alternative, the potentially impacted vessels would include recreational, or recreational and commercial, vessels permitted to fish in the state waters of Rhode Island, Massachusetts, Connecticut, and/or New York and not also permitted to fish in federal waters for summer flounder, scup, and black sea bass. For recreational vessels, this number can vary throughout the year as the federal party/charter permits for these species are open access and can be dropped and later reobtained throughout the year.

Although slight differences in fishing effort and harvest are possible under the various combinations of alternatives, fishing effort and harvest will continue to be constrained primarily by the RHL and commercial quota under all alternatives. Therefore, the socioeconomic impacts of these alternatives are not expected vary notably from the impacts of the RHL and commercial quota, which are analyzed in a specifications document prepared by the Council each time they are implemented or revised (e.g., MAFMC 2018). In addition, these impacts will only be realized by fishermen who fish in the state waters around Block Island and do not also hold federal permits for summer flounder, scup, or black sea bass.

7.2.2.1. Socioeconomic Impacts Of Alternative 3A (No Action On Block Island Sound Transit)

Under alternative 3A, no changes would be made to current regulations. Under current regulations, non-federally permitted commercial and for-hire vessels which are legally authorized to harvest summer flounder, scup, and black sea bass from the state waters around Block Island are unable to transit back to state waters adjacent to the mainland with those species onboard because a federal permit is required in order to possess those species in federal waters. Also, in certain situations, current regulations can require private anglers to comply with federal measures which are more restrictive than state waters measures because they must pass through federal waters to return from state waters around Block Island to the mainland. For example, as described in section 4.2, in recent years, state waters in Rhode Island, Connecticut, and/or New York (depending on the year) have been open to recreational black sea bass fishing when federal waters were closed in the fall. Therefore, if anglers retained any black sea bass during the federal waters closure, they were in violation of the federal regulations while transiting federal waters, even if those fish were legally caught in state waters. Alternative 3A can have similar implications for situations when the federal waters minimum fish size limit and/or possession limit is more restrictive than the state waters measures. As such, the current regulations can limit fishing opportunities in some situations and can also create confusion among anglers and enforcement challenges. For these reasons, alternative 3A is expected to have slight negative socio-economic impacts.

7.2.2.2. Socioeconomic Impacts Of Alternative 3B (Block Island Sound Transit; Preferred)

Under alternative 3B, certain vessels/fishermen (as defined through sub-alternative 3B-3 or 3B-4) would be allowed to transit through a defined area (sub-alternative 3B-1 or 3B-2) in Block Island Sound while complying with the state waters measures for summer flounder, scup, and black sea bass. In situations where the federal waters measures are more restrictive than the state waters measures, this could allow for increased fishing opportunities in the state waters around Block Island. This could lead to increased revenues for for-hire and/or commercial fishermen (depending on the sub-alternative chosen), increased demand for for-hire trips, and increased angler satisfaction. It could also reduce angler confusion and the potential for non-compliance with federal waters measures. These would all be considered socio-economic benefits. The magnitude of these positive impacts will vary depending on which sub-alternatives are chosen; however, under all sub-alternatives, the positive impacts are expected to be slight because they will only occur in situations when federal waters measures are more restrictive than state waters measures and will only be realized for non-federally permitted fishermen who fish in the Rhode Island state waters around Block Island and return to the mainland in Rhode Island or neighboring states (depending on the sub-alternative chosen).

7.2.2.2.1. Socioeconomic Impacts Of Alternative 3B-1 (Block Island Sound Transit In Rhode Island Specific Area)

Sub-alternative 3B-1 assumes that alternative 3B (allow transit in Block Island Sound) is selected as a preferred alternative. The socioeconomic impacts of alternative 3B are described in section 7.2.2.2 (i.e., slight positive impacts).

Sub-alternative 3B-1 would allow transit in a small corridor connecting Block Island to mainland Rhode Island, as shown in Figure 2 in section 5.3.2.1. Given the size and location of this transit

area, it would likely be used mostly by vessels returning to mainland Rhode Island. This transit area is not conveniently placed for vessels returning to Connecticut, New York, or Massachusetts. For this reason, the slight positive socioeconomic impacts of alternative 3B, including increased fishing opportunities, increased for-hire and/or commercial revenues (depending on whether sub-alternative 3B-3 or 3B-4 is selected), increased demand for for-hire trips, and increased angler satisfaction (section 7.2.2.2) are expected to be lesser in magnitude under alternative 3B-1 than under alternative 3B-2, which includes a larger transit area which could be used more easily by vessels returning to Rhode Island, Connecticut, New York, or Massachusetts (section 5.3.2.2).

7.2.2.2.2. Socioeconomic Impacts Of Alternative 3B-2 (Block Island Sound Transit In Striped Bass Transit Area; Preferred)

Sub-alternative 3B-2 assumes that alternative 3B (allow transit in Block Island Sound) is selected as a preferred alternative. The socioeconomic impacts of alternative 3B are described in section 7.1.2.2 (i.e., slight positive impacts).

Sub-alternative 3B-2 would allow transit in the same area where transit is currently allowed for striped bass (Figure 3, section 5.3.2.2). This is a preferred alternative. This transit area could easily be used by vessels returning to Rhode Island, Connecticut, New York, or Massachusetts. For this reason, the slight positive socioeconomic impacts of alternative 3B, including increased fishing opportunities, increased for-hire and/or commercial revenues (depending on whether sub-alternative 3B-3 or 3B-4 is selected), increased demand for for-hire trips, and increased angler satisfaction (section 7.2.2.2) are expected to be greater in magnitude under sub-alternative 3B-2 than under sub-alternative 3B-1, which includes a smaller transit area which could not easily be used by vessels returning to states other than Rhode Island (section 5.3.2.1).

7.2.2.2.3. Socioeconomic Impacts Of Alternative 3B-3 (Transit For Recreational Fisheries)

Sub-alternative 3B-3 assumes that alternative 3B (allow transit in Block Island Sound) is selected as a preferred alternative. The socioeconomic impacts of alternative 3B are described in section 7.1.2.2 (i.e., slight positive impacts).

Under sub-alternative 3B-3, transit through a defined area will be allowed only for recreational fisheries. As described in section 7.1.2.2, this is expected to lead to increased fishing opportunities, increased for-hire revenues, increased demand for for-hire trips, and increased angler satisfaction. As previously stated, these positive impacts are expected to be slight in magnitude because they will only be realized for recreational fishermen who do not hold federal party/charter permits for summer flounder, scup, or black sea bass and who fish in the Rhode Island state waters around Block Island and return to the mainland in Rhode Island or neighboring states. These impacts will also only be realized in situations where federal waters measures are more restrictive than state waters measures. Because alternative 3B-3 would allow transit only for recreational fisheries, these slight positive socioeconomic impacts are expected to be lesser in magnitude than the impacts of alternative 3B-4, which would allow transit for both commercial and recreational fisheries.

7.2.2.2.4. Socioeconomic Impacts Of Alternative 3B-4 (Transit For Recreational And Commercial Fisheries; Preferred)

Sub-alternative 3B-4 assumes that alternative 3B (allow transit in Block Island Sound) is selected as a preferred alternative. The socioeconomic impacts of alternative 3B are described in section 7.1.2.2 (i.e., slight positive impacts).

Under sub-alternative 3B-4, transit through a defined area will be allowed for recreational and commercial fisheries. As described in section 7.1.2.2, this is expected to lead to increased fishing opportunities, increased commercial and for-hire revenues, increased demand for for-hire trips, and increased angler satisfaction. As previously stated, these positive impacts are expected to be slight in magnitude because they will only be realized for fishermen who do not hold federal permits for summer flounder, scup, or black sea bass and who fish in the Rhode Island state waters around Block Island and return to the mainland in Rhode Island or neighboring states. These impacts will also only be realized in situations where federal waters measures are more restrictive than state waters measures. Because alternative 3B-4 would allow transit for both recreational and commercial fisheries, these slight positive socioeconomic impacts are expected to be greater in magnitude than the impacts of alternative 3B-3, which would allow transit for recreational fisheries only.

7.2.3. Socioeconomic Impacts Of Slot Limit Alternatives

Three alternatives regarding recreational slot limits were analyzed. The socioeconomic impacts of these alternatives are described in the following sections. As previously stated, these alternatives do not implement slot limits but rather update the Council's FMP to allow slot limits to be used in future years. In this sense, the alternatives are largely administrative in nature. The following sections describe the likely impacts of using (or not using) slot limits in the recreational summer flounder, scup, and black sea bass fisheries. As described in the following sections, alternative 4B (allow use of a maximum size limit for summer flounder and black sea bass) is generally expected to have the most positive socioeconomic impacts, followed by alternative 4C (allow use of a maximum size limit for scup), and alternative 4A (no action). The impacts of any particular slot limits may vary. If the Council wishes to use a particular slot limit in an upcoming year, that slot limit will be analyzed in a future specifications package.

7.2.3.1. Socioeconomic Impacts Of Alternative 4A (No Action On Slot Limits)

Under alternative 4A, no action on slot limits would be taken. The Council would not be able to use regular slot limits, split slot limits, or a trophy fish category because the Council's FMP does not allow for use of a maximum size limit. A maximum size limit can be used in state waters for all three species and for the recreational summer flounder fishery in years when federal waters measures are waived in favor of state waters measures through conservation equivalency.

To the extent that traditional minimum fish size limits are an effective tool to prevent overfishing (as described in section 7.1.3.1), they have slight positive socio-economic impacts by helping ensure availability of fish to anglers. However, as described in section 7.1.3.1, compared to slot limits, traditional minimum fish sizes can result in both higher discards and lower harvest in numbers of fish (Wong 2009, Wiedenmann et al. 2013). These could be considered slight negative socio-economic impacts because they would be expected to lead to decreased angler satisfaction and potentially lower demand for for-hire trips (and thus lower for-hire revenues). The no action alternative (alternative 4A) would represent a continuation of these slight negative impacts. Thus, the socioeconomic impacts of alternative 4A are expected to be mixed (i.e., both positive and negative), but generally slight negative overall.

7.2.3.2. Socioeconomic Impacts Of Alternative 4B (Allow Use Of A Maximum Size Limit For Summer Flounder And Black Sea Bass; Preferred)

Alternative 4B would allow a maximum fish size to be specified for recreational summer flounder and black sea bass fisheries in federal waters. This would allow for regular slot limits, split slots, and trophy fish. As previously stated, this framework does not consider implementing any specific slot limits. Rather, it proposes updating the Council's FMP to allow slot limits to be used in future years. The potential impacts of slot limits are summarized below, but will vary depending on the particular slot limit used.

As summarized in section 7.1.3.2, Wong (2009) and Wiedenmann et al. (2013) suggested that total summer flounder removals in numbers of fish may increase under slot limits, compared to traditional minimum size limits. The same may be true for black sea bass; however, slot limits have not been analyzed for black sea bass. This could result in socioeconomic benefits as it could allow anglers to retain more fish and would increase angler satisfaction. However, if the increase in removals is great enough to negatively impact the stock(s) and significantly increase the risk of overfishing, this could result in longer-term moderate to slight negative socioeconomic impacts if it leads to reduced availability or requires more restrictive management measures in future years.

Wong (2009) also suggested that given differences in availability of smaller summer flounder, slot limits could result in a disproportionate increase in harvest from shore, compared to for-hire and private/rental boats, assuming other regulations were unchanged. Due to this increase in harvest, slot limits could have greater positive socioeconomic impacts for anglers fishing from shore than anglers fishing from boats. A small percentage of recreational black sea bass harvest comes from the shore mode, thus a slot limit in the recreational black sea bass fishery may not disproportionately impact the shore mode compared to other modes. These impacts depend, in part, on the particular slot limit implemented. For example, slot limits that allow retention of smaller fish could allow greater harvest from shore, compared to other modes, and in certain states (e.g., Maryland and North Carolina where bays are important recreational fishing areas), compared to others. Slot limits at larger sizes could disadvantage the shore mode and those states compared to others (Wong 2009). Over the past 10 years (i.e., 2008-2017), the shore mode generally accounted for less than 20% of the summer flounder harvest in each state. North Carolina is a notable exception, where the shore mode accounted for about 43% of the summer flounder harvest in numbers of fish.[20]

[20] MRIP data downloaded November 26, 2018.

Based on Wong 2009, the Monitoring Committee concluded that a very narrow slot limit would be necessary to constrain summer flounder harvest to the RHL at the time. Narrow slot limits could be more challenging to enforce and could lead to greater noncompliance than wider slot limits or a standard minimum size. For these reasons, slot limits could have some negative socio-economic impacts in years when RHLs are low and harvest must be constrained. Wider slots could be possible under higher RHLs.

In addition, slot limits would require anglers to discard fish above a certain size. This could be unappealing to some anglers, which could lead to decreased angler satisfaction and may increase the potential for noncompliance, compared to a traditional minimum size limit. These would be considered slight to moderate negative socioeconomic impacts. Allowance of a trophy fish in combination with a slot limit could address these concerns.

In summary, the socioeconomic impacts of slot limits could be mixed (i.e., both positive and negative) and would depend on the particular slot limits used.

7.2.3.3. Socioeconomic Impacts Of Alternative 4C (Allow Use Of A Maximum Size Limit For Scup)

Alternative 4C would allow a maximum fish size to be specified for the recreational scup fishery in federal waters. This would allow for regular slot limits, split slots, and trophy fish. As previously stated, this framework does not consider implementing any specific slot limits. Rather, it proposes updating the Council's FMP to allow slot limits to be used in future years. The potential impacts of slot limits are summarized below, but will vary depending on the particular slot limit used.

As summarized in section 7.1.3.2, Wong (2009) and Wiedenmann et al. (2013) suggested that total summer flounder removals in numbers of fish may increase under slot limits, compared to traditional minimum size limits. The same may be true for scup; however, slot limits have not been analyzed for scup. This could result in socioeconomic benefits as it could allow anglers to retain more fish and would increase angler satisfaction. If the increase in removals is great enough to negatively impact the stock and significantly increase the risk of overfishing, this could result in longer-term negative socioeconomic impacts if it leads to reduced availability or requires more restrictive management measures in future years.

An analysis by the Monitoring Committee suggested that, given differences in availability of smaller summer flounder, slot limits could result in a disproportionate increase in harvest from shore, compared to for-hire and private/rental boats, assuming other regulations were unchanged (Wong 2009). This may also be true for scup as a smaller range of sizes of scup tend to be available from shore, as opposed to from for-hire and private/rental boats. Due to this increase in harvest, slot limits could have greater positive socioeconomic impacts for anglers fishing from shore than anglers fishing from boats, who have access to a wider range of size classes.

The impacts of slot limits depend, in part, on the particular slot implemented. For example, slot limits that allow retention of smaller fish could allow greater harvest from shore, compared to other modes, and in certain states compared to others. Slot limits at larger sizes could disadvantage the shore mode and those states compared to others (Wong 2009). For example, over the past 10 years (i.e., 2008-2017), the shore mode on average accounted for less than 25%

of the scup harvest in numbers of fish in each state, with the exception of Rhode Island (55%) and Virginia (81%).[21]

Based on Wong 2009, the Monitoring Committee concluded that a very narrow slot limit would be necessary to constrain summer flounder harvest to the RHL at the time. Narrow slot limits could be more challenging to enforce and could lead to greater noncompliance than wider slot limits or a standard minimum size. For these reasons, slot limits could have some negative socioeconomic impacts in years when RHLs are low and harvest must be constrained. Wider slots could be possible under higher RHLs. Recreational scup harvest has been below the RHL for several years (Table 13), thus these issues may not be of great concern for scup.

Slot limits would require anglers to discard fish above a certain size. This could be unappealing to some anglers, which could lead to decreased angler satisfaction and may increase the potential for noncompliance, compared to a traditional minimum size limit. These would be considered negative socio-economic impacts. Allowance of a trophy fish in combination with a slot limit could address these concerns.

In summary, the socioeconomic impacts of recreational scup slot limits could be mixed (i.e., both positive and negative) and would depend on the particular slot limits used.

7.3. Impacts Of The Alternatives On Habitat

This section summarizes the expected impacts of each alternative on habitat.

7.3.1. Impacts Of Conservation Equivalency Alternatives On Habitat

Five alternatives related to recreational conservation equivalency were considered (alternatives 1A-1C for black sea bass and 2A-2B for summer flounder). As described in the following sections, none of these alternatives are expected to have different impacts on habitat than the impacts of the RHL. There are no differences among the five conservation equivalency alternatives in terms of their impacts on habitat. They are not expected to change the amount, duration, or location of gear in the water, compared to current conditions.

7.3.1.1. Impacts Of Alternative 1A (No Action On Black Sea Bass Conservation Equivalency) On Habitat

Under alternative 1A, no changes would be made to the current regulations regarding state and federal recreational black sea bass measures. As with most other alternatives in this document, fishing effort will continue to be influenced primarily by the RHL. The impacts of alternative 1A on habitat are not expected to differ from those of the RHL. The expected impacts of the RHL are analyzed in a specifications document prepared by the Council each time an RHL is implemented or revised (e.g., MAFMC 2018).

Black sea bass are predominantly caught with hook and line gear in the recreational fishery. As described in section 6.3.2, this gear type has minor negative impacts on physical habitat. The areas where the recreational black sea bass fishery takes place are impacted year-round by many fisheries using many different gear types. Thus, any changes in recreational black sea bass fishing effort would not be expected to create additional negative impacts to habitat (if fishing effort were to increase) or result in improvements to habitat quality (if fishing effort were to decrease). As such, the black sea bass RHL is generally expected to have slight negative impacts

[21] MRIP data downloaded January 25, 2019.

to habitat, regardless of whether the RHL is increasing or decreasing from one year to the next. These slight negative impacts would be expected to persist under alternative 1A.

The impacts of alternative 1A on habitat are not expected to be different than the impacts of alternatives 1B or 1C because fishing effort will be constrained primarily by the RHL under all three alternatives.

7.3.1.2. Impacts Of Alternative 1B (Black Sea Bass Conservation Equivalency Using The Current Summer Flounder Process; Preferred) On Habitat

Alternative 1B proposes updating the Council and Commission FMPs to allow conservation equivalency to be used for the recreational black sea bass fishery in future years based on the process currently used for summer flounder (section 5.1.2). This is a preferred alternative.

As with all other alternatives in this document, fishing effort will continue to be constrained primarily by the RHL. The impacts of alternative 1B on habitat are not expected to differ from those of the RHL. The expected impacts of the RHL are analyzed in a specifications document prepared by the Council each time an RHL is implemented or revised (e.g., MAFMC 2018).

Black sea bass are predominantly caught with hook and line gear in the recreational fishery. As described in section 6.3.2, this gear type has minor negative impacts on physical habitat. The areas where the recreational black sea bass fishery takes place are impacted year-round by many fisheries using many different gear types. Thus, any changes in recreational black sea bass fishing effort would not be expected to create additional negative impacts to habitat (if fishing effort were to increase) or result in improvements to habitat quality (if fishing effort were to decrease). As such, the black sea bass RHL is generally expected to have slight negative impacts to habitat, regardless of whether the RHL is increasing or decreasing from one year to the next. These slight negative impacts would be expected to persist under alternative 1B.

The impacts of alternative 1B on habitat are not expected to be different than the impacts of alternatives 1A or 1C because fishing effort with be constrained primarily by the RHL under all three alternatives.

7.3.1.3. Impacts Of Alternative 1C (Black Sea Bass Conservation Equivalency Using The Current Summer Flounder Process With Rollover) On Habitat

Alternative 1C proposes updating the Council and Commission FMPs to allow conservation equivalency to be used for the recreational black sea bass fishery in future years based on the process currently used for summer flounder. Alternative 1C would also allow conservation equivalency to roll over from one year to the next when appropriate (section 5.1.3). Conservation equivalency rollover is the only difference between alternatives 1B and 1C. When considered separately from the use of conservation equivalency itself, conservation equivalency rollover is administrative in nature and is not expected to result in any changes in fishing effort and is not expected to have any direct or indirect impacts on habitat. For this reason, the impacts of alternative 1C on habitat are identical to those of alternative 1B (i.e., slight negative), which are described in the previous section.

As previously stated, the impacts of alternatives 1A-1C on habitat are expected to be identical as fishing effort will be constrained primarily by the RHL under all three alternatives.

7.3.1.4. Impacts Of Alternative 2A (No Action On Summer Flounder Conservation Equivalency Rollover; Preferred) On Habitat

When considered separately from the use of conservation equivalency itself, the alternatives for conservation equivalency rollover for summer flounder (alternatives 2A and 2B) are both administrative in nature. As such, they are not expected to result in any changes in fishing effort and are not expected to have any direct or indirect impacts on habitat.

7.3.1.5. Impacts Of Alternative 2B (Summer Flounder Conservation Equivalency Rollover) On Habitat

When considered separately from the use of conservation equivalency itself, the alternatives for conservation equivalency rollover for summer flounder (alternatives 2A and 2B) are both administrative in nature. As such, they are not expected to result in any changes in fishing effort and are not expected to have any direct or indirect impacts on habitat.

7.3.2. Impacts Of Block Island Sound Transit Alternatives On Habitat

The Council considered two alternatives for Block Island Sound transit provisions, one of which includes four sub-alternatives. All but the no action alternative (alternative 3A) could lead to a slight increase in fishing effort and fishing mortality in the Rhode Island state waters around Block Island, compared to current conditions. As previously stated, impacts to habitat are based on expected changes in fishing effort, with negative impacts generally expected when fishing effort increases, remains unchanged, and, in most cases, decreases. A decrease in fishing effort is only expected to lead to positive impacts if it allows impacted habitat areas to recover.

The following list ranks all possible combinations of sub-alternatives from the highest potential increase in fishing effort, and thus greatest negative expected habitat impacts, to the lowest.

- Alternatives 3B (allow transit), 3B-2 (in the striped bass transit area), and 3B-4 (for commercial and recreational fishermen/vessels) - this is the preferred combination of Block Island Sound transit alternatives.
- Alternatives (allow transit), 3B-2 (in the striped bass transit area), and 3B-3 (for recreational fisheries only).
- Alternatives 3B (allow transit), 3B-1 (in RI-specific area) and 3B-4 (for commercial and recreational fishermen/vessels).
- Alternatives 3B (allow transit), 3B-1 (in RI-specific area) and 3B-3 (for recreational fisheries only).
- Alternative 3A (no action).

As described in detail in section 7.1.2, there is some uncertainty regarding the relative ranking of the combination of alternatives 3B, 3B-2, and 3B-3 (allow transit in the striped bass transit area for recreational fisheries only) compared to the combination of alternatives 3B, 3B-1, and 3B-4 (allow transit in the RI-specific area for commercial and recreational fishermen/vessels).

7.3.2.1. Impacts Of Alternative 3A (No Action On Block Island Sound Transit) On Habitat

Under alternative 3A, no changes would be made to current regulations. Fishing effort and associated habitat impacts would be expected to be similar to recent levels and would continue to be constrained primarily by the RHL and commercial quota. Fishing effort may change in the future in response to changes in the RHL, quota, and other factors (e.g., weather, market factors,

regulations in other fisheries). The impacts of any changes to the RHL and quota on habitat will be analyzed in future specifications documents.

As previously stated, the impacts of the RHL on habitat are generally considered to be slight negative, regardless of whether the RHL is increasing or decreasing from one year to the next. These slight negative impacts would be expected to persist under alternative 3A. Black sea bass are predominantly caught with hook and line gear in the recreational fishery. As described in section 6.3.2, this gear type has minor negative impacts on physical habitat. The areas where the recreational black sea bass fishery takes place are impacted year-round by many fisheries using many different gear types. Thus, any changes in recreational black sea bass fishing effort would not be expected to create additional negative impacts to habitat (if fishing effort were to increase) or result in improvements to habitat quality (if fishing effort were to decrease).

The impacts of the commercial quota on habitat are also generally expected to be slight negative, though the magnitude varies with the magnitude of the change in the quota from one year to the next. As described in section 6.3.2, bottom otter trawls and fish/pots traps are the predominant gears in the commercial black sea bass fishery and these gear types have a variety of impacts on habitat. Overall, these impacts are generally negative. However, the areas fished for black sea bass have been fished for many years for a variety of species. Thus, slight to moderate increases in commercial fishing effort are generally not expected to result in additional negative impacts to habitats not already impacted by this and other fisheries. Alternatively, slight to moderate decreases in fishing effort in a single fishery are not expected to allow impacted habitat areas to recover and are thus expected to result in slight negative habitat impacts.

In summary, the impacts of alternative 3A on habitat are expected to be slight negative. As described in the next section, alternative 3B would allow for an increase in fishing effort in the Rhode Island state waters around Block Island, compared to alternative 3A. As such, the expected slight negative impacts of alternative 3A on habitat are lesser in magnitude than the impacts of alternative 3B.

