

**2018 Black Sea Bass Recreational Wave 1 Modification**

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

**December 2017**

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

# 1. EXECUTIVE SUMMARY

This document was prepared by the National Marine Fisheries Service (NMFS), and was developed in accordance with all applicable laws and statutes as described in section 8.

The purpose of the management actions described in this document is to modify the recreational management measures for the 2018 black sea bass fishery to include a winter season in Federal waters (Box ES-1). This action is necessary to provide additional recreational opportunities and equitable access to the stable black sea bass resource at a time of year when recreational options are limited. The actions described in this document do not include changes to any of the other fishery management measures for black sea bass, nor do they include any changes to the summer flounder or scup fisheries within the same Fishery Management Plan (FMP). Recreational measures for the remainder of 2018, including those to accommodate the proposed season, will be developed by the Council and Commission for implementation in spring of 2018. However, this Federal action is needed to enable winter access prior to the establishment of those measures, and to minimize the potential for exceeding the recreational annual catch limit (ACL) while the level of state participation remains unknown. This document details all management alternatives considered for this 2018 recreational modification to the black sea bass fishery, for more background information on its development, see section 4.2.

## Summary of Alternatives and Impacts

Alternative 1, the No Action (*status quo*) alternative, maintains recreational management measures (possession limit, fish size, seasons) that are identical to those currently proposed for the black sea bass fishery in 2018; without any modifications or the addition of a Wave 1 (January and February) winter season. This includes an annual recreational harvest limit (RHL) of 3.66 million lb, a minimum fish size of 12.5 inches, a possession limit of 15 fish per angler, and summer and fall seasons only from May 15 through September 21, and October 22 through December 31. Alternative 1 is the most restrictive of the three alternatives considered in terms of increasing recreational accessibility, which is the purpose of this action. This alternative does not create a Wave 1 recreational season, or provide any additional recreational fishing opportunities in 2018. As such, it does not satisfy the purpose and need, and is a non-preferred alternative.

The preferred alternative (Alternative 2) would modify the 2018 black sea bass recreational management measures to include an additional 28-day open season during the month of February. All other implemented measures would remain in place during this new season (i.e., 12.5-in minimum fish size and 15-fish possession limit). To account for expected harvest during the February season, the Council and Commission are recommending that the RHL for the remainder of the 2018 fishing year be reduced by a catch estimate of 100,000 lb. States that participate in the February fishery would be required to account for this estimated catch when developing their management measures for the rest of 2018 to ensure that the RHL is not exceeded. This alternative creates more recreational fishing opportunity and access, with minimal administrative burden and a manageable season length that decreases the likelihood of overharvesting too early in the fishing year. For these reasons, Alternative 2 best satisfies the stated purpose and need, and is the preferred alternative.

Alternative 3 includes a modification to open an additional season for the 2018 recreational black sea bass fishery during the entirety of Wave 1 (January and February). As in Alternative 2, the

previously established recreational management measures of a 12.5-in minimum fish size and 15-fish possession limit would remain in place during this winter fishery, and catch from this Wave 1 recreational season would be accounted for only by the states that participate. The Council and Commission are recommending a catch estimate of 250,000 lb be deducted from the 2018 RHL for this alternative; both because Alternative 3 proposes a longer winter season, and because analyses indicate that between the two months of Wave 1, January typically accounts for about 64% of the recreational black sea bass catch compared to only 37% in February. This alternative was proposed as an option to increase recreational access to the black sea bass fishery and restore the historic Wave 1 recreational season. However, Alternative 3 does pose some operational and administrative challenges, and may not be feasible to implement in time for January 1, 2018.

For each of the alternatives, recreational harvest limits are provisional and may be adjusted by NMFS in a 2018 specifications final rule, which is currently under development. Further adjustments may also be necessary to the recreational management measures for the remainder of fishing year 2018. These will be published separately in the *Federal Register*.