7.3.2.2. Impacts Of Alternative 3B (Block Island Sound Transit; Preferred) On Habitat

Under alternative 3B, certain vessels/fishermen (as defined through sub-alternative 3B-3 or 3B-4) would be allowed to transit through a defined area (sub-alternative 3B-1 or 3B-2) in Block Island Sound while complying with the state waters regulations for summer flounder, scup, and black sea bass. This is a preferred alternative.

In situations where the federal waters regulations are more restrictive than the state waters regulations, alternative 3B could allow for increased fishing effort in the Rhode Island state waters around Block Island. Only non-federally permitted fishermen will be impacted by this alternative. Depending on the sub-alternatives chosen, this will apply to recreational fishermen only or recreational and commercial fishermen (sub-alternatives 3B-3 and 3B-4) who fish in the Rhode Island state waters around Block Island and return to the mainland in Rhode Island, Massachusetts, Connecticut, or New York (sub-alternatives 3B-1 and 3B-2). For these reasons, the impacts of this alternative will be limited in terms of area and number of fishermen/vessels. In addition, fishing effort will continue to be primarily constrained by the RHL and commercial

quota. As such, any increases in fishing effort under alternative 3B are expected to be slight compared to current conditions and to the no action alternative (alternative 3A).

As previously stated, the recreational and commercial black sea bass fisheries have slight negative impacts on habitat due to the gear types used (i.e., primarily hook and line in the recreational fishery and bottom otter trawls and fish pots/traps in the commercial fishery; section 6.3.2). Due to the expected slight increase in fishing effort under alternative 3B, these slight negative habitat impacts are expected to increase in magnitude in the Rhode Island state waters around Block Island compared to current conditions and to the no action alternative (alternative 3A). The magnitude of these negative impacts will vary based on the sub-alternatives chosen, as described in the following sections. However, under all combinations of sub-alternatives, impacts to habitat are expected to be slight as opposed to moderate or high negative due to the limited area, number of fishermen/vessels, and situations in which an increase in fishing effort would be expected.

7.3.2.2.1. Impacts Of Alternative 3B-1 (Block Island Sound Transit In Rhode Island Specific Area) On Habitat

Sub-alternative 3B-1 assumes that alternative 3B (allow transit in Block Island Sound) is selected as a preferred alternative. As described in section 7.3.2.2, alternative 3B is expected to have slight negative impacts on habitat compared to current conditions and the no action alternative (alternative 3A).

Sub-alternative 3B-1 would allow transit in a small corridor connecting Block Island to mainland Rhode Island, as shown in Figure 2 in section 5.3.2.1. Given the size and location of this transit area, it would likely be used mostly by vessels returning to mainland Rhode Island. This transit area is not conveniently placed for vessels returning to Connecticut, New York, or Massachusetts. For this reason, sub-alternative 3B-1 is expected to lead to a lesser increase in fishing effort compared to sub-alternative 3B-2, which includes a larger transit area which could more easily be used by vessels returning to Rhode Island, Connecticut, New York, or Massachusetts (section 5.3.2.2). As such, the slight negative impacts of alternative 3B on habitat are expected to be lesser in magnitude under sub-alternative 3B-1 than under sub-alternative 3B-2.

7.3.2.2.2. Impacts Of Alternative 3B-2 (Block Island Sound Transit In Striped Bass Transit Area; Preferred) On Habitat

Sub-alternative 3B-2 assumes that alternative 3B (allow transit in Block Island Sound) is selected as a preferred alternative. As described in section 7.3.2.2, alternative 3B is expected to have slight negative impacts on habitat compared to current conditions and the no action alternative (alternative 3A).

Sub-alternative 3B-2 would allow transit in the same area where transit is currently allowed for striped bass (Figure 3, section 5.3.2.2). This is a preferred alternative. This transit area could easily be used by vessels returning to Rhode Island, Connecticut, New York, or Massachusetts. For this reason, sub-alternative 3B-2 is expected to lead to a greater increase in fishing effort compared to sub-alternative 3B-1, which includes a much smaller transit area which could not easily be used by vessels returning to states other than Rhode Island (section 5.3.2.1). As such, the slight negative impacts of alternative 3B on habitat are expected to be greater in magnitude (though still slight negative) under sub-alternative 3B-2 than under sub-alternative 3B-1.

7.3.2.2.3. Impacts Of Alternative 3B-3 (Transit For Recreational Fisheries) On Habitat

Sub-alternative 3B-3 assumes that alternative 3B (allow transit in Block Island Sound) is selected as a preferred alternative. As described in section 7.3.2.2, alternative 3B is expected to have slight negative impacts on habitat compared to current conditions and the no action alternative (alternative 3A).

Under sub-alternative 3B-3, transit through a defined area will be allowed only for recreational fisheries. This is expected to lead to a slight increase in fishing effort in the Rhode Island state waters around Block Island compared to current conditions and to the no action alternative (alternative 3A). This increase in fishing effort is expected to be lesser in magnitude than under sub-alternative 3B-4, which would allow transit for recreational and commercial fisheries. Sub-alternative 3B-3 (recreational only) would impact a smaller number of fishermen/vessels than sub-alternative 3B-4 (recreational and commercial). In addition, the impacts of those fishermen/vessels on habitat would be lesser in magnitude due to the gear types used. As previously stated, the recreational fishery primarily uses hook and line gear, which has a much lesser impact on habitat than the gears used in the commercial fishery (i.e., bottom otter trawl and pots/traps; section 6.3.2). For these reasons, the slight negative impacts of alternative 3B on habitat are expected to be lesser in magnitude under sub-alternative 3B-3 than under sub-alternative 3B-4.

7.3.2.2.4. Impacts Of Alternative 3B-4 (Transit For Recreational And Commercial Fisheries; Preferred) On Habitat

Sub-alternative 3B-4 assumes that alternative 3B (allow transit in Block Island Sound) is selected as a preferred alternative. As described in section 7.3.2.2, alternative 3B is expected to have slight negative impacts on habitat compared to current conditions and the no action alternative (alternative 3A).

Under sub-alternative 3B-4, transit through a defined area will be allowed for recreational and commercial fisheries. This is a preferred alternative. This is expected to lead to a slight increase in fishing effort in the Rhode Island state waters around Block Island compared to current conditions and to the no action alternative (alternative 3A). This increase in fishing effort is expected to be greater in magnitude than under sub-alternative 3B-3, which would allow transit for recreational fisheries only. Sub-alternative 3B-3 (recreational only) would impact a smaller number of fishermen/vessels than sub-alternative 3B-4 (recreational and commercial). In addition, the impacts of those fishermen/vessels on habitat would be lesser in magnitude due to the gear types used. As previously stated, the recreational fishery primarily uses hook and line gear, which has a much lesser impact on habitat than the gears used in the commercial fishery (i.e., bottom otter trawl and pots/traps; section 6.3.2). For these reasons, the slight negative impacts of alternative 3B on habitat are expected to be greater in magnitude (though still slight negative) under sub-alternative 3B-4 than under sub-alternative 3B-3.

7.3.3. Impacts Of Slot Limit Alternatives On Habitat

Three alternatives regarding recreational slot limits were analyzed. The impacts of these alternatives on habitat are described in the following sections. As previously stated, these alternatives do not implement slot limits but rather update the Council's FMP to allow slot limits to be used in the future. In this sense, these alternatives are largely administrative in nature. The

following sections describe the likely impacts of using (or not using) slot limits in the recreational summer flounder, scup, and black sea bass fisheries.

As described in the following sections, alternative 4A (no action) is generally expected to have the most positive impacts on habitat, followed by alternative 4C (allow use of a maximum size limit for scup), and alternative 4B (allow use of a maximum size limit for summer flounder and black sea bass). The impacts of any particular slot limits may vary. If the Council wishes to use a particular slot limit in an upcoming year, that slot limit will be analyzed in a future specifications package.

7.3.3.1. Impacts Of Alternative 4A (No Action On Slot Limits) On Habitat

Under alternative 4A, no action on slot limits would be taken. The Council would not be able to use regular slot limits, split slot limits, or a trophy fish category for summer flounder, scup, or black sea bass because the Council's FMP does not allow for use of a maximum size limit. A maximum size limit can be used in state waters for all three species and for the recreational summer flounder fishery in years when federal waters measures are waived in favor of state waters measures through conservation equivalency.

As with all other alternatives in this document, the greatest impact on recreational fishing effort and thus impacts to habitat, is expected to continue to result from the RHLs for all three species. The expected impacts of the RHLs are analyzed in a specifications document prepared by the Council each time an RHL is implemented or revised (e.g., MAFMC 2018).

Summer flounder, scup, and black sea bass are predominantly caught with hook and line gear in the recreational fisheries. As described in section 6.3.2, this gear type has minor negative impacts on physical habitat. The areas where these recreational fisheries take place are impacted year-round by many fisheries using many different gear types. Thus, any changes in recreational summer flounder, scup, or black sea bass fishing effort would not be expected to create additional negative impacts to habitat (if fishing effort were to increase) or result in improvements to habitat quality (if fishing effort were to decrease). As such, the RHLs are generally expected to have slight negative impacts to habitat, regardless of whether the RHLs are increasing or decreasing from one year to the next. These slight negative impacts would be expected to persist under alternative 4A.

7.3.3.2. Impacts Of Alternative 4B (Allow Use Of A Maximum Size Limit For Summer Flounder And Black Sea Bass; Preferred) On Habitat

Alternative 4B would allow a maximum fish size to be specified for recreational summer flounder and black sea bass fisheries in federal waters. This would allow for the use of regular slot limits, split slots, and trophy fish. This is a preferred alternative. As previously stated, this framework does not consider implementing any specific slot limits. Rather, it proposes updating the Council's FMP to allow slot limits to be used in future years.

As previously stated, the greatest impact on recreational fishing effort and thus impacts to habitat, is expected to continue to result from the summer flounder and black sea bass RHLs. The expected impacts of the RHLs are analyzed in a specifications document prepared by the Council each time an RHL is implemented or revised (e.g., MAFMC 2018).

Summer flounder and black sea bass are predominantly caught with hook and line gear in the recreational fisheries. As described in section 6.3.2, this gear type has minor negative impacts on physical habitat. The areas where these recreational fisheries take place are impacted year-round

by many fisheries using many different gear types. Thus, any changes in recreational summer flounder or black sea bass fishing effort would not be expected to create additional negative impacts to habitat (if fishing effort were to increase) or result in improvements to habitat quality (if fishing effort were to decrease). As such, the RHLs are generally expected to have slight negative impacts to habitat, regardless of whether the RHLs are increasing or decreasing from one year to the next. These slight negative impacts would be expected to persist under alternative 4B.

As previously stated, a 2009 Monitoring Committee analysis of slot limits for summer flounder concluded that compared to a standard minimum size limit, the slot limit options analyzed would "certainly result in greatly increased numbers of fish harvested" due to the higher availability of smaller fish compared to larger fish (Wong 2009). Wiedenmann et al. (2013) also found that slot limits could result in an increase in the number of summer flounder harvested per angler. The same may be true for black sea bass; however, a similar analysis has not been conducted for black sea bass. An increase in harvest in numbers of fish could lead to a decrease in recreational fishing effort for those anglers who fish in order to bring home summer flounder or black sea bass as they could retain smaller fish under a slot limit than under a traditional minimum size limit. For those anglers who practice catch and release, it may not have a notable impact on fishing effort. If overall recreational fishing effort decreases, then the slight negative impacts of this alternative on habitat could be lesser in magnitude than the slight negative impacts of the no action alternative (alternative 4A), which is not expected to change fishing effort compared to current levels. The slight negative impacts of alternative 4B may also be lesser in magnitude than the impacts of alternative 4C because alternative 4C would impact only the recreational scup fishery and thus would be expected to impact fewer anglers, compared to alternative 4B, which impacts the summer flounder and black sea bass fisheries.

7.3.3.3. Impacts Of Alternative 4C (Allow Use Of A Maximum Size Limit For Scup) On Habitat

Alternative 4C would allow a maximum fish size to be specified for the recreational scup fishery in federal waters. This would allow for regular slot limits, split slots, and trophy fish. As previously stated, this framework does not consider implementing any specific slot limits. Rather, it proposes updating the Council's FMP to allow slot limits to be used in future years.

As previously stated, the greatest impact on recreational fishing effort and thus impacts to habitat, is expected to continue to result from the scup RHL. The expected impacts of the RHL are analyzed in a specifications document prepared by the Council each time an RHL is implemented or revised (e.g., MAFMC 2017b).

Scup are predominantly caught with hook and line gear in the recreational fisheries. As described in section 6.3.2, this gear type has minor negative impacts on physical habitat. The areas where the recreational scup fishery takes place are impacted year-round by many fisheries using many different gear types. Thus, any changes in recreational scup fishing effort would not be expected to create additional negative impacts to habitat (if fishing effort were to increase) or result in improvements to habitat quality (if fishing effort were to decrease). As such, the scup RHL is generally expected to have slight negative impacts to habitat, regardless of whether the RHL is increasing or decreasing from one year to the next. These slight negative impacts would be expected to persist under alternative 4C.

As previously stated, a 2009 Monitoring Committee analysis of slot limits for summer flounder concluded that compared to a standard minimum size limit, the slot limit options analyzed would "certainly result in greatly increased numbers of fish harvested" due to the higher availability of smaller fish compared to larger fish (Wong 2009). Wiedenmann et al. (2013) also found that slot limits could result in an increase in the number of summer flounder harvested per angler. A similar analysis has not been conducted for scup. If a slot limit for scup leads to an increase in harvest in numbers of fish, it could lead to a decrease in recreational fishing effort for those anglers who fish in order to bring home scup. However, a slot limit for scup may not have a notable impact on fishing behavior because availability of scup at or above the current minimum fish sizes of 8-9 inches (depending on the area) has been relatively high in recent years. In addition, anglers may not wish to keep scup smaller than 8 inches. For those anglers who practice catch and release, it may not have a notable impact on fishing effort. For these reasons, the slight negative impacts of alternative 4C on habitat may be similar in magnitude to the impacts of the no action alternative (alternative 4A) if fishing effort remains unchanged or they could be slightly lesser in magnitude if fishing effort decreases.

The slight negative impacts of alternative 4C may be greater in magnitude (though still slight negative) than the impacts of alternative 4B because alternative 4C would impact only the recreational scup fishery and thus would be expected to impact fewer anglers, compared to alternative 4B, which impacts the summer flounder and black sea bass fisheries.

7.4. Impacts Of The Alternatives On Protected Species

This section summarizes the impacts of each alternative on the protected species identified in section 6.4.2. As described in the introduction to section 7, impacts are based on expected changes in fishing effort and associated changes in the potential for interactions with protected species under each alternative. Interaction risks with protected species are strongly associated with the amount of gear in the water, gear soak or tow time, as well as the area of overlap, either in space or time, of the gear and a protected species (with risk of an interaction increasing with increases in of any or all of these factors).

7.4.1. Impacts Of Conservation Equivalency Alternatives On Protected Species

Five alternatives related to recreational conservation equivalency were considered (alternatives 1A-1C for black sea bass and 2A-2B for summer flounder). As described in the following sections, none of these alternatives are expected to have different impacts on protected species than the impacts of the RHL. There are no differences among the conservation equivalency alternatives in terms of their impacts on protected species. None of the conservation equivalency alternatives are expected to impact the amount, duration, or location of fishing gear in the water in a way that would change the likelihood of interactions between the recreational black sea bass and summer flounder fisheries and protected species.

The conservation equivalency alternatives are largely administrative in nature. As described in more detail in section 5.1, they consider whether to update the FMP to add (for black sea bass) or adjust (for summer flounder) regulations related to recreational conservation equivalency. The decision of whether to use conservation equivalency in any given year and the associated measures (i.e., federal and state possession limits, fish size limits, and open and closed seasons) will be determined by the Council and Board each year through separate actions. Updating the FMP to add or revise recreational conservation equivalency regulations, as considered under the action alternatives, will not have direct impacts on protected species because it will not affect

fishing effort or the amount, duration, or location of fishing gear in the water. As such, the impacts of all conservation equivalency alternatives on protected species are indirect. Direct impacts will derive from how the fishery responds to the specific measures used in any given year.

All five alternatives address recreational fisheries only. Hook and line are the primary gears used in the recreational black sea bass and summer flounder fisheries. As described in section 6.4.3.1, while marine mammal interactions with recreational hook and line gear are possible (for ESA listed and non-listed large whales and bottlenose dolphins), there is a low probability that an interaction will result in serious injury or mortality to any of these species. For ESA-listed species of sea turtles and Atlantic sturgeon populations, interactions with hook and line gear are possible (section 6.4.3.1). Hook and line interactions with other protected species identified in section 6.4 (e.g., species of small cetaceans except for bottlenose dolphins, pinnipeds, Atlantic salmon) have never been observed or documented and therefore, this gear type is not expected to be source of injury or mortality to these species.

7.4.1.1. Impacts of Alternative 1A (No Action on Black Sea Bass Conservation Equivalency) On Protected Species

Under alternative 1A, no changes would be made to the current regulations for the recreational black sea bass fishery in regards to conservation equivalency. No changes in fishing effort, or the amount, duration, or location of gear in the water are expected under this alternative. As such, new or elevated interaction risks to protected species are not expected relative to current conditions.

Under this and all other black sea bass conservation equivalency alternatives (i.e., alternatives 1A - 1C), fishing effort will continue to primarily be impacted by the RHL. Therefore, the impacts of these alternatives on protected species are not expected to be notably different than the impacts of the annual RHL. The impacts of the RHL are analyzed in a specifications document prepared by the Council each time an RHL is implemented or revised (e.g., MAFMC 2018). As previously stated, the alternatives considered in this document will not impact the RHL; thus, all impacts to protected species described below are indirect.

As previously stated, any action that results in interactions with or take of ESA-listed species is expected to have some level of negative impacts on those species. Alternative 1A would allow for continued interactions between recreational hook and line gear and ESA-listed species; therefore, it is expected to have negligible to slight negative impacts on those species, depending on the species. Specifically, it is expected to have negligible impacts on those species which have never had observed or documented interactions with hook and line gear (i.e., Atlantic salmon). Slight negative impacts are expected for ESA listed species for which interactions are possible (i.e., ESA-listed large whales, sea turtles, and Atlantic sturgeon; section 6.4.3.1).

For non-ESA listed MMPA species that have their PBR level reached or exceeded (i.e., humpback whales, pilot whales, and bottlenose dolphins), negligible to slight negative impacts would be expected, depending on the species. Specifically, negligible impacts would be expected for those species which have never had observed or documented interactions with hook and line gear (i.e., pilot whales). Slight negative impacts would be expected for species for which interactions are possible but have a low probability of resulting in serious injury or mortality (i.e., humpback whales and bottlenose dolphins; section 6.4.3.1).

Non-ESA listed MMPA species whose PBR levels have not been exceeded are at more sustainable levels (i.e., all non-ESA listed MMPA species in Table 25 with the exception of humpback whales, pilot whales, and bottlenose dolphins). For these species, alternative 1A may have negligible to slight positive impacts by maintaining takes below the PBR level and approaching the zero mortality rate goal.

In summary, alternative 1A is expected to have negligible to slight negative impacts on ESA-listed species and slight negative to slight positive impacts on non-ESA listed MMPA-protected species. All these impacts are indirect impacts for the reasons previously stated. The impacts of alternative 1A on protected species are not expected to be different than the impacts of alternatives 1B or 1C because fishing effort will be constrained primarily by the RHL under all three alternatives. The differences between alternatives 1A-1C in terms of their impacts on protected species are negligible.

7.4.1.2. Impacts Of Alternative 1B (Black Sea Bass Conservation Equivalency Using The Current Summer Flounder Process; Preferred) On Protected Species

Alternative 1B proposes updating the Council and Commission FMPs to allow conservation equivalency to be used for the recreational black sea bass fishery in future years based on the process currently used for summer flounder (section 5.1.2). This is a preferred alternative.

As described in section 7.1.1.2, under this and all other black sea bass conservation equivalency alternatives (i.e., alternatives 1A - 1C), fishing effort will continue to be constrained primarily by the RHL. Therefore, the impacts of these alternatives on protected species are not expected to be notably different than the impacts of the annual RHL. The expected impacts of the RHL are analyzed in a specifications document prepared by the Council each time an RHL is implemented or revised (e.g., MAFMC 2018). The alternatives considered in this document will not impact the RHL; thus, all impacts to protected species described below are indirect.

No notable changes in fishing effort, or the amount, duration, or location of gear in the water are expected under this alternative. As such, new or elevated interaction risks to protected species are not expected under alternative 1B relative to current conditions.

As previously stated, any action that results in interactions with or take of ESA-listed species is expected to have some level of negative impacts on those species. Alternative 1B would allow for continued interactions between recreational hook and line gear and ESA-listed species; therefore, it is expected to have negligible to slight negative impacts on those species, depending on the species. Specifically, it is expected to have negligible impacts on those species which have never had observed or documented interactions with hook and line gear (i.e., Atlantic salmon). Slight negative impacts are expected for ESA listed species for which interactions are possible (i.e., ESA-listed large whales, sea turtles, and Atlantic sturgeon; section 6.4.3.1).

For non-ESA listed MMPA species that have their PBR level reached or exceeded (i.e., humpback whales, pilot whales, and bottlenose dolphins), negligible to slight negative impacts would be expected, depending on the species. Specifically, negligible impacts would be expected for those species which have never had observed or documented interactions with hook and line gear (i.e., pilot whales). Slight negative impacts would be expected for species for which interactions are possible but have a low probability of resulting in serious injury or mortality (i.e., humpback whales and bottlenose dolphins; section 6.4.3.1).

Non-ESA listed MMPA species whose PBR levels have not been exceeded are at more sustainable levels (i.e., all non-ESA listed MMPA species in Table 25 with the exception of humpback whales, pilot whales, and bottlenose dolphins). For these species, alternative 1B may have negligible to slight positive impacts by maintaining takes below the PBR level and approaching the zero mortality rate goal.

In summary, alternative 1B is expected to have negligible to slight negative impacts on ESA-listed species and slight negative to slight positive impacts on non-ESA listed MMPA-protected species. All these impacts are indirect impacts for the reasons previously stated. The impacts of alternative 1B on protected species are not expected to be different than the impacts of alternatives 1A or 1C because fishing effort will be constrained primarily by the RHL under all three alternatives. The differences between alternatives 1A-1C in terms of their impacts on protected species are negligible.

7.4.1.3. Impacts Of Alternative 1C (Black Sea Bass Conservation Equivalency Using The Current Summer Flounder Process With Rollover) On Protected Species

Alternative 1C proposes updating the Council and Commission FMPs to allow conservation equivalency to be used for the recreational black sea bass fishery in future years based on the process currently used for summer flounder. Alternative 1C would also allow conservation equivalency to roll over from one year to the next, when appropriate (section 5.1.3).

The only difference between alternative 1C and alternative 1B is the potential for conservation equivalency rollover. When considered separately from the use of conservation equivalency itself, conservation equivalency rollover is administrative in nature. As such, it is not expected to result in any changes in fishing effort or changes in the amount, duration, or location of recreational fishing gear in the water. Thus, conservation equivalency rollover is not expected to have any direct or indirect impacts on protected species. The impacts of alternative 1C on protected species therefore derive only from the use of conservation equivalency. For this reason, alternative 1C is expected to have identical impacts on protected species as alternative 1B. Those impacts are described in detail in the previous section and include negligible to slight negative impacts on ESA-listed species and slight negative to slight positive impacts on non-ESA listed MMPA-protected species. These are all indirect impacts for the reasons previously stated.

The impacts of alternative 1C on protected species are not expected to be different than the impacts of alternatives 1A or 1B because fishing effort will be constrained primarily by the RHL under all three alternatives. The differences between alternatives 1A-1C in terms of their impacts on protected species are negligible.

7.4.1.4. Impacts Of Alternative 2A (No Action On Summer Flounder Conservation Equivalency Rollover; Preferred) On Protected Species

When considered separately from the use of conservation equivalency itself, the alternatives for conservation equivalency rollover for summer flounder (alternatives 2A and 2B) are both administrative in nature. As such, they are not expected to result in any changes in fishing effort, or the amount, duration, or location of gear in the water. Therefore, they are not expected to have any direct or indirect impacts on protected species.

7.4.1.5. Impacts Of Alternative 2B (Summer Flounder Conservation Equivalency Rollover) On Protected Species

When considered separately from the use of conservation equivalency itself, the alternatives for conservation equivalency rollover for summer flounder (alternatives 2A and 2B) are both administrative in nature. As such, they are not expected to result in any changes in fishing effort, or the amount, duration, or location of gear in the water. Therefore, they are not expected to have any direct or indirect impacts on protected species.

7.4.2. Impacts Of Block Island Sound Transit Alternatives On Protected Species

The Council considered two alternatives for Block Island Sound transit provisions, one of which includes four sub-alternatives. All but the no action alternative (alternative 3A) could lead to a slight increase in fishing effort and thus a potential increase in the amount and/or duration of gear in the Rhode Island state waters around Block Island, compared to current conditions. As previously stated, impacts to protected species are based on expected changes in fishing effort and associated changes in the potential for interactions with protected species under each alternative. Interaction risks are strongly associated with the amount of gear in the water, gear soak or tow time, as well as the area of overlap, either in space or time, of the gear and a protected species (with risk of an interaction increasing with increases in of any or all of these factors).

The following list ranks all possible combinations of sub-alternatives from the highest potential increase in fishing effort, and thus greatest potential for negative impacts to protected species, to the lowest. This list should be considered when evaluating the relative impacts of each sub-alternative on protected species. For example, the sub-alternatives for transit area (alternatives 3B-1 and 3B-2) are not compared to the alternatives for the fisheries subject to the transit provisions (alternatives 3B-3 and 3B-4) as this would not be a meaningful comparison. Impacts to protected species will derive from the combination of alternatives selected, not the sub-alternatives considered individually.

- Alternatives 3B (allow transit), 3B-2 (in the striped bass transit area), and 3B-4 (for commercial and recreational fishermen/vessels) - this is the preferred combination of Block Island Sound transit alternatives.
- Alternatives (allow transit), 3B-2 (in the striped bass transit area), and 3B-3 (for recreational fisheries only).
- Alternatives 3B (allow transit), 3B-1 (in RI-specific area) and 3B-4 (for commercial and recreational fishermen/vessels).
- Alternatives 3B (allow transit), 3B-1 (in RI-specific area) and 3B-3 (for recreational fisheries only).
- Alternative 3A (no action).

As described in detail in section 7.1.2, there is some uncertainty regarding the relative ranking of the combination of alternatives 3B, 3B-2, and 3B-3 (allow transit in the striped bass transit area for recreational fisheries only) compared to the combination of alternatives 3B, 3B-1, and 3B-4 (allow transit in the RI-specific area for commercial and recreational fishermen/vessels).

The Block Island Sound transit alternatives have the potential to impact recreational or recreational and commercial fisheries for summer flounder, scup, and black sea bass, depending on the sub-alternative chosen. Hook and line are the primary gears used in the recreational

fisheries for all three species. As described in section 6.4.3.1, while marine mammal interactions with recreational hook and line gear are possible (for ESA listed and non-listed large whales and bottlenose dolphins), there is a low probability that an interaction will result in serious injury or mortality to any of these species. For ESA-listed species of sea turtles and Atlantic sturgeon, interactions with hook and line interactions are possible (section 6.4.3.1). Hook and line interactions with other protected species identified in section 6.4 (e.g., species of small cetaceans except bottlenose dolphins, pinnipeds, Atlantic salmon) have never been observed or documented and therefore, this gear type is not expected to be source of injury or mortality to these species.

The commercial fisheries for all three species are primarily prosecuted with bottom trawl and pot/trap gear. Many protected species are vulnerable to interactions with pot/trap and/or bottom trawl gear, including ESA-listed species (i.e., fin, sei, and North Atlantic right whales; green, loggerhead, leatherback and Kemp's ridley sea turtles; Atlantic sturgeon; and Atlantic salmon) and non-ESA listed MMPA-protected species (i.e., Risso's, short beaked common, bottlenose, and Atlantic white-sided dolphins; harbor porpoise; harbor, gray, hooded, and harp seals; and pilot, minke, and humpback whales; section 6.4.3.2).

7.4.2.1. Impacts Of Alternative 3A (No Action On Block Island Sound Transit) On Protected Species

Under all Block Island Sound transit alternatives, including alternative 3A, a small number of vessels (i.e., only non-federally permitted fishermen/vessels who fish in the Rhode Island state waters around Block Island) in a limited area (i.e., Rhode Island state waters around Block Island) will be affected. Under this alternative 3A, no changes would be made to current regulations; therefore, fishing effort and thus, the amount, location, and duration of time that gear is in the water would not differ from current operating conditions and would continue to be constrained primarily by the RHL and commercial quota. Based on this, and the fact that interaction risks to protected species are strongly associated with the amount of gear in the water, gear soak or tow time, as well as the area of overlap, either in space or time, of the gear and a protected species (with risk of an interaction increasing with increases in of any or all of these factors), interactions between protected species and hook and line gear, bottom otter trawls, and/or pots/traps would be expected to remain similar to current conditions.

As previously stated, any interactions with ESA-listed species are considered to have some level of negative impacts on those species. As provided in section 6.4.3, interactions with recreational hook and line gear are possible for ESA-listed large whales, sea turtles, and Atlantic sturgeon. ESA-listed sea turtles, Atlantic sturgeon, and Atlantic salmon are vulnerable to interactions with bottom otter trawls. Pot/trap gear poses an interaction risk to ESA-listed sea turtles and large whales (section 6.4.3). Based on this information, and taking into consideration expected fishing behavior under alternative 3A, we expect alternative 3A, in most instances, to result in negligible to slight negative impacts to most ESA listed species (i.e., sea turtles, Atlantic sturgeon, and Atlantic salmon); the exception is listed species of large whales, for which negligible to moderate impacts are expected. Negligible impacts are expected for those species/gear type combinations not expected to result in interactions based on no previously documented or observed interactions with gear types used in the fishery (e.g., Atlantic sturgeon and Atlantic salmon and pot/trap gear; Atlantic salmon and hook and line gear; large whales and bottom trawl gear; see section 6.4.3). For those listed species for which gear interactions are possible, we considered the resource condition, documented or observed interactions with gear types similar

to those used in the fishery, and expected level of effort under alternative 3A to determine the magnitude of negative impacts to ESA listed species. Taking those factors into consideration, as noted above, in most instances, alternative 3A is expected to result in slight negative impacts to most ESA listed species that have the potential to interact with bottom trawl, hook and line, and/or pot trap gear (e.g., hook and line gear interactions with sea turtles, and Atlantic sturgeon; bottom trawl interactions with ESA-listed sea turtles, Atlantic sturgeon, and Atlantic salmon; pot/trap interactions with ESA-listed sea turtles). The exception is impacts to ESA listed species of large whales, specifically as it relates to pot/trap gear. Even though the no action alternative will not result in an increased risk of an interaction relative to current operating conditions, pot/trap gear poses a high entanglement risk, and thus, high risk of serious injury or mortality to large whales. Given the status of large whales, particularly North Atlantic right whales which have experienced a decline since 2010 (Pettis et al. 2018; Pace et al. 2017), any potential for entanglement in pot/trap gear poses a high risk to these species. Taking these factors into consideration, moderate negative effects are expected under alternative 3A as it relates to the component of the fishery using pot/tap gear. Other gear types used in the fishery are either not known to interact with large whales (i.e., bottom trawl gear; see section 6.4.3), or are expected to result in little to no risk of serious injury or mortality to the species (i.e., hook and line gear; section 6.4.3). Given this, under alternative 3A, impacts to large whales are expected to range from negligible to moderate negative.

For non-ESA listed MMPA species that have their PBR level reached or exceeded (i.e., humpback whales, pilot whales, and bottlenose dolphins), given the information provided in section 6.4.3, alternative 3A is expected to have impacts that range from negligible to moderate negative, depending on the species and gear type. These populations are not at optimum sustainable levels and therefore, the continued existence of these stocks/species is at risk. As a result, any potential for an interaction is a detriment to their ability to recover from this condition. Negligible impacts would be expected for those species/gear type combinations which are not expected to result in interactions based on no previous documentation of interactions (e.g., pilot whales and hook and line gear). Slight to moderate negative impacts would be expected for species/gear type combinations which could result in interactions (e.g., humpback whales and pot/traps). These impacts are expected to be slight to moderate for the same rationale provided above for ESA listed species.

MMPA species whose PBR levels have not been exceeded are at more sustainable levels. This includes all non-ESA listed MMPA species in Table 25 with the exception of humpback whales, pilot whales, and bottlenose dolphins. There has been no indication that takes of these species in commercial or recreational fisheries have gone beyond levels which would result in the inability of the populations to sustain themselves. Given the risk of interactions associated with the gear types used in the commercial and recreational fisheries, as well as the information provided in section 6.4.3, alternative 3A may have negligible to slight positive impacts by maintaining takes below the PBR level and approaching the zero mortality rate goal.

In summary, alternative 3A is expected to have moderate negative to slight positive impacts on non-ESA listed MMPA-protected species, and negligible to moderate negative impacts on ESA-listed species (depending on the species and gear).

As previously described, alternative 3B would allow for an increase in fishing effort in the Rhode Island state waters around Block Island, compared to alternative 3A. As such, the impacts

of alternative 3A on protected species are expected to be less negative than the impacts of alternative 3B.

7.4.2.2. Impacts Of Alternative 3B (Block Island Sound Transit; Preferred) On Protected Species

Under alternative 3B, certain vessels/fishermen (as defined through sub-alternative 3B-3 or 3B-4) would be allowed to transit through a defined area (sub-alternative 3B-1 or 3B-2) in Block Island Sound while complying with the state waters regulations for summer flounder, scup, and black sea bass. This is a preferred alternative.

In situations where the federal waters regulations are more restrictive than the state waters regulations, alternative 3B could allow for increased fishing effort in the Rhode Island state waters around Block Island. Only non-federally permitted fishermen will be impacted by this alternative. Depending on the sub-alternatives chosen, this will apply to recreational fishermen only or recreational and commercial fishermen (sub-alternatives 3B-3 and 3B-4) who fish in the Rhode Island state waters around Block Island and return to the mainland in Rhode Island, Massachusetts, Connecticut, or New York (sub-alternatives 3B-1 and 3B-2). For these reasons, the impacts of this alternative will be limited in terms of area and number of fishermen/vessels. In addition, fishing effort will continue to be primarily constrained by the RHL and commercial quota. As such, any increases in fishing effort under alternative 3B are expected to be slight compared to current conditions and to the no action alternative (alternative 3A).

As previously stated, any interactions with ESA-listed species are considered to have some level of negative impacts on those species. As provided in section 6.4.3, interactions with recreational hook and line gear are possible for ESA-listed large whales, sea turtles, and Atlantic sturgeon. ESA-listed sea turtles, Atlantic sturgeon, and Atlantic salmon are vulnerable to interactions with bottom otter trawls. Pot/trap gear poses an interaction risk to ESA-listed sea turtles and large whales (see section 6.4.3). Based on this information, and taking into consideration expected fishing behavior under alternative 3B, we expect alternative 3B, in most instances, to result in negligible to slight negative impacts to most ESA listed species (i.e., sea turtles, Atlantic sturgeon, and Atlantic salmon); the exception is listed species of large whales, for which negligible to moderate impacts are expected. Negligible impacts are expected for those species/gear type combinations not expected to result in interactions based on no previously documented or observed interactions with gear types used in the fishery (e.g., Atlantic sturgeon and Atlantic salmon and pot/trap gear; Atlantic salmon and hook and line gear; large whales and bottom trawl gear; section 6.4.3). For those listed species for which gear interactions are possible, we considered the resource condition, documented or observed interactions with gear types similar to those used in the fishery, and expected level of effort under alternative 3B to determine the magnitude of negative impacts to ESA listed species. Taking those factors into consideration, as noted above, in most instances, alternative 3B is expected to result in slight negative impacts to most ESA listed species that have the potential to interact with bottom trawl, hook and line, and/or pot trap gear (e.g., hook and line gear interactions with sea turtles, and Atlantic sturgeon; bottom trawl interactions with ESA-listed sea turtles, Atlantic sturgeon, and Atlantic salmon; pot/trap interactions with ESA-listed sea turtles). The exception is impacts to ESA listed species of large whales, specifically as it relates to pot/trap gear. Even though alternative 3B will not result in a notably increased risk of an interaction relative to current operating conditions, pot/trap gear poses a high entanglement risk, and thus, high risk of serious injury or mortality to large whales. Given the status of large whales, particularly North Atlantic

right whales which have experienced a decline since 2010 (Pettis et al. 2018; Pace et al. 2017), any potential for entanglement in pot/trap gear poses a high risk to these species. Taking these factors into consideration, moderate negative effects are expected under alternative 3B as it relates to the component of the fishery using pot/tap gear. Other gear types used in the fishery are either not known to interact with large whales (i.e., bottom trawl gear; see section 6.4.3), or are expected to result in little to no risk of serious injury or mortality to the species (i.e., hook and line gear; section 6.4.3). Given this, under alternative 3B, impacts to large whales are expected to range from negligible to moderate negative.

For non-ESA listed MMPA species that have their PBR level reached or exceeded (i.e., humpback whales, pilot whales, and bottlenose dolphins), given the information provided in section 6.4.3, alternative 3B is expected to have impacts that range from negligible to moderate negative, depending on the species and gear type. These populations are not at optimum sustainable levels and therefore, the continued existence of these stocks/species is at risk. As a result, any potential for an interaction is a detriment to their ability to recover from this condition. Negligible impacts would be expected for those species/gear type combinations which are not expected to result in interactions based on no previous documentation of interactions (e.g., pilot whales and hook and line gear). Slight to moderate negative impacts would be expected for species/gear type combinations which could result in interactions (e.g., humpback whales and pot/traps). These impacts are expected to be slight to moderate for the same rationale provided above for ESA listed species.

MMPA species whose PBR levels have not been exceeded are at more sustainable levels. This includes all non-ESA listed MMPA species in Table 25 with the exception of humpback whales, pilot whales, and bottlenose dolphins. There has been no indication that takes of these species in commercial or recreational fisheries have gone beyond levels which would result in the inability of the populations to sustain themselves. Given the risk of interactions associated with the gear types used in the commercial and recreational fisheries, as well as the information provided in section 6.4.3, alternative 3B may have negligible to slight positive impacts by maintaining takes below the PBR level and approaching the zero mortality rate goal.

In summary, alternative 3B is expected to have moderate negative to slight positive impacts on non-ESA listed MMPA-protected species, and negligible to moderate negative impacts on ESA-listed species (depending on the species and gear).

As previously described, alternative 3B would allow for an increase in fishing effort in the Rhode Island state waters around Block Island, compared to alternative 3A. As such, the impacts of alternative 3A on protected species are expected to be less negative than the impacts of alternative 3B.

7.4.2.2.1. Impacts Of Alternative 3B-1 (Block Island Sound Transit In Rhode Island Specific Area) On Protected Species

Sub-alternative 3B-1 assumes that alternative 3B (allow transit in Block Island Sound) is selected as a preferred alternative. Sub-alternative 3B-1 would allow transit in a small corridor connecting Block Island to mainland Rhode Island, as shown in Figure 2 in section 5.3.2.1. Given the size and location of this transit area, it would likely be used mostly by vessels returning to mainland Rhode Island. This transit area is not conveniently placed for vessels returning to Connecticut, New York, or Massachusetts.

Sub-alternative 3B-1 only defines the transit area that will be used under alternative 3B. Thus, the impacts of sub-alternative 3B-1 are expected to be the same as those previously described for alternative 3B. For the reasons described in section 7.4.2.2, alternative 3B is expected to have moderate negative to slight positive impacts on non-ESA listed MMPA-protected species and negligible to moderate negative impacts on ESA-listed species (depending on the species) compared to current conditions.

Sub-alternative 3B-1 is expected to lead to a lesser increase in fishing effort compared to sub-alternative 3B-2, which includes a larger transit area which could more easily be used by vessels returning to Rhode Island, Connecticut, New York, or Massachusetts (section 5.3.2.2). As such, the impacts of alternative 3B on protected species (i.e., negligible to moderate negative for ESA-listed species and moderate negative to slight positive for non-ESA listed MMPA species) are expected to be slightly less negative under sub-alternative 3B-1 than under sub-alternative 3B-2.

7.4.2.2.2. Impacts Of Alternative 3B-2 (Block Island Sound Transit In Striped Bass Transit Area; Preferred) On Protected Species

Sub-alternative 3B-2 assumes that alternative 3B (allow transit in Block Island Sound) is selected as a preferred alternative. Sub-alternative 3B-2 would allow transit in the same area where transit is currently allowed for striped bass (Figure 3, section 5.3.2.2). This is a preferred alternative. This transit area could easily be used by vessels returning to Connecticut, New York, or Massachusetts.

Sub-alternative 3B-2 only defines the transit area that will be used under alternative 3B. Thus, the impacts of sub-alternative 3B-2 are expected to be the same as those previously described for alternative 3B. For the reasons described in section 7.4.2.2, alternative 3B is expected to have moderate negative to slight positive impacts on non-ESA listed MMPA-protected species and negligible to moderate negative impacts on ESA-listed species (depending on the species) compared to current conditions.

Sub-alternative 3B-2 is expected to lead to a slightly greater increase in fishing effort compared to sub-alternative 3B-1, which includes a smaller transit area which could not easily be used by vessels returning to Rhode Island, Connecticut, New York, or Massachusetts (section 5.3.2.2). As such, the impacts of alternative 3B on protected species (i.e., negligible to moderate negative for ESA-listed species and moderate negative to slight positive for non-ESA listed MMPA species) are expected to be slightly more negative under sub-alternative 3B-2 than under sub-alternative 3B-1.

7.4.2.2.3. Impacts Of Alternative 3B-3 (Transit For Recreational Fisheries) On Protected Species

Sub-alternative 3B-3 assumes that alternative 3B (allow transit in Block Island Sound) is selected as a preferred alternative. Under sub-alternative 3B-3, transit through a defined area will be allowed only for recreational fisheries. This is expected to lead to a slight increase in fishing effort in the Rhode Island state waters around Block Island compared to current conditions and to the no action alternative (alternative 3A).

Sub-alternative 3B-3 only defines the fishery sector which will be able to take advantage of the transit provisions under alternative 3B (i.e., recreational only). Thus, the expected impacts of sub-alternative 3B-3 are similar to those previously described for alternative 3B. The exception is that pot/trap and bottom otter trawl interactions are not relevant under this sub-alternative as

only recreational fisheries would be impacted and the recreational fisheries use hook and line gear almost exclusively. Thus, based on the rationale provided in section 7.4.2.2 regarding hook and line gear, sub-alternative 3B-3 is expected to have moderate negative to slight positive impacts on non-ESA listed MMPA-protected species and negligible to moderate negative impacts on ESA-listed species (depending on the species) compared to current conditions.

This increase in fishing effort is expected to be lesser in magnitude than under sub-alternative 3B-4, which would allow transit for recreational and commercial fisheries. Sub-alternative 3B-3 (recreational only) would impact a smaller number of fishermen/vessels than sub-alternative 3B-4 (recreational and commercial). Thus, the impacts of alternative 3B on protected species are expected to be slightly less negative under sub-alternative 3B-3 than under sub-alternative 3B-4.

7.4.2.2.4. Impacts Of Alternative 3B-4 (Transit For Recreational And Commercial Fisheries; Preferred) On Protected Species

Sub-alternative 3B-4 assumes that alternative 3B (allow transit in Block Island Sound) is selected as a preferred alternative. Under sub-alternative 3B-4, transit through a defined area would be allowed for recreational and commercial fisheries. This is a preferred alternative. This is expected to lead to a slight increase in fishing effort in the Rhode Island state waters around Block Island compared to current conditions and to the no action alternative (alternative 3A).

Sub-alternative 3B-4 only defines the fishery sector which will be able to take advantage of the transit provisions under alternative 3B (i.e., recreational and commercial). Thus, the expected impacts of sub-alternative 3B-4 are the same as those previously described for alternative 3B. For the reasons described in section 7.4.2.2, alternative 3B is expected to have moderate negative to slight positive impacts on non-ESA listed MMPA-protected species and negligible to moderate negative impacts on ESA-listed species (depending on the species) compared to current conditions.

This increase in fishing effort is expected to be greater in magnitude than under sub-alternative 3B-3 because it will impact a greater number of fishermen/vessels than alternative 3B-3, which would allow transit for recreational fisheries only. In addition, those fishermen/vessels would be expected to have a greater likelihood of interacting with and causing serious injury or mortality to protected species due to the gear types used (i.e., bottom otter trawls, pots/traps, and hook and line gear under sub-alternative 3B-4 as opposed to only hook and line gear under sub-alternative 3B-3; section 6.4.3). For these reasons, the impacts of alternative 3B on protected species are expected to be more negative under sub-alternative 3B-4 than under sub-alternative 3B-3.

7.4.3. Impacts Of Slot Limit Alternatives On Protected Species

Three alternatives regarding recreational slot limits were analyzed. The impacts of these alternatives on protected species are described in the following sections. As previously stated, these alternatives do not implement slot limits but rather update the Council's FMP to allow slot limits to be used in future years. In this sense, these alternatives are largely administrative in nature. The following sections describe the likely impacts to protected species of using (or not using) slot limits in the recreational summer flounder, scup, and black sea bass fisheries. However, the impacts of alternatives 4A-4C are largely indirect as no changes to the amount, location, or duration of gear in the water are expected based on modifying (or not modifying) the FMP to allow the use of a maximum size limit in future years, as considered by the alternatives.

As described in the following sections, alternative 4B (allow use of a maximum size limit for summer flounder and black sea bass) is generally expected to have the least negative impacts on protected species, followed by alternative 4C (allow use of a maximum size limit for scup), and alternative 4A (no action). The impacts of any particular slot limits may vary. If the Council wishes to use a particular slot limit in an upcoming year, that slot limit will be analyzed in a future specifications package.

7.4.3.1. Impacts Of Alternative 4A (No Action On Slot Limits) On Protected Species

Under alternative 4A, no action on slot limits would be taken. The Council would not be able to use regular slot limits, split slot limits, or a trophy fish category for summer flounder, scup, or black sea bass because the Council's FMP does not allow for use of a maximum size limit. A maximum size limit can be used in state waters for all three species and for the recreational summer flounder fishery in years when federal waters measures are waived in favor of state waters measures through conservation equivalency.

As previously stated, under this alternative the greatest impacts on recreational fishing effort, the amount, location, and duration of hook and line gear in the water and thus impacts to protected species, are expected to continue to result from the RHLs for all three species. The expected impacts of the RHLs are analyzed in a specifications document prepared by the Council each time an RHL is implemented or revised (e.g., MAFMC 2018).

This alternative is largely administrative in nature and would make no changes to current fishing regulations; therefore, it is not expected to have direct impacts on fishing effort or the amount, location, and duration of hook and line gear in the water. Thus, it is not expected to have direct impacts on protected species. However, indirect impacts will result from continued *status quo* levels of fishing effort and fishing behavior and continued *status quo* levels of interactions between recreational hook and line gear and protected species. The impacts of these interactions are summarized below.

As previously stated, any action that results in interactions with or take of ESA-listed species is expected to have negative impacts on those species. As described in more detail in section 7.4.1.1 for alternative 1A, *status quo* levels of recreational fishery interactions with ESA-listed species are expected to have negligible to slight negative impacts on those species, depending on the species. Specifically, negligible impacts are expected for those species which have never had observed or documented interactions with hook and line gear (i.e., Atlantic salmon). Slight negative impacts are expected for ESA listed species for which interactions are possible but have a low probability of resulting in serious injury or mortality (i.e., ESA-listed large whales; section 6.4.3.1).

For non-ESA listed MMPA species that have their PBR level reached or exceeded, negligible to slight negative impacts would be expected, depending on the species. Specifically, negligible impacts would be expected for those species which have never had observed or documented interactions with hook and line gear (i.e., pilot whales). Slight negative impacts would be expected for species for which interactions are possible but have a low probability of resulting in serious injury or mortality (i.e., humpback whales, pilot whales, and bottlenose dolphins; section 6.4.3.1).

MMPA species whose PBR levels have not been exceeded are at more sustainable levels (i.e., all non-ESA listed MMPA species in Table 25 with the exception of humpback whales, pilot

whales, and bottlenose dolphins). For these species, alternative 4A may have negligible to slight positive impacts by maintaining takes below the PBR level and approaching the zero mortality rate goal.

In summary, alternative 4A is expected to have negligible to slight negative impacts on ESA-listed species and slight negative to slight positive impacts on non-ESA listed MMPA-protected species. As previously described, in certain situations, fishing effort could be slightly lower under alternatives 4B and 4C, compared to alternative 4A. Therefore, the impacts of alternative 4A on protected species could be slightly more negative than the impacts of alternatives 4B and 4C.

7.4.3.2. Impacts Of Alternative 4B (Allow Use Of A Maximum Size Limit For Summer Flounder And Black Sea Bass; Preferred) On Protected Species

Alternative 4B would allow a maximum fish size to be specified for recreational summer flounder and black sea bass fisheries in federal waters. This would allow for the use of regular slot limits, split slots, and trophy fish. This is a preferred alternative. As previously stated, this framework does not consider implementing any specific slot limits. Rather, it proposes updating the Council's FMP to allow slot limits to be used in future years.

As previously stated, the greatest impact on recreational fishing effort, the amount, location, and duration of hook and line gear in the water and thus impacts to protected species, is expected to continue to result from the RHLs for summer flounder and black sea bass. The expected impacts of the RHLs are analyzed in a specifications document prepared by the Council each time an RHL is implemented or revised (e.g., MAFMC 2018).

This alternative is largely administrative in nature and would make no changes to current fishing regulations; therefore, it is not expected to have direct impacts on fishing effort or the amount, location, and duration of hook and line gear in the water. Thus, it is not expected to have direct impacts on protected species. However, it will allow for different types of recreational size limits to be used in future years (i.e., maximum size limits, slot limits, split slot limits, and trophy fish), compared to what was possible in the past (i.e., minimum size limits only). The types of regulations that may be used in the future under this alternative may result in indirect impacts to protected species if they result in changes in fishing effort and fishing behavior. These potential indirect impacts are summarized below. However, it is important to reiterate that this alternative does not consider implementing any specific types of management measures in any given year. If the Council decides to change the current minimum fish size regulations for summer flounder or black sea bass, the expected impacts of that change will be analyzed in a future document.

As previously stated, Wong (2009) concluded that compared to a standard minimum size limit, the slot limit options analyzed for summer flounder "certainly result in greatly increased numbers of fish harvested" due to the higher availability of smaller fish compared to larger fish (Wong 2009). Wiedenmann et al. (2013) also found that slot limits could result in an increase in the number of summer flounder harvested per angler. The same may be true for black sea bass; however, a similar analysis has not been conducted for black sea bass. An increase in harvest in numbers of fish could lead to a decrease in recreational fishing effort for those anglers who fish in order to bring home summer flounder or black sea bass as they could retain smaller fish under a slot limit than under a traditional minimum size limit. For those anglers who practice catch and release, it may not have a notable impact on fishing effort.

As previously stated, any action that results in interactions with or take of ESA-listed species is expected to have negative impacts on those species. Thus, even if alternative 4B leads to a slight decrease in fishing effort, it would allow for continued interactions between recreational hook and line gear and ESA-listed species; therefore, it is expected to have negligible to slight negative impacts on those species, depending on the species. Specifically, it is expected to have negligible impacts on those species which have never had observed or documented interactions with hook and line gear (i.e., Atlantic salmon). Slight negative impacts are expected for ESA listed species for which interactions are possible (i.e., ESA-listed large whales, sea turtles, and Atlantic sturgeon; section 6.4.3.1).

For non-ESA listed MMPA species that have their PBR level reached or exceeded (i.e., humpback whales, pilot whales, and bottlenose dolphins), negligible to slight negative impacts would be expected, depending on the species. Specifically, negligible impacts would be expected for those species which have never had observed or documented interactions with hook and line gear (i.e., pilot whales). Slight negative impacts would be expected for species for which interactions are possible but have a low probability of resulting in serious injury or mortality (i.e., humpback whales and bottlenose dolphins; section 6.4.3.1).

MMPA species whose PBR levels have not been exceeded are at more sustainable levels (i.e., all non-ESA listed MMPA species in Table 25 with the exception of humpback whales, pilot whales, and bottlenose dolphins). For these species, alternative 4B may have negligible to slight positive impacts by maintaining takes below the PBR level and approaching the zero mortality rate goal.

In summary, alternative 4B is expected to have negligible to slight negative impacts on ESA-listed species and slight negative to slight positive impacts on non-ESA listed MMPA-protected species.

If overall recreational fishing effort decreases, depending on the regulations implemented in future years under alternative 4B, then alternative 4B could have less negative impacts on protected species than the no action alternative (alternative 4A), which is not expected to change fishing effort compared to current levels. Alternative 4B may also have less negative impacts than alternative 4C because alternative 4C would impact only the recreational scup fishery and thus would be expected to impact fewer anglers, compared to alternative 4B, which impacts the summer flounder and black sea bass fisheries.

7.4.3.3. Impacts Of Alternative 4C (Allow Use Of A Maximum Size Limit For Scup) On Protected Species

Alternative 4C would allow a maximum fish size to be specified for the recreational scup fishery in federal waters. This would allow for regular slot limits, split slots, and trophy fish. As previously stated, this framework does not consider implementing any specific slot limits. Rather, it proposes updating the Council's FMP to allow slot limits to be used in future years.

As previously stated, the greatest impact on recreational fishing effort, the amount, location, and duration of hook and line gear in the water and thus impacts to protected species, is expected to continue to result from the scup RHL. The expected impacts of the RHL are analyzed in a specifications document prepared by the Council each time an RHL is implemented or revised (e.g., MAFMC 2017b).

This alternative is largely administrative in nature and would make no changes to current fishing regulations; therefore, it is not expected to have direct impacts on fishing effort or the amount, location, and duration of hook and line gear in the water. Thus, it is not expected to have direct impacts on protected species. However, it will allow for different types of recreational size limits to be used in future years (i.e., maximum size limits, slot limits, split slot limits, and trophy fish), compared to what was possible in the past (i.e., minimum size limits only). The types of regulations that may be used in the future under this alternative may result in indirect impacts to protected species if they result in changes in fishing effort and fishing behavior. These potential indirect impacts are summarized below. However, it is important to reiterate that this alternative does not consider implementing any specific types of management measures in any given year. If the Council decides to change the current minimum fish size regulations for scup, the expected impacts of that change will be analyzed in a future document.

As previously stated, Wong (2009) concluded that compared to a standard minimum size limit, the slot limit options analyzed for summer flounder would "certainly result in greatly increased numbers of fish harvested" due to the higher availability of smaller fish compared to larger fish. Wiedenmann et al. (2013) also found that slot limits could result in an increase in the number of summer flounder harvested per angler. A similar analysis has not been conducted for scup. If a slot limit for scup leads to an increase in harvest in numbers of fish, it could lead to a decrease in recreational fishing effort for those anglers who fish in order to bring home scup. However, a slot limit for scup may not have a notable impact on fishing behavior because availability of scup at or above the current minimum fish sizes of 8-9 inches (depending on the area) has been relatively high in recent years. In addition, anglers may not wish to keep scup smaller than 8 inches. For those anglers who practice catch and release, it may not have a notable impact on fishing effort.

For these reasons, alternative 4C may not have a notably different impact on fishing effort and the location and duration of hook and line gear in the water compared to the no action alternative (alternative 4A). Thus, the impacts of alternative 4C on protected species are expected to be the same as alternative 4A (i.e., negligible to slight negative impacts on ESA-listed species and slight negative to slight positive impacts on non-ESA listed MMPA-protected species). These impacts are described in detail in section 7.4.3.1 and not repeated here.

If alternative 4C leads to a slight decrease in fishing effort, compared to current conditions, then it could have slightly less negative impacts on protected species compared to the no action alternative (alternative 4A). Of the three slot limit alternatives, alternative 4B has the greatest potential for a decrease in fishing effort, thus is has the least negative expected impacts on protected species.

7.5. Cumulative Effects

A cumulative effects analysis (CEA) is required by the Council on Environmental Quality (CEQ; 40 CFR part 1508.7). The purpose of the CEA is to consider the combined effects of many actions on the human environment over time that would be missed if each action were evaluated separately. CEQ guidelines recognize that it is not practical to analyze the cumulative effects of an action from every conceivable perspective. Rather, the intent is to focus on those effects that are truly meaningful. A formal cumulative impact assessment is not necessarily required under NEPA as part of an EA if the significance of cumulative impacts have been considered (U.S.

EPA 1999). The following remarks address the significance of the expected cumulative impacts as they relate to the federally managed summer flounder, scup, and black sea bass fisheries.

7.5.1. Consideration of the VECs

The following sections discuss the significance of the cumulative effects on the following VECs:

- Managed species (i.e., summer flounder, scup, and black sea bass) and non-target species
- Human communities
- Habitat
- Protected species

7.5.2. Geographic Boundaries

The analysis of impacts focuses on actions related to the commercial and recreational harvest of summer flounder, scup, and black sea bass. The Western Atlantic Ocean is the core geographic scope for each VEC. The core geographic scopes for the managed species are their respective management units. For non-target species, those ranges may be expanded and would depend on the range of each species in the Western Atlantic Ocean. For habitat, the core geographic scope is focused on EFH within the EEZ but includes all habitat utilized by summer flounder, scup, black sea bass, and non-target species in the Western Atlantic Ocean. The core geographic scope for protected species is their range in the Western Atlantic Ocean. For human communities, the core geographic boundaries are defined as those U.S. fishing communities in coastal states from Maine through North Carolina directly involved in the commercial or recreational harvest or processing of the managed species (section 6).

7.5.3. Temporal Boundaries

The temporal scope of past and present actions for target and non-target species, human communities, and habitat is primarily focused on actions that occurred after FMP implementation (1988 for summer flounder and 1996 for scup and black sea bass). For protected species, the scope of past and present actions is focused on the 1980s and 1990s (when NMFS began generating stock assessments for marine mammals and sea turtles that inhabit waters of the U.S. EEZ) through the present.

The temporal scope of future actions for all VECs extends about five years into the future. The dynamic nature of resource management for these species and lack of information on projects that may occur in the future make it difficult to predict impacts beyond this timeframe with any certainty. The impacts discussed in this section are focused on the cumulative effects of the proposed action (i.e., the suite of preferred alternatives) in combination with the relevant past, present, and reasonably foreseeable future actions over these time scales.

7.5.4. Actions Other Than Those Proposed in This Document

The impacts of the alternatives considered in this document are described in sections 7.1 through 7.4. The sections below summarize meaningful past, present, and reasonably foreseeable future actions other than the alternatives considered in this document. The impacts of these actions are described qualitatively as actual impacts are too complex to be quantified in a meaningful way.

The Council has taken many actions to manage commercial and recreational fisheries. The MSA is the statutory basis for federal fisheries management. To the degree with which this regulatory regime is complied, the cumulative impacts of past, present, and reasonably foreseeable future

federal fishery management actions on the VECs should generally be associated with positive long-term outcomes. Constraining fishing effort through regulatory actions can have negative short-term socioeconomic impacts. These impacts are sometimes necessary to bring about long-term sustainability of a resource, and as such should promote positive effects on human communities in the long-term. Generally, these actions have had slight negative impacts on habitat, due to continued fishing operations preventing impacted habitats from recovering; however, some actions have had direct or indirect long-term positive impacts on habitat through designating or protecting important habitats. FMP actions have also had a range of impacts on protected species, including generally slight negative impacts on ESA-listed species, and a range of impacts on non ESA-listed marine mammals from slight negative to slight positive, depending on the species.

Summer Flounder, Scup, and Black Sea Bass FMP Actions

Past, present, and reasonably foreseeable future actions for summer flounder, scup, and black sea bass management include the establishment of the original FMP, all subsequent amendments and frameworks, and the setting of annual specifications (i.e., annual catch limits and measures to constrain catch and harvest). Key actions are described below.

Past and Present Actions

Management of the summer flounder fishery began through implementation of the original joint Council and Commission Summer Flounder FMP in 1988, a time that coincided with the lowest levels of stock biomass for summer flounder since the late 1960s. In 1993, Amendment 2 enacted the bulk of the fishery management program for summer flounder, including fishery allocations and regulations to reduce fishing mortality. Regulations included a commercial minimum fish size, minimum trawl mesh size, permit requirements for the sale and purchase of summer flounder, and annually adjustable landing limits for the commercial summer flounder fishery.

Amendments 8 and 9 (both in 1996) added scup and black sea bass to the FMP with commercial quotas, RHLs, minimum fish size limits, gear restrictions, permits, and reporting requirements.

A regulatory amendment followed shortly thereafter in 1996 to establish three commercial quota periods for the scup fishery. This was intended to limit the potential for the annual quota to be fully harvested early in the year and to ensure access to quota for both larger vessels which fish offshore in the winter and smaller vessels which fish inshore in the summer.

Additional amendments and framework actions have allowed for or required reduced F rates for these species, commercial quota transfers, research set-aside, gear restrictions, protection of the spawning classes, state- or region-level flexibility in recreational management, and reducing discards.

Amendment 12 (MAFMC 1998) designated EFH for all three species, which resulted in indirect positive impacts on habitat via the ability to identify, monitor, and protect important habitats.

Two gear restricted areas were implemented through specifications in 2000 with the intent of minimizing discards of small scup in small-mesh fisheries during the winter and spring. These areas were modified several times since their initial implementation, most recently through Framework 9 in 2016.

Framework 2 (2001) added the ability to manage the recreational summer flounder fishery via conservation equivalency, which gives individual states the opportunity to set recreational possession limits, size limits, and seasons to meet the needs of their stakeholders while collectively constraining coastwide harvest to the annual RHL. This management system has had positive impacts on target and non-target species by contributing to constraining harvest. The impacts on human communities have been overall positive due to the ability to customize measures, however negative impacts have been experienced as the result of increased regulatory complexity.

Amendment 13, implemented in 2003, replaced the quarterly black sea bass quota implemented through Amendment 9 with a coastwide quota in federal waters. At the same time, the Commission adopted state-by-state quota allocations in state waters.

Amendment 15 established ACLs and AMs consistent with the 2007 revisions to the Magnuson-Stevens Act (MAFMC 2011). Related to this requirement, the Council annually implements or reviews catch and landings limits for each species consistent with the recommendations of the SSC, and reviews other management measures as necessary to prevent catch limits from being exceeded and to meet the objectives of the FMP.

The recreational AM omnibus amendment (Amendment 19 to the Summer Flounder, Scup, and Black Sea Bass FMP), implemented in 2013, modified the recreational AMs for all three species. This amendment removed NMFS' in-season closure authority for the recreational fisheries due to the two-month time lag in availability of preliminary recreational catch data. In addition, the type of AM needed in response to an ACL overage (i.e., pound for pound payback, scaled payback, or adjustments to bag/size/seasons) is now tied to stock status.

Framework 12 in 2018 modified the dates of the scup commercial quota periods. Framework 13 in 2018 modified the commercial AMs for all three species when ACL overages are caused by discards. Stock status is now taken into consideration when determining the appropriate AM, similar to the method used in the recreational fisheries for these species.

In March 2019, the Council and Commission took final action on the Summer Flounder Commercial Issues Amendment. This amendment has not yet been approved or implemented by NMFS. If approved, this amendment would modify the state-by-state commercial quota allocations and would update the FMP goals and objectives for summer flounder.

Reasonably Foreseeable Future Actions

In 2019, the Council and Commission will incorporate a newly revised time series of recreational catch estimates into management, including into stock assessments and resulting catch limits. This will have implications for future catch limits and other management measures, since the revised estimates show higher catch throughout the time series for summer flounder, scup, and black sea bass, compared to the previous estimates. The Council and Commission recently revised the 2019 summer flounder specifications in response to a benchmark stock assessment which accounted for these new estimates. Operational stock assessments for scup and black sea bass are expected later in 2019.

The revised time series of recreational data may prompt re-evaluation of allocations within the FMP, both between and within the commercial and recreational sectors. One or more FMP actions may be initiated in the next 3-5 year to address these issues.

Other Fishery Management Actions

In addition to the Summer Flounder, Scup, and Black Sea Bass FMP, many other FMPs and associated fishery management actions for other species have impacted these VECs over the temporal scale described in section 7.5.3. These include FMPs managed by the Mid-Atlantic Fishery Management Council, New England Fishery Management Council (NEFMC), South Atlantic Fishery Management Council, and the Atlantic States Marine Fisheries Commission. Actions associated with other FMPs and omnibus amendments have included measures to regulate fishing effort for other species, measures to protect habitat and forage species, and fishery monitoring and reporting requirements.

For example, the NEFMC's omnibus habitat amendment revised EFH and habitat areas of particular concern designations for NEFMC-managed species; revised or created habitat management areas, including gear restrictions to protect vulnerable habitat from fishing gear impacts; and established dedicated habitat research areas. This action is expected to have overall positive impacts on habitat and EFH, with expected long-term positive implications for target and non-target species, while having mixed socioeconomic impacts.

The MAFMC's Unmanaged Forage Omnibus Amendment, implemented in 2017, prohibited the development of new and expansion of existing directed commercial fisheries on unmanaged forage species in mid-Atlantic federal waters until the Council has had an adequate opportunity to assess the scientific information relating to any new or expanded directed fisheries and consider potential impacts to existing fisheries, fishing communities, and the marine ecosystem. This action is expected to have ongoing positive impacts to target species, non-target species, and protected species, by protecting a forage base for these populations and limiting the expansion of any existing fishing effort on forage stocks.

The convening of take reduction teams for marine mammals over the temporal scope described in section 7.5.3 has had positive impacts for marine mammals via recommendations for management measures to reduce mortality and serious injury to marine mammals. These actions have had indirect positive impacts on target species, non-target species, and habitat as they have improved monitoring of fishing effort and reduced the amount of gear in the water. These measures have had indirect negative impacts on human communities through reduced fishery efficiency.

As with the summer flounder, scup, and black sea bass actions described above, other FMP actions have had positive long-term cumulative impacts on managed and non-target species because they constrain fishing effort and manage stocks at sustainable levels. As previously stated, constraining fishing effort can have negative short-term socioeconomic impacts and long-term positive impacts. These actions have typically had slight negative impacts on habitat, due to continued fishing operations preventing impacted habitats from recovering; however, some actions had long-term positive impacts through designating or protecting important habitats. FMP actions have also had a range of impacts on protected species, including generally slight negative impacts on ESA-listed species, and slight negative to slight positive impacts on non ESA-listed marine mammals, depending on the species.

Non-Fishing Impacts

Nearshore Human Activities

Non-fishing activities that introduce chemical pollutants, sewage, or suspended sediment into the marine environment or result in changes in water temperature, salinity, or dissolved oxygen, pose a risk to all VECs. The impacts of most nearshore human non-fishing activities are localized in the areas where the activities occur. Examples of these activities include agricultural runoff, port maintenance, beach nourishment, coastal development, marine transportation, marine mining, dredging, and the disposal of dredged material.

Wherever these activities co-occur, they are likely to work additively or synergistically to decrease habitat quality and as such may indirectly constrain the sustainability of managed species, non-target species, and protected species. Decreased habitat suitability tends to reduce the tolerance of these VECs to the impacts of fishing effort. Mitigation of this outcome through regulations that reduce fishing effort could negatively impact human communities. The overall impact on the affected species and their habitats on a population level is unknown, but likely to range from no impact to slight negative, depending on the species, since many of these populations have a limited or minor exposure to these local non-fishing perturbations. Agricultural runoff may be much broader in scope and the impacts of nutrient inputs to the coastal system may be larger in magnitude; however, the impact on productivity of managed, non-target, and protected species is not quantifiable.

Non-fishing activities permitted under other federal agencies (e.g., beach nourishment, offshore wind facilities) require examinations of potential impacts on the VECs. The MSA imposes an obligation on other federal agencies to consult with the Secretary of Commerce on actions that may adversely affect EFH (50 CFR 600.930). NMFS and the eight regional fishery management councils engage in this review process by making comments and recommendations on federal or state actions that may affect habitat for their managed species and by commenting on actions likely to adversely impact EFH. These activities also require ESA section 7 consultation in order to examine the impacts of these actions on listed species. This serves to minimize the extent and magnitude of indirect negative impacts those actions could have on resources under NMFS' jurisdiction.

Offshore and Nearshore Energy Development

In recent years, offshore wind energy and oil and gas exploration have become more relevant in the Greater Atlantic region. They are expected to impact all VECs. Turbines and cables for wind energy may influence water currents and electromagnetic fields, which can affect patterns of movement for various species (target, non-target, protected). Habitats directly at the turbine and cable sites would be affected, and there could be scouring concerns around turbines. Impacts on human communities will be mixed – there will be social and economic benefits due to jobs associated with construction and maintenance, and replacement of some electricity generated using fossil fuels with renewable sources. There may be negative effects on fishing activities in terms of effort displacement or making fishing more difficult or less efficient near the turbines or cables.

While there are currently no operational wind farms in Mid-Atlantic waters, potential offshore wind energy sites have been identified off Virginia, Maryland, New Jersey, Delaware, and New York, and there are several proposals to develop wind farms in both nearshore and offshore

waters. An operational wind farm currently exists off Block Island, Rhode Island. Additional offshore wind project construction south of Massachusetts/Rhode Island may begin as early as 2019 or 2020 (three projects including Vineyard Wind, Bay State Wind, and South Fork Wind Farm). Additional areas have been leased and will have site assessments in the next few years. These projects could have slight negative impacts on EFH, as well as summer flounder, scup, black sea bass, non-target species, protected species, and fishing communities.

The impacts of Block Island Wind Farm range from negative to positive. There are both short-term (construction phase) and long-term (operational phase) impacts. Construction is complete and the wind farm is currently in the operational phase. The project site was chosen to minimize potential impacts on natural resources, including sensitive benthic communities such as eelgrass beds and hard bottom habitats. The developers took measures to avoid, minimize, and mitigate potential disturbance of resources. Pile driving and cable laying during construction and associated noise and sediment and benthic habitat disturbance had minor, short-term negative impacts on finfish, habitat, and protected resources during construction. In the long-term, there will be a minimal permanent alteration of habitat associated with the five wind turbine generators and the use of additional cable protection (up to 2.25 acres). However, wind turbine foundations may provide a minor beneficial impact by providing artificial hard substrate. For protected species, there were minor short-term impacts from a temporary increase in underwater noise levels during construction. No impact is anticipated during operation from a loss of habitat or forage. For human communities, there are minor long-term negative visual impacts for Block Island. There were minor short-term negative impacts during construction associated with temporary displacement of fishing, other recreational, and tourism activities, and there is a potential for these impacts to continue during the operational phase. There are minor long-term negative impacts on marine navigation and aviation during operation in the vicinity of the wind turbine array. However, it occupies a relatively small portion of the available fishing and boating area in Rhode Island Sounds and Block Island Sound. There are benefits to local and regional economies from job creation during construction and operation.

For oil and gas, this timeframe would include leasing and possible surveys. Seismic surveys impact the acoustic environment within which marine species live. They have uncertain effects on fish behaviors that could cumulatively lead to negative population level impacts. The science on this is fairly uncertain. If marine resources are affected by seismic surveys, then so in turn the fishermen targeting these stocks could be affected. However, there would be an economic component in the form of increased jobs where there may be some positive effects on human communities.

The overall impact of offshore wind energy and oil and gas exploration on the affected species and their habitats on a population level is unknown, but likely to range from no impact to moderate negative, depending on the number and locations of projects that occur, as well as the effects of mitigation efforts.

Global Climate Change

Global climate change affects all components of marine ecosystems, including human communities. Physical changes that are occurring and will continue to occur to these systems include sea-level rise, changes in sediment deposition; changes in ocean circulation; increased frequency, intensity, and duration of extreme climate events; changing ocean chemistry, and warming ocean temperatures. Emerging evidence demonstrates that these physical changes are

resulting in direct and indirect ecological responses within marine ecosystems which may alter the fundamental production characteristics of marine systems (Stenseth et al. 2002). Climate change will potentially exacerbate the stresses imposed by fishing and other non-fishing human activities.

Results from the Northeast Fisheries Climate Vulnerability Assessment indicate that climate change could have impacts on Council-managed species that range from negative to positive, depending on the adaptability of each species to the changing environment (Hare et al. 2016). Based on this assessment, summer flounder was determined to have a moderate vulnerability to climate change. The exposure of summer flounder to the effects of climate change was determined to be very high due to the impacts of ocean surface temperature, ocean acidification, and air temperature. Exposure to all three factors occurs during all life stages. Summer flounder are an obligate estuarine-dependent species. Spawning occurs on the shelf and juveniles inhabit estuaries. Adults make seasonal north-south migrations exposing them to changing conditions inshore and offshore. The distributional vulnerability of summer flounder was ranked as high, given that summer flounder spawn in shelf waters and eggs and larvae are broadly dispersed. Adults use a range of habitats including estuarine, coastal, and shelf. The life history of the species has a strong potential to enable shifts in distribution. Summer flounder were thus determined to have low biological sensitivity to climate change.

The Climate Vulnerability Assessment also determined that scup have a moderate vulnerability to climate change. The exposure of scup to the effects of climate change was determined to be very high due to the impacts of ocean surface temperature, ocean acidification, and air temperature. Exposure to all three factors occurs during all life stages. Scup have seasonal inshore/offshore and north/south migrations. As warming continues, the availability of winter (offshore/southern) and summer (inshore/northern) habitat may increase and therefore may result in positive impacts on scup distribution, abundance and recruitment. Scup were determined to have low biological sensitivity to climate change, given their life history, spawning behavior, and relatively long life span (Hare et al. 2016).

The same assessment indicated that black sea bass has a high overall vulnerability to climate change. The exposure of black sea bass to the effects of climate change was determined to be very high due to the impacts of ocean surface temperature, ocean acidification, and air temperature. Exposure to all three factors occurs during all life stages. Black sea bass occur in coastal areas during warm months and migrate offshore in cold months and thus are exposed to changes occurring both in offshore and inshore waters. The distributional vulnerability for black sea bass was also rated as high. The biological sensitivity of black sea bass to climate change was ranked as moderate (Hare et al. 2016).[22]

Overall climate vulnerability results for additional Greater Atlantic species, including most of the non-target species identified in this action, are shown in Figure 19 (Hare et al. 2016). Climate change is expected to have impacts that range from positive to negative depending on the species. Future mitigation and adaptation strategies may mitigate some of these impacts. The science of predicting, evaluating, monitoring and categorizing these changes continues to evolve. The social and economic impacts of climate change will depend on stakeholder and community dependence on the fisheries, and their capacity to adapt to change. Commercial and recreational

[22] Climate vulnerability profiles for individual species are available at: https://www.st.nmfs.noaa.gov/ecosystems/climate/northeast-fish-and-shellfish-climate-vulnerability/index

fisheries may adapt in different ways, and methods of adaptation will differ among regions. In addition to added scientific uncertainty, climate change will introduce implementation uncertainty and other challenges to effective conservation and management (MAFMC 2014).

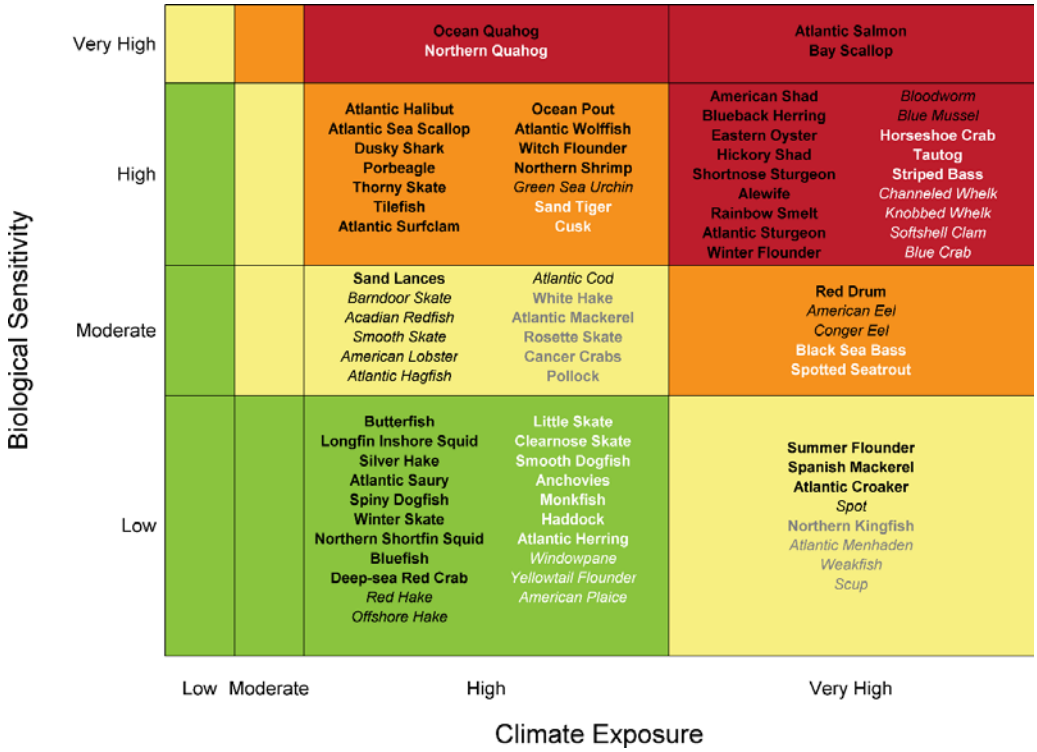

Figure 19: Overall climate vulnerability score for Greater Atlantic species. Overall climate vulnerability is denoted by color: low (green), moderate (yellow), high (orange), and very high (red). Certainty in score is denoted by text font and text color: very high certainty (>95%, black, bold font), high certainty (90–95%, black, italic font), moderate certainty (66–90%, white or gray, bold font), low certainty (<66%, white or gray, italic font). Figure source: Hare et al. 2016.

7.5.5. Magnitude and Significance of Cumulative Effects

In determining the magnitude and significance of the cumulative effects, the additive and synergistic effects of the proposed action (i.e., the suite of preferred alternatives), as well as past, present, and future actions, must be taken into account. The following sections describe the expected effects of these actions on each VEC. Those past, present, and reasonably foreseeable future actions which may impact the VECs, and the direction of those potential impacts, are summarized in section 7.5.4.

7.5.5.1. Magnitude and Significance of Cumulative Effects on Managed and Non-Target Species

Past fishery management actions taken through the respective FMPs have had a positive cumulative effect on the managed species. It is anticipated that the future management actions described in section 7.5.4 will have additional indirect positive effects on the managed species through actions which reduce and monitor bycatch, protect habitat, and protect the ecosystem

services on which the productivity of managed species depends. Overall, the past, present, and reasonably foreseeable future actions that are truly meaningful to the managed species have had positive cumulative effects.

Catch limits, commercial quotas, and RHLs for each of the managed species have been specified to ensure that these rebuilt stocks are managed sustainably and that measures are consistent with the objectives of the FMP under the guidance of the MSA. Recreational and commercial management measures are designed to ensure that catch and landings limits are not exceeded. The impacts of annual specification of catch limits and other management measures are largely dependent on how effective those measures are in meeting the objectives of preventing overfishing and achieving optimum yield, and on the extent to which mitigating measures are effective. The proposed actions described in this document would positively reinforce the past and anticipated positive cumulative effects on the managed species by achieving the objectives specified in the respective FMPs. As previously stated, the proposed actions add additional tools to the fisheries management tool box (i.e., recreational black sea bass conservation equivalency and a maximum size limit for summer flounder and black sea bass). They also address situations where differences between state and federal measures can create angler confusion and dissatisfaction and enforcement challenges (i.e., recreational black sea bass conservation equivalency and Block Island Sound transit). None of the proposed actions are expected to change fishing effort or practices such that the commercial quotas or RHLs are exceeded for the managed species or such that fishing mortality increases beyond current conditions for non-target species. Therefore, the proposed actions would have a positive, but not significant, effect on the managed species in consideration with other past, present, and reasonably foreseeable future actions (section 7.5.4).

7.5.5.2. Magnitude And Significance Of Cumulative Socioeconomic Effects

Past fishery management actions taken through the respective FMPs have had both positive and negative cumulative socioeconomic effects by benefiting domestic fisheries through sustainable fishery management practices while also sometimes reducing the ability of some individuals to participate in fisheries. Sustainable management practices are, however, expected to yield broad positive impacts to fishermen, their communities, businesses, and the nation as a whole. It is anticipated that the future management actions described in 7.5.4 will result in positive effects for human communities due to sustainable management practices, although additional indirect negative effects on some communities could occur if management actions result in reduced revenues. Overall, the past, present, and reasonably foreseeable future actions that are truly meaningful to human communities have had overall positive cumulative effects.

Catch limits, commercial quotas, and RHLs for each of the managed species have been specified to ensure that these rebuilt stocks are managed in a sustainable manner and that management measures are consistent with the objectives of the FMPs under the guidance of the MSA. Recreational and commercial management measures are designed to ensure that catch and landings limits are not exceeded, and to ensure that the fisheries are managed efficiently and benefit the human communities that rely on them. The impacts from annual specification of management measures on the managed species are largely dependent on how effective those measures are in meeting their intended objectives and the extent to which mitigating measures are effective. Quota overages may alter the timing of commercial fishery revenues such that revenues can be realized a year earlier. Impacts to some fishermen may be caused by unexpected reductions in their opportunities to earn revenues from commercial fisheries in the year during

which the overages are deducted. Similarly, decreased harvest opportunities may result from reduced RHLs or quotas as a result of overages and more restrictive management measures implemented to address overages. Despite the potential for negative short-term effects on human communities, positive long-term effects are expected due to the long-term sustainability of the managed stocks.

As previously stated, the proposed actions add additional tools to the fisheries management tool box (i.e., recreational black sea bass conservation equivalency and a maximum size limit for summer flounder and black sea bass). They also address situations where differences between state and federal measures can create angler confusion and dissatisfaction and enforcement challenges (i.e., recreational black sea bass conservation equivalency and Block Island Sound transit). None of the proposed actions are expected to change fishing effort or practices such that the commercial quotas or RHLs are exceeded. They are expected to have positive socioeconomic impacts by allowing for greater flexibility and more options for the types of management measures that can be used, as well as the potential for slightly increased harvest and revenues from commercial and recreational fishing in the Rhode Island state waters around Block Island in certain situations. Therefore, the proposed action would have a positive, but not significant effect on human communities when considered with other past, present, and reasonably foreseeable future actions (section 7.5.4).

7.5.5.3. Magnitude And Significance Of Cumulative Effects On Physical Habitat

Past fishery management actions taken through the respective FMPs and the annual specifications process have had positive cumulative effects on habitat. The actions have constrained fishing effort both at a large scale and locally and have implemented gear requirements which may reduce impacts on habitat. As required under these FMP actions, EFH and Habitat Areas of Particular Concern were designated for the managed species. It is anticipated that the future FMP actions described in section 7.5.4 will result in additional direct or indirect positive effects on habitat through actions which protect EFH and protect ecosystem services on which these species' productivity depends. These impacts could be broad in scope.

All the VECs are interrelated; therefore, the linkages among habitat quality, managed and non-target species productivity, and associated fishery yields should be considered. For habitat, there are direct and indirect negative effects from actions which may be localized or broad in scope; however, positive actions that have broad implications have been, and will likely continue to be, taken to improve the condition of habitat. Some actions, such as coastal population growth and climate change may indirectly impact habitat and ecosystem productivity; however, these actions are beyond the scope of NMFS and Council management. As described in section 7.2, the impacts of the proposed actions on habitat are expected to have slight negative impacts. The preferred alternatives are expected to maintain similar levels of fishing effort compared to recent years. Under all preferred alternatives, fishing effort will continue to be constrained primarily by the RHL and commercial quota. No notable changes to the amount, type, or location of fishing effort are expected. Although the impacted areas have been fished for many years with many different gear types and therefore will not likely be further impacted by these measures, continued fishing effort prevents impacted habitats from recovering. Overall, the past, present, and reasonably foreseeable future actions that are truly meaningful to habitat have had cumulative effects ranging from slight negative to slight positive. Therefore, the relevant past, present, and reasonably foreseeable future actions, including the proposed action, are

cumulatively expected to have slight negative to slight positive, but not significant effects on habitat (section 7.5.4.).

7.5.5.4. Magnitude and Significance of Cumulative Effects on Protected Species

Given the life history of protected species, large changes in their abundance over long time periods, and the multiple and wide-ranging fisheries management actions that have occurred, the cumulative impacts on protected species were evaluated over a long time frame (i.e., from the early 1970s when the MMPA and ESA were implemented through the present). Past fishery management actions have contributed to this long-term trend toward positive cumulative effects on protected species through the reduction of fishing effort and implementation of gear requirements, and thus a reduction in potential interactions. It is anticipated that future management actions, summarized in section 7.5.4, will result in additional indirect positive effects on protected species. These impacts could be broad in scope. Under all preferred alternatives, fishing effort will continue to be constrained primarily by the RHL and commercial quota. The preferred alternatives would not substantially modify current levels of fishing effort in terms of the overall amount of effort, timing, or location. Fishing effort would be expected to be similar to current conditions. As described in section 7.4, this is expected to have impacts on protected species that range from moderate negative to slight positive, depending on the species and gear types relevant for each alternative. Overall, the relevant past, present, and reasonably foreseeable future actions, including the proposed action, are cumulatively expected to have positive, but not significant effects on most protected species (section 7.5.4).

7.5.6. Proposed Action on All VECs

The Council's preferred alternatives (i.e., the proposed action) are described in section 5. The direct and indirect impacts of the proposed action on the VECs are described in sections 7.1 through 7.4. The magnitude and significance of the cumulative effects, including additive and synergistic effects of the proposed action, as well as past, present, and future actions, have been considered (section 7.5.5).

When considered in conjunction with all other pressures placed on the fisheries by past, present, and reasonably foreseeable future actions, the preferred alternatives are not expected to result in any significant impacts, positive or negative. As previously described, the preferred alternative for recreational black sea bass conservation equivalency (alternative 1B: black sea bass conservation equivalency using the current summer flounder process) is expected to have moderate positive impacts on black sea bass, slight negative to slight positive impacts on non-target species (depending on the species), moderate positive socioeconomic impacts, slight negative impacts to habitat, and slight negative to slight positive impacts to protected species (depending on the species). The preferred alternative for summer flounder conservation equivalency rollover (alternative 2A: no action) is largely administrative in nature; therefore, it is not expected to have direct or indirect impacts on summer flounder, non-target species, habitat, or protected species. It is expected to have some slight negative socioeconomic impacts. The preferred alternatives for Block Island Sound transit (alternatives 3B, 3B-2, and 3B-4, allow transit in the striped bass transit area for commercial and recreational summer flounder, scup, and black sea bass fisheries) are expected to have moderate positive impacts on target species, slight negative to slight positive impacts on non-target species (depending on the species), slight positive socioeconomic impacts, slight negative impacts to habitat, and slight negative to slight positive impacts to protected species (depending on the species).

The preferred alternatives are consistent with other management measures that have been implemented in the past for these fisheries. These measures are part of a broader management scheme for the summer flounder, scup, and black sea bass fisheries. This management scheme has helped rebuild stocks and ensure long-term sustainability, while minimizing environmental impacts.

The regulatory atmosphere within which federal fishery management operates requires that management actions be taken in a manner that will optimize the conditions of managed species, habitat, and human communities. Consistent with NEPA, the MSA requires that management actions be taken only after consideration of impacts to the biological, physical, economic, and social dimensions of the human environment. Given this regulatory environment, and because fishery management actions must strive to create and maintain sustainable resources, impacts on all VECs from past, present and reasonably foreseeable future actions have generally been positive and are expected to continue in that manner for the foreseeable future. This is not to say that some aspects of the VECs are not experiencing negative impacts, but rather that when considered as a whole and as a result of the management measure implemented in these fisheries, the overall long-term trend is positive.

There are no significant cumulative effects associated with the preferred alternatives based on the information and analyses presented in this document and in past FMP documents (Table 30). Cumulatively, it is anticipated that the preferred alternatives will result in a range of non-significant impacts on all VECs ranging from negative to positive.

Table 30: Magnitude and significance of the cumulative, additive, and synergistic effects of the preferred alternatives, as well as past, present, and reasonably foreseeable future actions.

VEC	Current Status	Net Impact of Past, Present, and Reasonably Foreseeable Future Actions	Impact of the Preferred Actions	Significant Cumulative Effects
Managed Species	Complex and variable (section 6.1)	Positive (section 7.5.5.1)	Moderate positive (section 7.1)	**None**
Non-target Species	Complex and variable (section 6.1)	Positive (section 7.5.5.1)	Slight negative to moderate positive (section 7.1)	**None**
Human Communities	Complex and variable (section 6.2)	Likely mixed (section 7.5.5.2)	Slight negative to slight positive (section 7.2)	**None**
Habitat	Complex and variable (section 6.3)	Slight negative to slight positive (section 7.5.5.3)	Slight negative (section 7.3)	**None**
Protected Species	Complex and variable (section 6.4)	Positive for most (section 7.5.5.4)	Moderate negative to slight positive (section 7.4)	**None**

8. Applicable Laws

8.1. Magnuson-Stevens Fishery Conservation and Management Act (MSA)

8.1.1. National Standards

Section 301 of the MSA requires that FMPs contain conservation and management measures that are consistent with the ten National Standards. The Council continues to meet the obligations of National Standard 1 by adopting and implementing conservation and management measures that will continue to prevent overfishing, while achieving optimum yield for managed species and the U.S. fishing industry on a continuing basis. When developing and evaluating management measures, the Council uses the best scientific information available (National Standard 2). The Council manages summer flounder, scup, and black sea bass throughout the range of the stocks (National Standard 3). The preferred alternatives do not discriminate among residents of different states (National Standard 4) and they do not have economic allocation as their sole purpose (National Standard 5). The measures account for variations in the fisheries (National Standard 6), avoid unnecessary duplication (National Standard 7), take fishing communities into account (National Standard 8), and promote safety at sea (National Standard 10). The proposed actions are consistent with National Standard 9, which states that "conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent that bycatch cannot be avoided, minimize the mortality of such bycatch". By continuing to meet the National Standards requirements of the MSA through future FMP amendments, framework actions, and the annual specification setting process, the Council will insure that cumulative impacts of these actions will remain positive overall for the managed species, the ports and communities that depend on these fisheries, and the Nation as a whole.

8.1.2. Essential Fish Habitat Assessment

EFH assessments are required for any action that is expected to have an adverse impact on EFH, even if the impact is minimal and/or temporary in nature (50 CFR Part 600.920 (e) (1-5)).

Description of Action

As previously described, the proposed action would:

- Allow use of conservation equivalency in the recreational black sea bass fishery in future years (section 5.1.2),
- Allow non-federally permitted recreational and commercial vessels to transit a defined area of federal waters in Block Island Sound while complying with the state waters regulations for summer flounder, scup, and black sea bass (section 5.3.2), and
- Allow a maximum size limit to be used in the recreational fisheries for summer flounder and black sea bass in future years (section 5.4.2).

Potential Adverse Effects of the Action on EFH

The types of habitat impacts caused by the gears used in summer flounder, scup, and black sea bass fisheries (predominantly bottom otter trawl and pots/traps in the commercial fisheries; predominantly hook and line gear in the recreational fisheries) are summarized in section 6.3.2.

As described in section 7, only the preferred alternatives regarding Block Island Sound transit are expected to lead to an increase in fishing effort compared to current conditions. All other preferred alternatives are not expected to have different impacts on fishing effort and thus

different impacts on habitat than the impacts of the RHL. The impacts of the RHL are analyzed in a specifications document each time the RHL is modified (e.g., MAFMC 2018). As previously described, the RHL is generally expected to have slight negative impacts on habitat, even in situations where the RHL decreases from one year to the next, because continued fishing effort, even at lower levels, is expected to limit the potential for recovery of impacted habitat areas.

The increase in fishing effort under the preferred alternatives for Block Island Sound transit is expected to be limited in scope as it will only take place in the Rhode Island state waters around Block Island in situations where federal waters measures are more restrictive than state waters measures. Only recreational and commercial fishermen/vessels legally authorized/permitted to fish in state waters and not also federally-permitted for summer flounder, scup, or black sea bass will be able to increase their fishing effort under these preferred alternatives. For these reasons, the increase in fishing effort is expected to be slight compared to current conditions.

Fishing locations are not expected to change. The amount of gear in the water and duration of time that gear is in the water are not expected to increase in a manner that would cause meaningful increased negative impacts on habitat. The habitats impacted by the recreational and commercial summer flounder, scup, and black sea bass fisheries in the Rhode Island state waters around Block Island have been impacted by many fisheries over many years. The levels of fishing effort expected under the preferred alternatives are not expected to cause additional habitat damage, but they are expected to limit the recovery of previously impacted areas. Thus, the proposed action is expected to have slight negative impacts on habitat and EFH.

Proposed Measures to Avoid, Minimize, or Mitigate Adverse Impacts of This Action

Measures in the Summer Flounder, Scup, and Black Sea Bass FMP which impact EFH were considered Amendment 13 (MAFMC 2002). The analysis in Amendment 13 indicated that no management measures were needed to minimize impacts to EFH because the trawl fisheries for summer flounder, scup, and black sea bass in federal waters are conducted primarily in high energy mobile sand habitat where gear impacts are minimal and/or temporary in nature. As previously stated, hook and line are the principal gears used in the recreational fishery for all three species and these gears have minimal adverse impacts on EFH in the region (Stevenson et al. 2004). These characteristics of the fisheries have not changed since Amendment 13. None of the alternatives included in this document were designed to avoid, minimize, or mitigate adverse impacts on EFH.

Section 6.3.2 lists examples of management measures previously implemented by the Council with the intent of minimizing the impacts of various fisheries on habitat. None of these measures substantially restrict the summer flounder, scup, or black sea bass fisheries.

Conclusions

Overall, the preferred alternatives are expected to have slight negative impacts on EFH; therefore, an EFH consultation is required.

8.2. NEPA Finding of No Significant Impact (FONSI)

The Council on Environmental Quality (CEQ) Regulations state that the determination of significance using an analysis of effects requires examination of both context and intensity, and lists ten criteria for intensity (40 CFR 1508.27). In addition, the companion manual for NOAA Administrative Order 216-6A provides sixteen criteria (the same ten as the CEQ Regulations and six additional) for determining whether the impacts of a proposed action are significant. Each

criterion is discussed below with respect to the proposed action and considered individually as well as in combination with the others.

1. Can the proposed action reasonably be expected to cause both beneficial and adverse impacts that overall may result in a significant effect, even if the effect will be beneficial?

The preferred alternatives would allow recreational conservation equivalency to be used for black sea bass in future years (alternative 1B), would allow certain commercial and recreational fishermen/vessels to transit through a defined area in Block Island Sound while complying with the state regulations for those species (alternatives 3B, 3B-2, and 3B-4), and would update the Council's FMP to allow a maximum size limit to be specified in the recreational summer flounder and black sea bass fisheries in future years (alternative 4B).

The expected impacts of these preferred alternatives are fully described in section 7. As previously stated, only the preferred alternatives for Block Island Sound transit are expected to result in an increase in fishing effort compared to current conditions. This increase in fishing effort is expected to be very slight, as it will occur only in the Rhode Island state waters around Block Island for non-federally permitted fishermen/vessels in situations where the federal waters measures are more restrictive than state waters measures. Impacts are expected to be moderate positive for target species (section 7.1.2), slight negative to moderate positive for non-target species (depending on the species; section 7.1.2), slight negative for habitat (section 7.3.2), and negligible to slight negative for protected species (depending on the species; section 7.4.2).

The preferred alternatives for black sea bass conservation equivalency and slot limits are not expected to have different impacts on target species, non-target species, habitat, or protected species than the impacts of the RHL. These impacts are generally moderate positive for target species (section 7.1), slight negative to moderate positive for non-target species (depending on the species; section 7.1), slight negative for habitat (section 7.3), and slight negative to slight positive for protected species (depending on the species; section 7.4).

All preferred alternatives are expected to have socioeconomic benefits compared to current conditions. Some negative socioeconomic impacts may also be possible under the preferred alternative for slot limits (section 7.2). None of these socioeconomic impacts are expected to be significant.

The preferred alternatives are not expected to result in significant impacts on any VECs, nor will they result in overall significant effects, either beneficial or adverse. The preferred alternatives will ensure the long-term sustainability of the summer flounder, scup, and black sea bass fisheries.

2. Can the proposed action reasonably be expected to significantly affect public health or safety?

The preferred alternatives are not expected to alter the manner in which fishing activities are conducted. Therefore, no changes in fishing behavior that would affect safety are anticipated. The preferred alternatives will not adversely impact public health or safety.

3. Can the proposed action reasonably be expected to result in significant impacts to unique characteristics of the geographic area, such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas?

The preferred alternatives are not expected to alter fishing methods or activities or to substantially increase fishing effort. Many types of fishing already occur in the impacted areas.

Although it is possible that historic or cultural resources such as shipwrecks could be present, vessels try to avoid fishing too close to most physical structures due to possible loss or entanglement of fishing gear. Therefore, it is not likely that the preferred alternatives would result in substantial impacts to unique areas.

4. Are the proposed action's effects on the quality of the human environment likely to be highly controversial?

The preferred alternatives are not expected to have highly controversial effects on the human environment. As described in detail in section 7, the impacts of the preferred alternatives for black sea bass conservation equivalency and slot limits on target species, non-target species, habitat, and protected species will continue to result primarily from the RHL. The impacts of the Block Island Sound transit alternatives are not expected to be substantially different than the impacts of the RHL and commercial quota. The impacts of the RHL and commercial quota are analyzed each time these measures are implemented or modified. The RHL and quota are based on peer reviewed information. The process used to develop these measures, and to develop the alternatives considered through this framework action, includes many opportunities for public review and input.

In addition, as previously stated, the preferred alternatives would not implement recreational black sea bass conservation equivalency or slot limits for summer flounder or black sea bass in any given year. Rather, the preferred alternatives would allow those types of management measures to be used in future years. Specific measures under conservation equivalency or slot limits proposed for future years will be analyzed in a future specifications document.

5. Are the proposed action's effects on the human environment likely to be highly uncertain or involve unique or unknown risks?

The impacts of the preferred alternatives on the human environment are described in section 7. The preferred alternatives are not expected to alter fishing methods or activities or to substantially increase fishing effort or the spatial and/or temporal distribution of current fishing effort. The impacts to target species, non-target species, and protected species will continue to be monitored. The preferred alternatives are not expected to have highly uncertain effects or to involve unique or unknown risks on the human environment.

6. Can the proposed action reasonably be expected to establish a precedent for future actions with significant effects or represent a decision in principle about a future consideration?

The preferred alternatives are not expected to substantially increase fishing effort or the spatial and/or temporal distribution of current fishing effort. The impact of any future changes will be analyzed as to their significance in the process of developing and implementing them.

7. Is the proposed action related to other actions that when considered together will have individually insignificant but cumulatively significant impacts?

As discussed in section 7.5, the preferred alternatives are not expected to have individually insignificant, but cumulatively significant impacts. The preferred alternatives, together with past, present, and reasonably foreseeable future actions, are not expected to result in significant cumulative impacts on the biological, physical, and human components of the environment.

8. Can the proposed action reasonably be expected to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources?

The impacts of the preferred alternatives on the human environment are described in section 7. The preferred alternatives are not expected to alter fishing practices. Although there are shipwrecks present in the area where fishing occurs, including some registered on the National Register of Historic Places, vessels typically avoid fishing too close to wrecks due to possible loss or entanglement of fishing gear. Therefore, it is not likely that the preferred alternatives would adversely affect the historic resources listed above.

9. Can the proposed action reasonably be expected to have a significant impact on endangered or threatened species, or their critical habitat as defined under the Endangered Species Act of 1973?

A variety of gear types are used in the summer flounder, scup, and black sea bass fisheries. Bottom otter trawls and fish pots/traps account for the majority of commercial catch and have the potential to interact with endangered and threatened species. Hook and line gear is the primarily gear type in the recreational fishery. As described in section 7.4, the expected levels of fishing effort under the preferred alternatives are expected to result in negligible to moderate negative impacts for ESA-listed species (depending on the alternative and species) because they are not expected to contribute to the recovery of these populations.

The preferred alternatives are not expected to alter overall fishing operations, lead to a substantial increase of fishing effort, or alter the spatial and/or temporal distribution of current fishing effort in a manner that would increase interaction rates with protected species (section 7.4).

This action falls within the range of impacts considered in the Batched Fisheries Biological Opinion for the Summer Flounder, Scup, and Black Sea Bass Fishery (December 16, 2013). In a memorandum dated October 17, 2017, GARFO's Protected Resources Division reinitiated consultation on the Batched Biological Opinion. As part of the reinitiation, it was determined that allowing this fishery to continue during the reinitiation period will not violate ESA sections 7(a)(2) and 7(d) because it will not increase the likelihood of interactions with protected species above the amount that was previously considered in the 2013 Batched Biological Opinion. Therefore, conducting the proposed action during the reinitiation period would not be likely to jeopardize the continued existence of any whale, sea turtle, Atlantic salmon, or sturgeon species. As described in section 6.4.1, the preferred alternatives are not likely to adversely affect any critical habitat. The summer flounder, scup, and black sea bass fisheries will not affect the essential physical and biological features of North Atlantic right whale or loggerhead (Northwest Atlantic DPS) critical habitat and, and therefore, will not result in the destruction or adverse modification of critical habitat (NMFS 2013; NMFS 2014a; NMFS 2015a,b).

10. Can the proposed action reasonably be expected to threaten a violation of Federal, state, or local law or requirements imposed for environmental protection?

The preferred alternatives are not expected to alter fishing methods or activities such that they threaten a violation of federal, State, or local law or requirements imposed for the protection of the environment. The proposed measures have been found to be consistent with other applicable laws (sections 8.3 - 8.10).

11. Can the proposed action reasonably be expected to adversely affect stocks of marine mammals as defined in the Marine Mammal Protection Act?

As described in section 7, the preferred alternatives are not expected to notably alter fishing methods or activities. They are not expected to substantially increase fishing effort or the spatial and/or temporal distribution of current fishing effort.

A variety of gear types are used in the summer flounder, scup, and black sea bass fisheries. Bottom otter trawls and fish pots/traps account for the majority of commercial catch and have the potential to interact with MMPA species. Hook and line is the primary gear in the recreational fishery. For the reasons described in section 7.4 and summarized below, fishing effort under the preferred alternatives is expected to result in moderate negative to slight positive impacts for non-ESA listed marine mammals.

As described in section 6.4, some marine mammal stocks/species are experiencing levels of interactions that have resulted in exceedance of their PBR levels. These stocks/populations are not at an optimum sustainable level and therefore, their continued existence is at risk. As a result, any potential for an interaction is a detriment to their ability to recover from this condition. As interactions with non-ESA listed marine mammals are possible under all preferred alternatives, for these species/stocks, the proposed action is likely to result in negligible to moderate negative impacts, depending on the alternative and species.

There are also many non-ESA listed marine mammals that, even with continued fishery interactions, are maintaining an optimum sustainable level (i.e., PBR levels have not been exceeded) over the last several years. For these stocks/species, it appears that the fishery management measures that have been in place over this timeframe have resulted in interaction levels that are not expected to impair their ability to remain at an optimum sustainable level. These fishery management measures, therefore, have resulted in slight positive impacts to these non-ESA listed marine mammal species/stocks, depending on the alternative and species. Should future fishery management actions maintain similar operating conditions as they have over the past several years, it is expected that these slight positive impacts would remain. Thus, given that the preferred alternatives are not expected to significantly change fishing effort relative to current conditions, the impacts on these non-ESA listed species of marine mammals with positive stock status are expected to be slight positive (i.e., continuation of current operating conditions is not expected to result in exceedance of any of these stocks/species PBR level).

12. Can the proposed action reasonably be expected to adversely affect managed fish species?

The preferred alternatives are not expected to have any significant adverse impacts on managed target or non-target fish species. The impacts of this action on managed fish species, including target and non-target species, are described in section 7.1.

As previously described, the impacts to target species are expected to continue to derive primarily from the RHLs and commercial quotas for those species. Those measures are designed to prevent overfishing and to maintain the current positive stock status of the managed species. Thus, the preferred alternatives are expected to have moderate positive impacts on target species (i.e., summer flounder, scup, and black sea bass).

Most non-target species are not currently overfished and are not experiencing overfishing (section 6.1.4). As described in section 7, fishing effort is not expected to change under any of these alternatives in a manner that would substantially impact non-target species. Some non-

target species may experience continued slight negative impacts, but these impacts are not expected to be significant.

13. Can the proposed action reasonably be expected to adversely affect essential fish habitat as defined under the Magnuson-Stevens Fishery Conservation and Management Act?

The proposed action is not expected to cause substantial damage EFH as defined under the MSA and identified in FMPs. The commercial fisheries are mostly bottom trawl and pot/trap fisheries, while the recreational fisheries are almost entirely hook and line (section 6.2). These gear types, particularly bottom otter trawls and pots/traps, can adversely impact EFH. While there is the potential for slight changes in effort under some of the preferred alternatives, none of the preferred alternatives are expected to substantially alter the fishing methods and fishing locations in these fisheries. As described in section 7.2, the areas fished for summer flounder, scup, and black sea bass have been fished for many years and are unlikely to be degraded further as the result of the levels of fishing effort that are expected under the proposed action. The proposed action is expected to result in slight negative impacts to habitat as the result of continued fishing that prevents habitat recovery in areas currently impacted by fishing effort (section 7.2).

14. Can the proposed action reasonably be expected to adversely affect vulnerable marine or coastal ecosystems, including but not limited to, deep coral ecosystems?

The preferred alternatives are not expected to have significant impacts on the natural or physical environment, including vulnerable marine or coastal ecosystems. The preferred alternatives are not expected to alter fishing methods or activities or to substantially increase fishing effort or the spatial and/or temporal distribution of current fishing effort. The areas fished for summer flounder, scup, and black sea bass have been fished for many years, and for a variety of species, and this action is not expected to change the locations of fishing activity. While some fishing takes place near the continental slope/shelf break where deep sea corals may be found in and around the submarine canyons, much of this area in the Mid-Atlantic is now protected by a prohibition on bottom-tending gear in the Frank R. Lautenberg Deep Sea Coral Protection Area (81 Federal Register 90246; December 14, 2016). The preferred alternatives are not expected to alter summer flounder, scup, or black sea bass fishing patterns relative to this protected area or in any other manner that would lead to adverse impacts on deep sea coral or other vulnerable marine or coastal ecosystems.

15. Can the proposed action reasonably be expected to adversely affect biodiversity or ecosystem functioning (e.g., benthic productivity, predator-prey relationships, etc.)?

The impacts of summer flounder, scup, and black sea bass fisheries on biodiversity and ecosystem functioning have not been assessed; however, the impacts to components of the ecosystem (i.e., non-target species, habitat, and protected species) have been considered. As described in section 7, the preferred alternatives are not expected to result in a notable change in the amount of or spatial/temporal distribution of effort. These expected levels of effort are not likely to negatively impact the stock status of non-target species (section 7.1), they are not likely to cause additional habitat damage beyond that previously caused by a variety of fisheries (section 7.3), and they are not expected to jeopardize any protected species (section 7.4). They are, however, expected to prevent recovery of damaged habitats and are not expected to contribute to the recovery of any endangered or threatened species. For these reasons, the preferred alternatives are not expected to have a substantial impact on biodiversity and ecosystem function within the affected area.

16. Can the proposed action reasonably be expected to result in the introduction or spread of a nonindigenous species?

There is no evidence or indication that the fisheries impacted by the proposed action have ever resulted in the introduction or spread of nonindigenous species. The preferred alternatives are not expected to alter fishing methods or activities and are is not expected to substantially increase fishing effort or the spatial and/or temporal distribution of current fishing effort. Therefore, it is highly unlikely that the preferred alternatives would result in the introduction or spread of a non-indigenous species.

DETERMINATION

In view of the information presented in this document and the analysis contained in the supporting Environmental Assessment prepared for this action, it is hereby determined that this action will not significantly impact the quality of the human environment as described above and in the supporting Environmental Assessment. In addition, all beneficial and adverse impacts of the proposed action have been addressed to reach the conclusion of no significant impacts. Accordingly, preparation of an environmental impact statement for this action is not necessary.

Michael Ruccio _____ Nov 1, 2019

Regional Administrator for GARFO, NMFS, NOAA Date

8.3. Endangered Species Act

The batched fisheries Biological Opinion completed on December 16, 2013 concluded that the actions considered would not jeopardize the continued existence of any ESA-listed species. On October 17, 2017, NMFS reinitiated consultation on the batched Biological Opinion due to updated information on the decline of Atlantic right whale abundance.

Section 7(d) of the ESA prohibits federal agencies from making any irreversible or irretrievable commitment of resources with respect to the agency action that would have the effect of foreclosing the formulation or implementation of any reasonable and prudent alternatives during the consultation period. This prohibition is in force until the requirements of section 7(a)(2) have been satisfied. Section 7(d) does not prohibit all aspects of an agency action from proceeding during consultation; non-jeopardizing activities may proceed as long as their implementation would not violate section 7(d). Per the October 17, 2017 memo, it was concluded that allowing those fisheries specified in the batched Biological Opinion to continue during the reinitiation period will not increase the likelihood of interactions with ESA listed species above the amount that would otherwise occur if consultation had not been reinitiated. Based on this, the memo concluded that the continuation of these fisheries during the reinitiation period would not be likely to jeopardize the continued existence of any ESA listed species. Taking this, as well as the analysis of the proposed action into consideration, the proposed action, in conjunction with other activities, is not expected to result in jeopardy for any ESA listed species.

This action does not represent any irreversible or irretrievable commitment of resources with respect to the FMP that would affect the development or implementation of reasonable and prudent measures during the consultation period. NMFS has discretion to amend its MSA and

ESA regulations and may do so at any time subject to the Administrative Procedure Act and other applicable laws. As a result, the Council has preliminarily determined that fishing activities conducted pursuant to this action will not affect endangered and threatened species or critical habitat in any manner beyond what has been considered in prior consultations on this fishery.

8.4. Marine Mammal Protection Act

Sections 6.4 and 7.4 contain an assessment of the impacts of the proposed action on marine mammals. A final determination of consistency with the MMPA will be made by the agency during rulemaking for this action.

8.5. Coastal Zone Management Act

The Coastal Zone Management Act of 1972, as amended, provides measures for ensuring productive fishery habitat while striving to balance development pressures with social, economic, cultural, and other impacts on the coastal zone. The Council developed this framework document and will submit it to NMFS. NMFS will determine whether the proposed actions are consistent to the maximum extent practicable with the coastal zone management programs for each state (Maine through North Carolina).

8.6. Administrative Procedure Act

Sections 551-553 of the Federal Administrative Procedure Act establish procedural requirements applicable to informal rulemaking by federal agencies. The purpose of these requirements is to ensure public access to the Federal rulemaking process and to give the public notice and opportunity to comment before the agency promulgates new regulations.

The Administrative Procedure Act requires solicitation and review of public comments on actions taken in the development of an FMP and subsequent amendments and framework adjustments. There were many opportunities for public review, input, and access to the rulemaking process during the development of the management measures described in this document and during the development of this document. This action was developed through a multi-stage process that was open to review by affected members of the public. The public had the opportunity to review and comment on management measures during the following meetings:

- Council Demersal Committee and Board meeting, March 27, 2018 via webinar.
- Joint Council and Board meeting, April 30, 2018, in Arlington, VA.
- Joint Council and Commission Advisory Panel meeting, June 25, 2018 in Linthicum, MD.
- Monitoring Committee meeting, July 19, 2018, in Baltimore, MD.
- Joint Council and Board meeting, August 14, 2018, in Virginia Beach, VA.
- Council meeting, October 4, 2018, in Cape May, NJ.
- Public hearings for Commission Addenda XXXI and XXXII at the following dates and locations:
    - November 5, 2018 in Old Lyme, CT.
    - November 7, 2018 in Narragansett, RI.
    - November 14, 2018 in Newport News, VA.
    - November 15, 2018 in Berlin, MD.
    - November 26, 2018 in Manahawkin, NJ.
    - November 27, 2018 in East Setauket, NY.
    - November 28, 2018 in Buzzards Bay, MA.

- Joint Council and Board meeting, December 11, 2018 in Annapolis, MD.

The public will have further opportunity to comment on this document and the proposed management measures once NMFS publishes a request for comments notice in the *Federal Register*.

8.7. Section 515 (Data Quality Act)

Utility of Information Product

This document includes a description of the alternatives considered, the preferred alternatives and rationale for selection, and any changes to the implementing regulations of the FMP. As such, this document enables the implementing agency (NMFS) to make a decision on implementation and serves as a supporting document for the proposed rule.

This document was developed to be consistent with the Summer Flounder, Scup, and Black Sea Bass FMP, the MSA, and other applicable laws through a multi-stage process that was open to review by affected members of the public. The public had the opportunity to review and comment on management measures during a number of public meetings (section 8.6). The public will have further opportunity to comment on this specifications document once NMFS publishes a request for comments notice in the Federal Register.

Integrity of Information Product

This information product meets the standards for integrity under the following types of documents: Other/Discussion (e.g. Confidentiality of Statistics of the MSA; NOAA Administrative Order 216-100, Protection of Confidential Fisheries Statistics; 50 CFR 229.11, Confidentiality of information collected under the MMPA).

Objectivity of Information Product

The category of information product that applies here is "Natural Resource Plans." Section 8 describes how this document was developed to be consistent with any applicable laws, including the MSA. The analyses used to develop the alternatives (i.e., policy choices) are based upon the best scientific information available. The most up to date information was used to develop the environmental assessment which evaluates the impacts of those alternatives (section 7). The specialists who worked with these core data sets and population assessment models are familiar with the most recent analytical techniques and are familiar with the available data and information relevant to the summer flounder, scup, and black sea bass fisheries.

The review process for this document involved Council, NEFSC, GARFO, and NMFS headquarters. The NEFSC technical review was conducted by senior-level scientists with specialties in fisheries ecology, population dynamics and biology, as well as economics and social anthropology. The Council and Commission review process involved public meetings at which affected stakeholders had the opportunity to comment on proposed management measures. Review by GARFO was conducted by those with expertise in fisheries management and policy, habitat conservation, protected species, and compliance with applicable law. Final approval of the document and clearance of the rule was conducted by staff at NMFS Headquarters, the Department of Commerce, and the U.S. Office of Management and Budget.

8.8. Paperwork Reduction Act

The Paperwork Reduction Act concerns the collection of information. The intent of the Paperwork Reduction Act is to minimize the federal paperwork burden for individuals, small businesses, state and local governments, and other persons, as well as to maximize the usefulness of information collected by the Federal government. This framework proposes no changes to the existing reporting requirements previously approved under the Summer Flounder, Scup, and Black Sea Bass FMP for vessel permits, dealer reporting, or vessel logbooks. This action does not contain a collection-of-information requirement for purposes of the Paperwork Reduction Act.

8.9. Impacts of the Action Relative to Federalism/Executive Order 13132

This framework action does not contain policies with federalism implications sufficient to warrant preparation of a federalism assessment under Executive Order (EO) 13132.

8.10. Environmental Justice/ Executive Order 12898

EO 12898 provides that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." EO 12898 directs each Federal agency to analyze the environmental effects, including human health, economic, and social effects of Federal actions on minority populations, low-income populations, and Indian Tribes, when such analysis is required by NEPA. Agencies are further directed to "identify potential effects and mitigation measures in consultation with affected communities, and improve the accessibility of meetings, crucial documents, and notices."

The proposed action is not expected to notably affect participation in any fisheries. None of the preferred alternatives are expected to have notable negative socioeconomic impacts. The preferred alternatives for Block Island Sound transit could allow for socioeconomic benefits for non-federally permitted commercial and recreational fishermen who fish in the Rhode Island state waters around Block Island. No negative economic or social effects in the context of EO 12898 are anticipated. Therefore, the proposed action is not expected to cause disproportionately high and adverse human health, environmental or economic effects on minority populations, low-income populations, or Indian Tribes.

8.11. Regulatory Impact Review and Regulatory Flexibility Act

This section provides analysis to address the requirements of Executive Order 12866 (Regulatory Planning and Review) and the Regulatory Flexibility Act (RFA). These two mandates are addressed together as many of their requirements are duplicative. In addition, many of their requirements duplicate those required under the MSA and/or NEPA; thus, this section contains several references to other sections of this document.

Regulatory Impact Review

Executive Order 12866 requires a Regulatory Impact Review (RIR) in order to enhance planning and coordination with respect to new and existing regulations. This executive order requires the Office of Management and Budget to review "significant" regulatory programs. Executive Order 12866 requires a review of proposed regulations to determine whether the expected effects would be significant. A significant regulatory action is one that may:

- Have an annual effect on the economy of $100 million or more;
- Adversely affect in a material way the economy, a sector of the economy, productivity, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;
- Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
- Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or
- Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

As described in section 7, the impacts associated with the proposed action are not expected to be significant. The following sections further demonstrate that this action is not a "significant regulatory action" because it will not affect the economy or a sector of the economy in a material way.

Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA), first enacted in 1980, and codified at 5 U.S.C. 600-611, was designed to place the burden on the government to review all new regulations to ensure that, while accomplishing their intended purposes, they do not unduly inhibit the ability of small entities to compete. The RFA recognizes that the size of a business, unit of government, or nonprofit organization can have a bearing on its ability to comply with Federal regulations. Major goals of the RFA are to 1) increase agency awareness and understanding of the impact of their regulations on small business; 2) require that agencies communicate and explain their findings to the public; and 3) encourage agencies to use flexibility and to provide regulatory relief to small entities.

The RFA emphasizes consideration of alternatives that may minimize significant adverse impacts on small entities while still achieving the stated objective of the action. When an agency publishes a proposed rule it must either (1) certify that the proposed action will not have a significant adverse impact on a substantial number of small entities and provide a supporting factual basis, or (2) if such a certification cannot be supported by a factual basis, prepare and make available for public review an Initial Regulatory Flexibility Analysis that describes the impact of the proposed rule on small entities.

The sections below provide the supporting analysis to assess whether the preferred alternatives will have a significant impact on a substantial number of small entities.

8.11.1. Problem Statement and Description of the Proposed Action

Section 4 includes a complete description of the purpose and objectives of this action. This action is taken under the authority of the MSA and regulations at 50 CFR part 648.

The objectives of the Summer Flounder, Scup, and Black Sea Bass FMP are to:[23]

[23] In March 2019, the Council and Board approved a modification to the FMP objectives for summer flounder only. These modifications have not yet been approved and implemented by NMFS. The proposed revisions are as follows:
Goal 1: Ensure the biological sustainability of the summer flounder resource in order to maintain a sustainable summer flounder fishery.

1. Reduce fishing mortality in the summer flounder, scup, and black sea bass fisheries to ensure that overfishing does not occur;
2. Reduce fishing mortality on immature summer flounder, scup, and black sea bass to increase spawning stock biomass;
3. Improve the yield from the fishery;
4. Promote compatible management regulations between state and federal jurisdictions;
5. Promote uniform and effective enforcement of regulations; and
6. Minimize regulations to achieve the management objectives stated above.

Consistent with objectives 3-5, this action seeks to:

- Allow use of conservation equivalency in the recreational black sea bass fishery in future years (section 5.1.2),
- Allow non-federally permitted recreational and commercial vessels to transit a defined area of federal waters in Block Island Sound while complying with the state waters regulations for summer flounder, scup, and black sea bass (section 5.3.2), and
- Allow a maximum size limit to be used in the recreational fisheries for summer flounder and black sea bass in future years (section 5.4.2).

Additional non-preferred alternatives were also considered. All alternatives are described in detail in section 5. The socioeconomic impacts of all alternatives are described in section 7.2. For the purposes of the RFA, only the preferred alternatives and those non-preferred alternatives which would minimize negative impacts to small businesses are considered. As described in section 7.2, none of the non-preferred alternatives are expected to have lesser negative impacts on small businesses than the preferred alternatives. Therefore, only the preferred alternatives are considered for RFA purposes.

8.11.2. Affected Entities

This action has the potential to impact all recreational black sea bass fishermen from Maine through Cape Hatteras, North Carolina through the use of conservation equivalency in future years (section 5.1.2). It also has the potential to impact all recreational black sea bass and summer flounder fishermen throughout the respective management units (Maine through Cape Hatteras for black sea bass and Maine through North Carolina for summer flounder) through the use of a maximum fish size which may be specified in the recreational fisheries in future years

---

Objective 1.1: Prevent overfishing, and achieve and maintain sustainable spawning stock biomass levels that promote optimum yield in the fishery.

Goal 2: Support and enhance the development and implementation of effective management measures.

Objective 2.1: Maintain and enhance effective partnership and coordination among the Council, Commission, Federal partners, and member states.

Objective 2.2: Promote understanding, compliance, and the effective enforcement of regulations.

Objective 2.3: Promote monitoring, data collection, and the development of ecosystem-based science that support and enhance effective management of the summer flounder resource.

Goal: Optimize economic and social benefits from the utilization of the summer flounder resource, balancing the needs and priorities of different user groups to achieve the greatest overall benefit to the nation.

Objective 3.1: Provide reasonable access to the fishery throughout the management unit. Fishery allocations and other management measures should balance responsiveness to changing social, economic, and ecological conditions with historic and current importance to various user groups and communities.

(section 5.4.2). In addition, all commercial and recreational summer flounder, scup, and black sea bass fishermen who are legally permitted to fish in Rhode Island state waters and do not also hold federal permits for any of those species may be impacted by the proposed action on transit in Block Island Sound (section 5.3.2).

Section 6.2 includes a summary of the commercial and recreational the summer flounder, scup, and black sea bass fisheries. Amendment 13 includes a description of ports and communities (MAFMC 2002). Additional information on "Community Profiles for the Northeast US Fisheries" can be found at: https://www.nefsc.noaa.gov/read/socialsci/communitySnapshots.php.

8.11.2.1. Description And Number Of RFA Regulated Entities

For the purposes of the RFA, the entities (i.e., the small and large businesses) that may be affected by this action include:

- Fishermen/vessels legally permitted/authorized to fish commercially and/or recreationally for summer flounder, scup, and/or black sea bass in Rhode Island state waters and not also federally-permitted to fish commercially or recreationally for those species (section 5.3.2), as well as
- All federal party/charter permit holders for black sea bass and summer flounder, regardless of where they fish in the management unit (due to the potential impacts of the preferred alternatives for black sea bass conservation equivalency and maximum size limits).

Private recreational anglers are not considered “entities” under the RFA, thus economic impacts on private anglers are not considered in this section, though they are considered in section 7.2.

For RFA purposes only, NMFS established a small business size standard for businesses, including their affiliates, whose primary industry is commercial fishing (50 CFR §200.2). A business primarily engaged in commercial fishing is classified as a small business if it is independently owned and operated, is not dominant in its field of operation (including its affiliates), and has combined annual receipts not in excess of $11 million for all its affiliated operations worldwide. A business primarily engaged in for-hire fishing is classified as small business if it has combined annual receipts not in excess of $7 million.

Vessel ownership data[24] were used to identify all individuals who own fishing vessels. Vessels were then grouped according to common owners. The resulting groupings were then treated as entities, or affiliates, for purposes of identifying small and large businesses which may be affected by this action. These groupings did not account for ownership of vessels without associated federal permits.

Based on this grouping, a total of 869 affiliates held summer flounder or black sea bass federal party/charter permits in 2015, 2016, and/or 2017. Based on their combined receipts in 2017, all these recreational affiliates were classified as small businesses.

A similar affiliate database is not available for non-federally permitted vessels. As previously stated, the preferred alternatives for transit in Block Island Sound apply only to non-federally permitted commercial and recreational vessels/fishermen (section 5.3.2). The number of commercial and recreational entities/affiliates which are legally authorized/permitted to fish in Rhode Island state waters and do not hold federal commercial or party/charter permits for

[24] Affiliate data for 2015-2017 were provided by the NMFS NEFSC Social Science Branch.

summer flounder, scup, and black sea bass has not been assessed. It is likely that most, if not all, these entities would be classified as small businesses based on the standards identified above.

8.11.3. Economic Impacts Of Proposed Action On Affected Entities, Including Small Businesses

Under the RFA, effects on profitability associated with the proposed action should be evaluated by assessing impacts on costs and revenues for individual business entities. Changes in gross revenues are used as a proxy for profitability in the absence of cost data for individual business entities. Many factors influence summer flounder, scup, and black sea bass commercial landings and demand for party/charter trips including commercial quotas, RHLs, prices, weather, availability of these and other target species, and regulations in other fisheries. As such, changes in revenues, as a result of the proposed action cannot be precisely estimated and are instead described in a general, qualitative sense.

As previously stated, the preferred alternatives would:

- Allow use of conservation equivalency in the recreational black sea bass fishery in future years (section 5.1.2),
- Allow non-federally permitted recreational and commercial vessels to transit a defined area of federal waters in Block Island Sound while complying with the state waters regulations for summer flounder, scup, and black sea bass (section 5.3.2), and
- Allow a maximum size limit to be used in the recreational fisheries for summer flounder and black sea bass in future years.

As described in section 7.2, the preferred alternative for recreational black sea bass conservation equivalency could lead to increased angler satisfaction and potentially decreased non-compliance. The preferred alternative for summer flounder and black sea bass slot limits could also lead to increased angler satisfaction and, depending on the specific slot limits used, could lead to a decrease in fishing effort. However, neither of these alternatives are expected to lead to increased recreational harvest or notable changes in demand for for-hire trips or for-hire revenues.

An increase in revenues is only expected under the preferred alternatives for Block Island Sound transit, which would allow non-federally permitted recreational and commercial vessels to transit a defined area in Block Island Sound while complying with the state regulations for summer flounder, scup, and black sea bass (section 5.3). As previously stated, the number of fishermen/vessels/entities which may be impacted by these preferred alternatives is unknown because a database on non-federally permitted fishermen/vessels/entities is not available. In addition, it is not possible to derive what proportion of the overall revenues for for-hire firms came from fishing activities for an individual species. Nevertheless, given the popularity of the recreational summer flounder, scup, and black sea bass fisheries (section 6.2), revenues generated from these species are likely important for many of these firms.

As described in section 7.2.2, the preferred Block Island Sound alternatives could allow for increased fishing effort in the Rhode Island state waters around Block Island. This could lead to increased commercial and for-hire revenues. The economic benefits of these alternatives will not be realized by all summer flounder, scup, and black sea bass fishermen. These impacts will be restricted to those fishermen/vessels who do not have federal permits for summer flounder, scup, or black sea bass and fish in the state waters around Block Island and return to the mainland in

Rhode Island, Massachusetts, Connecticut, or New York. As previously described, changes in landings and prices are influenced by a variety of factors and are difficult to predict. For this reason, the impact of the preferred alternative has not been translated into a dollar value. The potential increase in revenues is not expected to be substantial for the reasons described above, and because commercial and recreational landings will continue to be constrained primarily by the RHL and quotas for all three species.

Although these socioeconomic benefits are not expected to be notable when considered in relation to the fishery as a whole, they could have a greater impact at the individual vessel and/or affiliate level for those vessels/affiliates for whom a notable proportion of annual revenues derive from fishing activity for summer flounder, scup, and black sea bass in the Rhode Island state waters around Block Island. As previously stated, the number of such vessels/affiliates has not been assessed.

It is unknown how many of the non-federally permitted commercial and recreational entities potentially impacted by the preferred alternatives for Block Island Sound transit are small business; however, it is likely that most or all would be classified as such. All federal party/charter affiliates impacted by the preferred alternatives for black sea bass conservation equivalency and slot limits for summer flounder and black sea bass are small businesses according to the SBA definition of a small business presented above.

The preferred alternatives are not expected to result in disproportional effects on profits, costs, or net revenue for a substantial number of small entities compared to large entities. They are not expected to place a substantial number of small entities at a significant competitive disadvantage compared to large entities. Additionally, all directly affected business, both large (if any) and small, are expected to experience economic benefits from the proposed action. None are expected to experience notable negative socioeconomic impacts.

8.11.4. Determination of Executive Order 12866 (RIR) Significance

Executive Order 12866 mandates that proposed measures be analyzed in terms of changes in net benefits and costs to stakeholders, changes to the distribution of benefits and costs within the industry, changes in income and employment, cumulative impacts of the regulation, and changes in other social concerns.

As described in section 7, the impacts of the preferred alternatives are not expected to be significant for any of the VECs. The cumulative impacts of management and regulations are described in section 7.5 and are also not expected to be significant. There should not be substantial distributional issues. There are no other expected social concerns.

The proposed action does not constitute a significant regulatory action under Executive Order 12866. It will not have an annual effect on the economy of more than $100 million and is not predicted to have any adverse impact on ports, recreational anglers, and operators of party/charter businesses. As shown in section 6.2, the collective sum of the commercial ex-vessel value for all three species is much less than $100 million per year. The preferred alternatives do not propose substantial changes to current measures (section 5), thus they will not have an annual effect on the economy of more than $100 million.

In addition, there should be no interactions with activities of other agencies and no impacts on entitlements, grants, user fees, or loan programs. The preferred alternatives are similar to actions

taken in other fisheries, and as such do not raise novel legal or policy issues. As such, the preferred alternatives are not considered significant as defined by Executive Order 12866.

9. Literature Cited

ASMFC (Atlantic States Marine Fisheries Commission). 2007. Special report to the Atlantic Sturgeon Management Board: Estimation of Atlantic sturgeon bycatch in coastal Atlantic commercial fisheries of New England and the Mid-Atlantic. August 2007. 95 p.

ASMFC (Atlantic States Marine Fisheries Commission). 2016. 2016 Tautog Stock Assessment Update. Available at: http://www.asmfc.org/uploads/file/589e1d3f2016TautogAssessmentUpdate_Oct2016.pdf.

ASMFC (Atlantic States Marine Fisheries Commission). 2017a. 2017 Atlantic Croaker Stock Assessment Peer Review. Available at: http://www.asmfc.org/uploads/file/59c2ba88AtlCroakerAssessmentPeerReviewReport_May2017.pdf.

Atlantic States Marine Fisheries Commission (ASMFC). 2017b. 2017 Atlantic sturgeon benchmark stock assessment and peer review report. October 18, 2017. 456 pp.

ASSRT (Atlantic Sturgeon Status Review Team). 2007. Status review of Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*). Report to National Marine Fisheries Service, Northeast Regional Office. February 23, 2007. 174 p.

Balazs, G.H. 1985. Impact of ocean debris on marine turtles: entanglement and ingestion. NOAA Technical Memorandum NMFS-SWFSC-54:387-429.

Baum, E.T. 1997. *Maine Atlantic Salmon - A National Treasure*. Atlantic Salmon Unlimited. Hermon, Maine.

Baumgartner, M.F., T.V.N. Cole, R.G. Campbell, G.J. Teegarden and E.G. Durbin. 2003. Associations between North Atlantic right whales and their prey, *Calanus finmarchicus*, over diel and tidal time scales. *Marine Ecological Progress Series*. 264: 155–166.

Baumgartner, M.F. and B.R. Mate. 2003. Summertime foraging ecology of North Atlantic right whales. *Marine Ecological Progress Series*. 264: 123–135.

Beanlands, G.E., and P. N. Duinker. 1984. Ecological framework adjustment for environmental impact assessment. *Journal of Environmental Management*. 8:3.

Beardsall, J.W., M. F. McLean, S. J. Cooke, B. C. Wilson, M. J. Dadswell, A. M. Redden, and M. J. W. Stokesbury. 2013. Consequences of incidental otter trawl capture on Survival and Physiological Condition of Threatened Atlantic Sturgeon. *Transactions of the American Fisheries Society*. 142:1202–1214.

Blaylock, J. and G.R. Shepherd. 2016. Evaluating the vulnerability of an atypical protogynous hermaphrodite to fishery exploitation: results from a population model for black sea bass (*Centropristis striata*). Fishery Bulletin 114(4): 476-489.

Blumenthal, J.M., J.L. Solomon, C.D. Bell, T.J. Austin, G. Ebanks-Petrie, M.S. Coyne, A.C. Broderick, and B.J. Godley. 2006. Satellite tracking highlights the need for international cooperation in marine turtle management. *Endangered Species Research.* 2:51-61.

Braun, J., and S.P. Epperly. 1996. Aerial surveys for sea turtles in southern Georgia waters, June 1991. *Gulf of Mexico Science*. 1996(1):39-44.

Braun-McNeill, J., and S.P. Epperly. 2002. Spatial and temporal distribution of sea turtles in the western North Atlantic and the U.S. Gulf of Mexico from Marine Recreational Fishery Statistics Survey (MRFSS). *Marine Fisheries Review*. 64(4):50-56.

Braun-McNeill, J., C.R. Sasso, S.P.Epperly, C. Rivero. 2008. Feasibility of using sea surface temperature imagery to mitigate cheloniid sea turtle–fishery interactions off the coast of northeastern USA. *Endangered Species Research*. 5: 257–266.

Brown, M.B., O.C. Nichols, M.K. Marx, and J.N. Ciano. 2002. Surveillance of North Atlantic right whales in Cape Cod Bay and adjacent waters. Final report to the Division of Marine Fisheries, Commonwealth of Massachusetts. September 2002. 29 p.

Chavez-Rosales S, Lyssikatos MC, Hatch J. 2017. Estimates of cetacean and pinniped bycatch in Northeast and Mid-Atlantic bottom trawl fisheries, 2011-2015. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 17-16; 18 p. Available from: http://www.nefsc.noaa.gov/publications/.

Clapham, P.J., L.S. Baraff, C.A. Carlson, M.A. Christian, D.K. Mattila, C.A. Mayo, M.A. Murphy and S. Pittman. 1993. Seasonal occurrence and annual return of humpback whales, *Megaptera novaeangliae*, in the southern Gulf of Maine. *Canadian Journal of Zoology*. 71: 440-443.

Cole, T. V. N., P. Hamilton, A. G. Henry, P. Duley, R. M. Pace III, B. N. White, T. Frasier. 2013. Evidence of a North Atlantic right whale *Eubalaena glacialis* mating ground. *Endangered Species Research*. 21: 55–64.

Collins, M. R. and T. I. J. Smith. 1997. Distribution of shortnose and Atlantic sturgeons in South Carolina. *North American Journal of Fisheries Management*. 17: 995-1000.

Conant, T.A., P.H. Dutton, T. Eguchi, S.P. Epperly, C.C. Fahy, M.H. Godfrey, S.L. MacPherson, E.E. Possardt, B.A. Schroeder, J.A. Seminoff, M.L. Snover, C.M. Upite, and B.E. Witherington. 2009. Loggerhead sea turtle (*Caretta caretta*) 2009 status review under the U.S. Endangered Species Act. Report of the Loggerhead Biological Review Team to the National Marine Fisheries Service, August 2009. 222 p.

Dadswell, M. 2006. A review of the status of Atlantic sturgeon in Canada, with comparisons to populations in the United States and Europe. *Fisheries*. 31: 218-229.

Dadswell, M. J., B. D. Taubert, T. S. Squiers, D. Marchette, and J. Buckley. 1984. Synopsis of Biological Data on Shortnose Sturgeon, *Acipenser brevirostrum*, LeSuer 1818. NOAA Technical Report NMFS 14.

Dodge, K.L., B. Galuardi, T. J. Miller, and M. E. Lutcavage. 2014. Leatherback turtle movements, dive behavior, and habitat characteristics in ecoregions of the northwest Atlantic Ocean. *PLOS ONE*. 9 (3) e91726: 1-17.

Dovel, W.L. and T.J. Berggren. 1983. Atlantic sturgeon of the Hudson River Estuary, New York. *New York Fish and Game Journal*. 30: 140-172.

Dunton, K.J., A. Jordaan, K.A. McKown, D.O. Conover, and M.J. Frisk. 2010. Abundance and distribution of Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) within the northwest Atlantic Ocean, determined from five fishery-independent surveys. *Fishery Bulletin*. 108:450-465.

Dunton, K.J., A. Jordaan, D. O. Conover, K.A. McKown, L. A. Bonacci, and M. G. Frisk. 2015. Marine Distribution and Habitat Use of Atlantic Sturgeon in New York Lead to Fisheries Interactions and Bycatch. Marine and Coastal Fisheries: Dynamics, Management, and Ecosystem Science 7:18–32.

Eckert, S.A., D. Bagley, S. Kubis, L. Ehrhart, C. Johnson, K. Stewart, and D. DeFreese. 2006. Internesting and postnesting movements of foraging habitats of leatherback sea turtles (*Dermochelys coriacea*) nesting in Florida. *Chelonian Conservation and Biology*. 5(2): 239-248.

Epperly, S.P., J. Braun, and A.J. Chester. 1995a. Aerial surveys for sea turtles in North Carolina inshore waters. *Fishery Bulletin*. 93: 254-261.

Epperly, S.P., J. Braun, A.J. Chester, F.A. Cross, J.V. Merriner, and P.A. Tester. 1995b.Winter distribution of sea turtles in the vicinity of Cape Hatteras and their interactions with the summer flounder trawl fishery. *Bulletin of Marine Science*. 56(2): 547-568.

Erickson, D. L., A. Kahnle, M. J. Millard, E. A. Mora, M. Bryja, A. Higgs, J. Mohler, M. DuFour, G. Kenney, J. Sweka, and E. K. Pikitch. 2011. Use of pop-up satellite archival tags to identify oceanic-migratory patterns for adult Atlantic Sturgeon, *Acipenser oxyrinchus oxyrinchus* Mitchell, 1815. *Journal of Applied Ichthyology*. 27: 356–365.

Fay, C., M. Bartron, S. Craig, A. Hecht, J. Pruden, R. Saunders, T. Sheehan, and J. Trial. 2006. Status review for anadromous Atlantic salmon (*Salmo salar*) in the United States. Report to the National Marine Fisheries Service and U.S. Fish and Wildlife Service. 294 pages.

Gaichas, S., J. Hare, M. Pinsky, G. DePiper, O. Jensen, T. Lederhouse, J. Link, D. Lipton, R. Seagraves, J. Manderson, and M. Clark. 2015. Climate change and variability: a white paper to inform the Mid-Atlantic Fishery Management Council on the impact of climate change on fishery science and management. Second draft. Available at: http://www.mafmc.org/eafm/

Griffin, D.B., S. R. Murphy, M. G. Frick, A. C. Broderick, J. W. Coker, M. S. Coyne, M. G. Dodd, M. H. Godfrey, B. J. Godley, L. A. Hawkes, T. M. Murphy, K. L. Williams, and M. J. Witt. 2013. Foraging habitats and migration corridors utilized by a recovering subpopulation of adult female loggerhead sea turtles: implications for conservation. *Marine Biology*. 160: 3071–3086.

Hare, J.A., W.E. Morrison, M.W. Nelson, M.M. Stachura, E.J. Teeters, R.B. Griffis, et al. 2016. A Vulnerability Assessment of Fish and Invertebrates to Climate Change on the Northeast U.S. Continental Shelf. *PLoS ONE*. 11(2). Available at: http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0146756.

Hartley, D., A. Whittingham, J. Kenney, T. Cole, and E. Pomfret. 2003. Large Whale Entanglement Report 2001. Report to the National Marine Fisheries Service, updated February 2003.

Hawkes, L.A., A.C. Broderick, M.S. Coyne, M.H. Godfrey, L.-F. Lopez-Jurado, P. Lopez Suarez, S.E. Merino, N. Varo-Cruz, and B.J. Godley. 2006. Phenotypically linked dichotomy in sea turtle foraging requires multiple conservation approaches. *Current Biology*. 16: 990-995.

Hawkes, L.A., M.J. Witt, A.C. Broderick, J.W. Coker, M.S. Coyne, M. Dodd, M.G. Frick, M.H. Godfrey, D.B. Griffin, S.R. Murphy, T.M. Murphy, K.L. Williams, and B.J. Godley. 2011. Home on the range: spatial ecology of loggerhead turtles in Atlantic waters of the USA. *Diversity and Distributions*. 17: 624–640.

Hayes, S.A., E. Josephson , K. Maze-Foley , and P. E. Rosel. 2017. U.S. Atlantic and Gulf of Mexico marine mammal stock assessments 2016. NOAA Technical Memorandum NMFS-NE-241.

Hayes, S.A, E. Josephson, K. Maze-Foley, and P. Rosel. 2018. US Atlantic and Gulf of Mexico Marine Mammal Stock Assessment-2017. NOAA Technical Memorandum NMFS-NE-245.

Henry, A.G., T.V.N. Cole, L. Hall, W. Ledwell, D. Morin, and A. Reid. 2016. Serious injury and mortality and determinations for baleen whale stocks along the Gulf of Mexico, United States east coast and Atlantic Canadian provinces, 2010-2014. U.S. Dept Commer, Northeast Fish Sci Cent Ref Doc. 16-10; 51 p.

Henry, A.G., T.V.N. Cole, M. Garron, W. Ledwell, D. Morin, and A. Reid. 2017. Serious injury and mortality and determinations for baleen whale stocks along the Gulf of Mexico, United States east coast and Atlantic Canadian provinces, 2011-2015. U.S. Dept Commer, Northeast Fish Sci Cent Ref Doc. 17-19; 57 p.

Hirth, H.F. 1997. Synopsis of the biological data of the green turtle, *Chelonia mydas* (Linnaeus 1758). USFWS Biological Report 97(1): 1-120.

Hyvarinen, P., P. Suuronen and T. Laaksonen. 2006. Short-term movement of wild and reared Atlantic salmon smolts in brackish water estuary – preliminary study. *Fisheries Management and Ecology*. 13(6): 399 -401.

James, M.C., R.A. Myers, and C.A. Ottenmeyer. 2005. Behaviour of leatherback sea turtles, *Dermochelys coriacea*, during the migratory cycle. *Proceedings of the Royal Society B*. 272: 1547-1555.

James, M.C., S.A. Sherrill-Mix, K. Martin, and R. A. Myers. 2006. Canadian waters provide critical foraging habitat for leatherback sea turtles. *Biological Conservation*. 133: 347-357.

Johnson, A. J., G. S. Salvador, J. F. Kenney, J. Robbins, S. D. Kraus, S. C. Landry, and P. J. Clapham. 2005. Fishing gear involved in entanglements of right and humpback whales, *Marine Mammal Science* 21(4): 635-645.

Kenney, J., and D. Hartley. 2001. Draft large whale entanglement summary 1997-2001. Report to the National Marine Fisheries Service, updated October.

Kenney, R.D., M.A.M. Hyman, R.E. Owen, G.P. Scott and H.E. Winn. 1986. Estimation of prey densities required by western North Atlantic right whales. *Marine Mammal Science*. 2: 1–13.

Kenney, R.D., H.E. Winn and M.C. Macaulay 1995. Cetaceans in the Great South Channel, 1979-1989: right whale (*Eubalaena glacialis*). *Continental Shelf Research*. 15: 385–414.

Khan, C., T.V.N. Cole, P. Duley, A. Glass, M. Niemeyer, and C. Christman. 2009. North Atlantic Right Whale Sighting Survey (NARWSS) and Right Whale Sighting Advisory System (RWSAS) 2008 Results Summary. NEFSC Reference Document 09-05. 7 p.

Khan, C., T. Cole, P. Duley, A. Glass, and J. Gatzke. 2010. North Atlantic Right Whale Sighting Survey (NARWSS) and Right Whale Sighting Advisory System (RWSAS) 2009 Results Summary. NEFSC Reference Document 10-07. 7 p.

Khan, C., T. Cole, P. Duley, A. Glass, and J. Gatzke. 2011. North Atlantic Right Whale Sighting Survey (NARWSS) and Right Whale Sighting Advisory System (RWSAS) 2010 Results Summary. NEFSC Reference Document 11-05. 6 p.

Khan C., T. Cole, P. Duley, A. Glass, and J. Gatzke, J. Corkeron. 2012. North Atlantic Right Whale Sighting Survey (NARWSS) and Right Whale Sighting Advisory System (RWSAS) 2011 Results Summary. NEFSC Reference Document 12-09; 6 p.

Kocik. J.F., S.E. Wigley, and D. Kircheis. 2014. Annual bycatch update Atlantic salmon 2013. U.S. Atlantic Salmon Assessment Committee Working Paper 2014:05. Old Lyme, CT. 6 p. (cited with permission of authors).

Kynard, B., M. Horgan, M. Kieffer, and D. Seibel. 2000. Habitat used by shortnose sturgeon in two Massachusetts rivers, with notes on estuarine Atlantic sturgeon: a hierarchical approach. *Transactions of the American Fisheries Society*. 129: 487-503.

Lacroix, G.L. and P. McCurdy. 1996. Migratory behavior of post-smolt Atlantic salmon during initial stages of seaward migration. *Journal of Fish Biology*. 49: 1086-1101.

Lacroix, G. L, P. McCurdy, and D. Knox. 2004. Migration of Atlantic salmon post smolts in relation to habitat use in a coastal system. *Transactions of the American Fisheries Society*. 133(6):1455-1471.

Lacroix, G.L. and D. Knox. 2005. Distribution of Atlantic salmon (*Salmo salar*) postsmolts of different origins in the Bay of Fundy and Gulf of Maine and evaluation of factors affecting migration, growth, and survival. *Canadian Journal of Fisheries and Aquatic Science*. 62: 1363–1376.

Laney, R.W., J.E. Hightower, B.R. Versak, M.F. Mangold, W.W. Cole Jr., and S.E. Winslow 2007. Distribution, habitat use, and size of Atlantic sturgeon captured during cooperative winter tagging cruises, 1988–2006. Pages 167-182. In: J. Munro, D. Hatin, J. E. Hightower, K. McKown, K. J. Sulak, A. W. Kahnle, and F. Caron, (editors), Anadromous sturgeons: Habitats, threats, and management. American Fisheries Society Symposium 56, Bethesda, MD.

Lucey, S. M. and J. A. Nye. 2010. Shifting species assemblages in the northeast US continental shelf large marine ecosystem. *Marine Ecology Progress Series*. 415: 23-33.

Lyssikatos, M.C. 2015. Estimates of cetacean and pinniped bycatch in Northeast and mid-Atlantic bottom trawl fisheries, 2008-2013. Northeast Fisheries Science Center Reference Document 15-19; 20 p.

MAFMC (Mid-Atlantic Fishery Management Council). 2002. Amendment 13 to the Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan. 552 p. + append. Available at: http://www.mafmc.org/fisheries/fmp/sf-s-bsb

MAFMC (Mid-Atlantic Fishery Management Council). 2011. Amendment 15 to the Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan. 383 p. Available at: http://www.mafmc.org/fisheries/fmp/sf-s-bsb

MAFMC (Mid-Atlantic Fishery Management Council). 2014. Workshop Report: East Coast Climate Change and Fisheries Governance Workshop. March 19-21, 2014, Washington, DC. Available at: http://www.mafmc.org/council-events/2014/east-coast-climate-change-and-fisheries-governance-workshop.

MAFMC (Mid-Atlantic Fishery Management Council). 2017a. Atlantic Bluefish Advisory Panel Information Document. Available at: http://www.mafmc.org/s/Bluefish-AP-Info-document-2017.pdf.

MAFMC (Mid-Atlantic Fishery Management Council). 2017b. 2018-2019 Scup Specifications Environmental Assessment, Initial Regulatory Flexibility Act Analysis.

MAFMC (Mid-Atlantic Fishery Management Council). 2018. 2019 Summer Flounder, Scup, and Black Sea Bass Specifications Environmental Assessment, Regulatory Impact Review, and Regulatory Flexibility Act Analysis. Available at: http://www.mafmc.org/s/SFSBSB_2019_specs_EA.pdf

Mansfield, K.L., V.S. Saba, J. Keinath, and J.A. Musick. 2009. Satellite telemetry reveals adichotomy in migration strategies among juvenile loggerhead sea turtles in the northwest Atlantic. *Marine Biology*. 156:2555-2570.

Mayo, C.A., and M.K. Marx. 1990. Surface foraging behaviour of the North Atlantic right whale, *Eubalaena glacialis*, and associated zooplankton characteristics. *Canadian Journal of Zoology*. 68: 2214–2220.

McClellan, C.M., and A.J. Read. 2007. Complexity and variation in loggerhead sea turtle life history. *Biology Letters.* 3:592-594

Miller, T. and G. Shepard. 2011. Summary of discard estimates for Atlantic sturgeon. Northeast Fisheries Science Center, Population Dynamics Branch, August 2011.

Mitchell, G.H., R.D. Kenney, A.M. Farak, and R.J. Campbell. 2003. Evaluation of occurrence of endangered and threatened marine species in naval ship trial areas and transit lanes in the Gulf of Maine and offshore of Georges Bank. NUWC-NPT Technical Memo 02-121A. 113 p.

Morreale, S.J. and E.A. Standora. 2005. Western North Atlantic waters: Crucial developmental habitat for Kemp's ridley and loggerhead sea turtles. *Chelonian Conservation Biology*. 4(4):872-882.

Murphy, T.M., S.R. Murphy, D.B. Griffin, and C. P. Hope. 2006. Recent occurrence, spatial distribution and temporal variability of leatherback turtles (*Dermochelys coriacea*) in nearshore waters of South Carolina, USA. *Chelonian Conservation Biology*. 5(2): 216-224.

Murray, K.T., 2008. Estimated average annual bycatch of loggerhead sea turtles (*Caretta caretta*) in US Mid-Atlantic bottom otter trawl gear, 1996–2004, second ed. Northeast Fisheries Science Center Reference Document 08-20, p. 32. Available at: http://www.nefsc.noaa.gov/publications/crd/crd0820

Murray, K.T. 2013. Estimated loggerhead and unidentified hard-shelled turtle interactions in mid-Atlantic gillnet gear, 2007-2011. NOAA Technical Memorandum. NMFS-NM-225. 20 p. Available at: http://www.nefsc.noaa.gov/publications/tm/

Murray, K.T. 2015. The importance of location and operational fishing factors in estimating and reducing loggerhead turtle (*Caretta caretta*) interactions in U.S. bottom trawl gear. *Fisheries Research*. 172: 440–451.

NEFMC (New England Fishery Management Council). 2018. Framework Adjustment 5 to the Northeast Skate Complex FMP. Newburyport, MA.

NEFSC (Northeast Fisheries Science Center). 2007. 44th Northeast Regional Stock Assessment Workshop (44th SAW) assessment summary report. US Dep Commer, Northeast Fish Sci Cent Ref Doc. 07-03; 58 p.

NEFSC (Northeast Fisheries Science Center). 2015. 60th Northeast Regional Stock Assessment (60th SAW) assessment report. Northeast Fisheries Science Center Reference Document 15-08; 870 p.

NEFSC (Northeast Fisheries Science Center). 2017. 62nd Northeast Regional Stock Assessment Workshop (62nd SAW) Assessment Report. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 17-03; 822 p. Available from: National Marine Fisheries Service, 166 Water Street, Woods Hole, MA 02543-1026, or online at http://nefsc.noaa.gov/publications/.

NEFSC (Northeast Fisheries Science Center). 2018a. Black Sea Bass 2017 Catch and Survey Information for Stock North of Cape Hatteras, NC: Report to the Mid-Atlantic Science and Statistical Committee. 30 p. Available at: http://www.mafmc.org/s/3_2018-Black-Sea-Bass-Data-Update_06_18.pdf

NEFSC (Northeast Fisheries Science Center). 2018b. Update on the Status of Spiny Dogfish in 2018 and Projected Harvests at the Fmsy Proxy and Pstar of 40%. Report to the Mid-Atlantic Scientific and Statistical Committee. 82 p. Available at: http://www.mafmc.org/s/2018-Status-Report-for-spiny-dogfish.pdf

NEFSC (Northeast Fisheries Science Center). 2019. 66th Northeast Regional Stock Assessment Workshop (66th SAW) Assessment Summary Report. US Dept Commerce, Northeast Fish Sci Cent Ref Doc. 19-01; 40 p. Available from: http://www.nefsc.noaa.gov/publications/

NMFS (National Marine Fisheries Service). 1991. Final recovery plan for the humpback whale (*Megaptera novaeangliae*). Prepared by the Humpback Whale Recovery Team for the National Marine Fisheries Service, Silver Spring, MD. 105 p.

NMFS (National Marine Fisheries Service). 2005. Revision- recovery plan for the North Atlantic right whale (*Eubalaena glacialis*). Prepared by the Office of Protected Resources National Marine Fisheries Service, Silver Spring, MD. 137 p.

NMFS (National Marine Fisheries Service). 2010. Final recovery plan for the fin whale (*Balaenoptera physalus*). Prepared by the Office of Protected Resources National Marine Fisheries Service, Silver Spring, MD. 121 p.

NMFS (National Marine Fisheries Service). 2011a. Final recovery plan for the sei whale (*Balaenoptera borealis*). Prepared by the Office of Protected Resources National Marine Fisheries Service, Silver Spring, MD. 108 p.

NMFS (National Marine Fisheries Service). 2011b. Bycatch Working Group Discussion Notes. NMFS Sturgeon Workshop, Alexandria, VA. February 11, 2011.

NMFS (National Marine Fisheries Service). 2013. Endangered Species Act Section 7 Consultation on the Continued Implementation of Management Measures for the Northeast Multispecies, Monkfish, Spiny Dogfish, Atlantic Bluefish, Northeast Skate Complex, Mackerel/Squid/Butterfish, and Summer Flounder/Scup/Black Sea Bass Fisheries. Available at: http://www.greateratlantic.fisheries.noaa.gov/protected/section7/bo/actbiops/batchedfisheriesopinionfinal121613.pdf

NMFS (National Marine Fisheries Service). 2014a. NMFS-Greater Atlantic Region (GARFO) Memo to the record: Determination regarding reinitiation of Endangered Species Act section 7 consultation on 12 GARFO fisheries and two Northeast Fisheries Science Center funded fisheries research surveys due to critical habitat designation for loggerhead sea turtles. Memo issued September 17, 2014.

NMFS (National Marine Fisheries Service). 2014b. Final Environmental Impact Statement for Amending the Atlantic Large Whale Take Reduction Plan: Vertical Line Rule. National Marine Fisheries Service. May 2014.

NMFS (National Marine Fisheries Service). 2015a. Endangered Species Act Section 4(b)(2) Report: Critical Habitat for the North Atlantic Right Whale (*Eubalaena glacialis*). Prepared by National Marine Fisheries Service Greater Atlantic Regional Fisheries Office and Southeast Regional Office, December 2015. http://www.greateratlantic.fisheries.noaa.gov/regs/2016/January/16narwchsection4_b__2_report012616.pdf

NMFS (National Marine Fisheries Service). 2015b. North Atlantic Right Whale (*Eubalaena glacialis*). Source Document for the Critical Habitat Designation: A review of information pertaining to the definition of "critical habitat" Prepared by National Marine Fisheries Service Greater Atlantic Regional Fisheries Office and Southeast Regional Office, July 2015.

NMFS NEFSC FSB (Northeast Fisheries Science Center, Fisheries Sampling Branch). 2018. Northeast Fisheries Observer Program: Incidental Take Reports. Omnibus data request + supplemental data for 2017 from http://www.nefsc.noaa.gov/fsb/take_reports/nefop.html.

NMFS and USFWS (National Marine Fisheries Service and U.S. Fish and Wildlife Service). 1991. Recovery plan for U.S. population of Atlantic green turtle (*Chelonia mydas*). National Marine Fisheries Service, Washington, D.C. 58 p.

NMFS and USFWS (National Marine Fisheries Service and U.S. Fish and Wildlife Service). 1992. Recovery plan for leatherback turtles (*Dermochelys coriacea*) in the U.S. Caribbean, Atlantic, and Gulf of Mexico. National Marine Fisheries Service, Washington, D.C. 65 p.

NMFS and USFWS (National Marine Fisheries Service and U.S. Fish and Wildlife Service). 1995. Status reviews for sea turtles listed under the Endangered Species Act of 1973. Silver Spring, Maryland: National Marine Fisheries Service. 139 p.

NMFS and USFWS (National Marine Fisheries Service and U.S. Fish and Wildlife Service). 1998a. Recovery Plan for U.S. Pacific Populations of the Leatherback Turtle (*Dermochelys coriacea*). Silver Spring, Maryland: National Marine Fisheries Service. 65 p.

NMFS and USFWS (National Marine Fisheries Service and U.S. Fish and Wildlife Service). 1998b. Recovery Plan for U.S. Pacific Populations of the Green Turtle (*Chelonia mydas*). Silver Spring, Maryland: National Marine Fisheries Service. 84 p.

NMFS and USFWS (National Marine Fisheries Service and U.S. Fish and Wildlife Service). 2005. Recovery plan for the Gulf of Maine distinct population segment of the Atlantic salmon (*Salmo salar*). National Marine Fisheries Service, Silver Spring, MD.

NMFS and USFWS (National Marine Fisheries Service and U.S. Fish and Wildlife Service). 2007a. Kemp's ridley sea turtle (*Lepidochelys kempii*) 5 year review: summary and evaluation. Silver Spring, Maryland: National Marine Fisheries Service. 50 p.

NMFS and USFWS (National Marine Fisheries Service and U.S. Fish and Wildlife Service). 2007b. Green sea turtle (*Chelonia mydas*) 5 year review: summary and evaluation. Silver Spring, Maryland: National Marine Fisheries Service. 102 p.

NMFS and USFWS (National Marine Fisheries Service and U.S. Fish and Wildlife Service). 2008. Recovery plan for the Northwest Atlantic population of the loggerhead turtle (*Caretta caretta*), Second revision. Washington, D.C.: National Marine Fisheries Service. 325 p.

NMFS and USFWS (National Marine Fisheries Service and U.S. Fish and Wildlife Service). 2013. Leatherback sea turtle (*Dermochelys coriacea*) 5 year review: summary and evaluation. Silver Spring, Maryland: National Marine Fisheries Service. 91 p.

NMFS and USFWS (National Marine Fisheries Service and U.S. Fish and Wildlife Service). 2016. Draft Recovery Plan for the Gulf of Maine Distinct Population Segment of Atlantic Salmon (Salmo salar).

NMFS, USFWS, and SEMARNAT. 2011. Bi-National Recovery Plan for the Kemp's Ridley Sea Turtle (*Lepidochelys kempii*), Second Revision. National Marine Fisheries Service. Silver Spring, MD. 156 p. + appendices.

NOAA (National Oceanic and Atmospheric Administration). 2008. High numbers of right whales seen in Gulf of Maine: NOAA researchers identify wintering ground and potential breeding ground. NOAA press release. December 31, 2008.

Northeast Data Poor Stocks Working Group. 2009. The northeast data poor stocks working group report, part A: skate species complex, deep sea red crab, Atlantic wolffish, scup, and black sea bass. Northeast Fish Science Center Reference Document 09-02; 496 p. Available at: http://www.nefsc.noaa.gov/publications/crd/crd0902/.

Nye, J. A., T. M. Joyce, Y.O. Kwon, and J.S. Link. 2011. Silver hake tracks changes in Northwest Atlantic circulation. *Nature Communications*. 2:412.

O'Leary, S.J., K. J. Dunton, T. L. King, M. G. Frisk, and D.D. Chapman. 2014. Genetic diversity and effective size of Atlantic sturgeon, *Acipenser oxyrhinchus oxyrhinchus*, river spawning populations estimated from the microsatellite genotypes of marine-captured juveniles. *Conservation Genetics*. 15(5):1173-1181.

Pace, R.M., Corkeron, P.J., Kraus, S.D. (2017). State–space mark–recapture estimates reveal a recent decline in abundance of North Atlantic right whales. *Ecol Evo*. 1-12.

Palmer, D. 2017. Developing the Protected Resources Affected Environment for Environmental Assessments and Environmental Impact Statements. Greater Atlantic Region Policy Series 17-01. NOAA Fisheries Greater Atlantic Regional Fisheries Office - www.greateratlantic.fisheries.noaa.gov/policyseries/. 74p.

Payne, P.M., J.R. Nicholas, L. O'Brien and K.D. Powers. 1986. The distribution of the humpback whale, *Megaptera novaeangliae*, on Georges Bank and in the Gulf of Maine in relation to densities of the sand eel, *Ammodytes americanus*. *Fishery Bulletin.* 84: 271-277.

Payne, P.M., D.N. Wiley, S.B. Young, S. Pittman, P.J. Clapham, and J.W. Jossi. 1990. Recent fluctuations in the abundance of baleen whales in the southern Gulf of Maine in relation to changes in selected prey. *Fishery Bulletin.* 88: 687-696.

Pettis, H.M., Pace, R.M., Hamilton, P.K. (2018). North Atlantic Right Whale Consortium 2018 Annual Report Card. Report to the North Atlantic Right Whale Consortium. Available at: www.narwc.org.

Pinsky, M.L., B. Worm, M.J. Fogarty, J.L. Sarmiento, and S.A. Levin. 2013. Marine taxa track local climate velocities. *Science*. 341(6151): 1239-1242.

Reddin, D.G. 1985. Atlantic salmon (*Salmo salar*) on and east of the Grand Bank. *Journal of Northwest Atlantic Fisheries Science*. 6(2):157-164.

Reddin, D.G and P.B. Short. 1991. Postsmolt Atlantic salmon (*Salmo salar*) in the Labrador Sea. *Canadian Journal of Fisheries and Aquatic Science*. 48:2-6.

Reddin, D.G and K.D. Friedland. 1993. Marine environmental factors influencing the movement and survival of Atlantic salmon. 4th Int. Atlantic Salmon Symposium. St. Andrews, N.B. Canada.

Schilling, M. R., I. Seipt, M. T. Weinrich, S. E. Frohock, A. E. Kuhlberg, and P. J. Clapham. 1992. Behavior of individually-identified sei whales *Balaenoptera borealis* during an episodic influx into the southern Gulf of Maine in 1986. *Fishery Bulletin*. 90:749–755.

SEDAR (Southeast Data, Assessment, and Review). 2015. SEDAR 39 stock assessment report HMS Atlantic smooth dogfish shark. Available at: https://sedarweb.org/sedar-39-final-stock-assessment-report-hms-atlantic-smooth-dogfish.

Sheehan, T.F., D.G. Reddin, G. Chaput and M.D. Renkawitz. 2012. SALSEA North America: Apelagic ecosystem survey targeting Atlantic salmon in the Northwest Atlantic. *ICES Journal of Marine Science*. 69(9):1580-1588.

Shoop, C.R., and R.D. Kenney. 1992. Seasonal distributions and abundance of loggerhead and leatherback sea turtles in waters of the northeastern United States. *Herpetological Monographs*. 6:43-67.

STDN (Sea Turtle Disentanglement Network). 2016. Northeast Region Sea Turtle Disentanglement Network Summary of Entanglement/Disentanglement Data from 2002-2016. Unpublished report compiled by NMFS NERO.

Steimle, FW, Zetlin CA, Berrien PL, Johnson DL, Chang S. 1999. Essential fish habitat source document: Scup, Stenotomus chrysops, life history and habitat characteristics. NOAA Tech Memo NMFS NE 149; 39 p.

Steimle, FW, and CA Zetlin. 2000. Reef habitats in the middle Atlantic bight: abundance, distribution, associated biological communities, and fishery resource use. *Marine Fisheries Review*. 62: 24-42. 62: 24-42.

Stein, A. B., K. D. Friedland, and M. Sutherland. 2004a. Atlantic sturgeon marine distribution and habitat use along the northeastern coast of the United States. *Transactions of the American Fisheries Society*. 133: 527-537.

Stein, A. B., K. D. Friedland, and M. Sutherland. 2004b. Atlantic sturgeon marine bycatch and mortality on the continental shelf of the Northeast United States. *North American Journal of Fisheries Management*. 24: 171-183.

Stenseth, N.C, Mysterud, A., Otterson, G., Hurrell, J.W., Chan, K., and M. Lima. 2002 Ecological Effects of Climate Fluctuations. Science 297(5585); 1292-1296.

Stevenson, D., L. Chiarella, D. Stephan, R. Reid, K. Wilhelm, J. McCarthy, M. Pentony. 2004. Characterization of the fishing practices and marine benthic ecosystems of the Northeast U.S. Shelf, and an evaluation of the potential effects of fishing on Essential Fish Habitat. NOAA Technical Memorandum NMFS-NE-181; 179 p.

Swingle, W.M., S.G. Barco, T.D. Pitchford, W.A. McLellan, and D.A. Pabst. 1993. Appearance of juvenile humpback whales feeding in the nearshore waters of Virginia. *Marine Mammal Science.*. 9: 309-315.

Terceiro M. 2016. Stock Assessment of Summer Flounder for 2016. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 16-15; 117 p. Available from: National Marine Fisheries Service, 166 Water Street, Woods Hole, MA 02543-1026, or online at http://www.nefsc.noaa.gov/publications/.

Terceiro M. 2017. Stock Assessment of Scup for 2017. US Dept Commer, Northeast Fish Sci Cent. Available at: http://www.mafmc.org/s/5Scup_2017_Assesssment_Update.pdf.

TEWG (Turtle Expert Working Group). 1998. An assessment of the Kemp's ridley (*Lepidochelys kempii*) and loggerhead (*Caretta caretta*) sea turtle populations in the Western North Atlantic. NOAA Technical Memorandum NMFS-SEFSC-409:1-96.

TEWG (Turtle Expert Working Group). 2000. Assessment update for the Kemp's ridley and loggerhead sea turtle populations in the western North Atlantic. NOAA Technical Memorandum NMFS-SEFSC-444: 1-115.

TEWG (Turtle Expert Working Group). 2007. An assessment of the leatherback turtle population in the Atlantic Ocean. NOAA Technical Memorandum NMFS-SEFSC-555: 1-116.

TEWG (Turtle Expert Working Group). 2009. An assessment of the loggerhead turtle population in the Western North Atlantic Ocean. NOAA Technical Memorandum NMFS-SEFSC-575: 1-131.

Timoshkin, V. P. 1968. Atlantic sturgeon (*Acipenser sturio L.*) caught at sea. *Journal of Ichthyol.* 8(4): 598.

USASAC (U.S. Atlantic Salmon Assessment Committee). 2013. Annual reports 2001 through 2012. Annual Report of the U.S. Atlantic Salmon Assessment Committee.

Vu, E., D. Risch, C. Clark, S. Gaylord, L. Hatch, M. Thompson, D. Wiley, and S. Van Parijs. 2012. Humpback whale song occurs extensively on feeding grounds in the western North Atlantic Ocean. *Aquatic Biology*.14(2):175–183.

Waldman, J.R., T. King, T. Savoy, L. Maceda, C. Grunwald, and I. Wirgin. 2013. Stock origins of subadult and adult Atlantic sturgeon, *Acipenser oxyrinchus*, in a non-natal estuary, Long Island Sound. *Estuaries and Coasts*. 36:257–267.

Warden, M.L. 2011a. Modeling loggerhead sea turtle (*Caretta caretta*) interactions with US Mid-Atlantic bottom trawl gear for fish and scallops, 2005–2008. *Biological Conservation*. 144: 2202–2212.

Warden, M.L. 2011b. Proration of loggerhead sea turtle (*Caretta caretta*) interactions in US Mid-Atlantic bottom otter trawls for fish and scallops, 2005-2008, by managed species landed. NEFSC Reference Document 11-04; 8 p. Available at: http://www.nefsc.noaa.gov/publications/crd/

Waring, G.T., E. Josephson, K. Maze-Foley, and P.E. Rosel, editors. 2014. U.S. Atlantic and Gulf of Mexico marine mammal stock assessments—2013. NOAA Tech Memo NMFS- NE-228. 475 p.

Waring, G.T., E. Josephson, K. Maze-Foley, and P.E. Rosel, editors. 2015a. U.S. Atlantic and Gulf of Mexico marine mammal stock assessments 2014. Available at: http://www.nmfs.noaa.gov/pr/sars/pdf/atl2014_final.pdf

Waring, G.T., E. Josephson, M.C. Lyssikatos, and F.W. Wenzel. 2015b. Serious injury determinations for small cetaceans and pinnipeds caught in commercial fisheries off the northeast U.S. coast, 2012. Northeast Fisheries Science Center Reference Document 15-12; 19 p.

Waring, G.T., E. Josephson, K. Maze-Foley, and P. E. Rosel. 2016. U.S. Atlantic and Gulf of Mexico marine mammal stock assessments 2015. NOAA Technical Memorandum NMFS-NE-238. http://www.nmfs.noaa.gov/pr/sars/pdf/atlantic2015_final.pdf

Weinberg, J. R. 2005. Bathymetric shift in the distribution of Atlantic surfclams: response to warmer ocean temperature. *ICES Journal of Marine Science*. 62(7): 1444-1453.

Wiedenmann, J., M. Wilberg, E. Bochenek, J. Boreman, B. Freeman, J. Morson, E. Powell, B. Rothschild, and P. Sullivan. 2013. Evaluation of management and regulatory options for the summer flounder recreational fishery. Available at: http://www.mafmc.org/s/A-Model-to-Evaluate-Recreational-Management-Measures.pdf

Whittingham, A., D. Hartley, J. Kenney, T. Cole, and E. Pomfret. 2005a. Large Whale Entanglement Report 2002. Report to the National Marine Fisheries Service, updated March 2005.

Whittingham, A., M. Garron, J. Kenney, and D. Hartley. 2005b. Large Whale Entanglement Report 2003. Report to the National Marine Fisheries Service, updated June 2005.

Wirgin, I., L. Maceda, J.R. Waldman, S. Wehrell, M. Dadswell, and T. King. 2012. Stock origin of migratory Atlantic sturgeon in the Minas Basin, Inner Bay of Fundy, Canada, determined by microsatellite and mitochondrial DNA analyses. *Transactions of the American Fisheries Society.* 141(5): 1389-1398.

Wirgin, I., M. W. Breece , D. A. Fox , L. Maceda , K. W. Wark, and T. King. 2015a. Origin of Atlantic sturgeon collected off the Delaware coast during spring months. North American *Journal of Fisheries Management*. 35: 20–30.

Wirgin, I., L. Maceda, C. Grunwald, and T. L. King. 2015b. Population origin of Atlantic sturgeon *Acipenser oxyrinchus oxyrinchus* by-catch in U.S. Atlantic coast fisheries. Journal of Fish Biology 86(4):1251–1270.

Wong, R. 2009. Slot limit management for recreational summer flounder harvest. Available at: http://www.mafmc.org/s/Slot_limit_guidance_Wong_2009-002.pdf

10. List of Agencies and Persons Consulted

In preparing this document, the Council consulted with NMFS, the New England and South Atlantic Fishery Management Councils, Fish and Wildlife Service, and the states of Maine through North Carolina through their membership on the Mid-Atlantic Council and the Atlantic States Marine Fisheries Commission's Summer Flounder, Scup, and Black Sea Bass Management Board. The advice of NMFS GARFO personnel was sought to ensure compliance with NMFS formatting requirements.

Copies of the document are available from Dr. Christopher M. Moore, Executive Director, Mid-Atlantic Fishery Management Council, Suite 201, 800 North State Street, Dover, DE 19901; 302-674-2331. Once finalized, this document will be posted to www.mafmc.org.