The following section presents a qualitative summary of expected impacts by alternative and cumulatively for all evaluated alternatives (Box ES-2). The impacts of each alternative are described in detail in section 7 of this document. For all valued ecosystem components (VECs), consideration was given to how recreational fishing effort is likely to change under each alternative. For this action, no alternatives are expected to increase or substantially change fishing effort or activity beyond a small temporal redistribution throughout the year. Therefore, for most VECs, all alternatives are similar in their expected impacts.

<b>Box ES-1. Summary of the 2018 black sea bass recreational modification alternatives analyzed in this document; as well as associated measures, and requirements for effort accounting.</b>				
<b>Alternative</b>	<b>Recreational Seasons</b>	<b>Possession Limit</b>	<b>Minimum Fish Size</b>	<b>Effort Requirements</b>
<b>Alternative 1</b> (Non-Preferred: <i>Status quo</i> )	May 15 – Sept. 21, Oct. 22 – Dec. 31	15 fish/person	12.5 inches	None
<b>Alternative 2</b> (Preferred)	<b>Feb. 1 – 28,</b> May 15 – Sept. 21, Oct. 22 – Dec. 31	15 fish/person	12.5 inches	100,000 lb from RHL
<b>Alternative 3</b> (Non-Preferred)	<b>Jan. 1 – Feb. 28,</b> May 15 – Sept. 21, Oct. 22 – Dec. 31	15 fish/person	12.5 inches	250,000 lb from RHL

### *Black Sea Bass and Non-Target Species*

The 2016 benchmark stock assessment indicates that the black sea bass stock is at 229% of the biomass target (NEFSC 2017). The No Action alternative (Alternative 1) would create no changes to current recreational management and is expected to maintain fishing effort similar to recent years. While Alternatives 2 and 3 may redistribute effort temporally throughout recreational seasons, neither alternative is expected to increase or substantially change fishing effort or activity.

Therefore, all three alternatives are projected to maintain the healthy black sea bass stock that is well above the biomass target and not at risk of an overfished status. Additionally, none of the top ten most commonly caught non-target species on black sea bass trips are considered overfished. Therefore, all alternatives are expected to result in slight positive impacts on black sea bass and non-target species, relative to current conditions (Box ES-2; Section 7.1).

### *Physical Habitat*

All three alternatives for this 2018 action have potential habitat impacts that range from slight negative to no impact. The black sea bass fishery operates in areas that have been fished for many years, for a variety of species and with a variety of gear types. Modifications to the recreational fishing seasons, resulting potential changes in the temporal distribution of fishing effort under the alternatives in this action are unlikely to further degrade habitat beyond its current state. Also, the recreational black sea bass fishery is primarily conducted with hook and line gear, which only minimally interacts with and affects physical habitat, if at all. However, none of the alternatives are expected to result in any improvements to current habitat conditions, and continued fishing effort may limit the recovery potential of some of the currently degraded areas. Thus, all alternatives are expected to have impacts on habitat that range from no impact to slight negative.

The No Action alternative (Alternative 1) would have the least negative impact on habitat because no additional fishing season is created, and existing fishing effort is expected to be maintained. If the shift in temporal distribution of fishing effort created by a new Wave 1 recreational season is enough to influence potential habitat impacts, Alternatives 2 and 3 would be expected to have similarly slight negative impacts; with Alternative 3 being slightly more negative than Alternative 2 due to the longer additional season. It is very difficult to differentiate impacts to physical habitat from these alternatives as they are all so negligible with recreational gear. Any differences in actual effort between alternatives would also not meaningfully impact habitat recovery potential. For these reasons, overall all alternatives are expected to have no impact (Box ES-2; Section 7.2).

### *Protected Resources*

As previously mentioned, the recreational black sea bass fishery primarily uses hook and line gear which does have documented protected species interactions with some stocks. However, relative to other gear types, these interactions are minimal. When interactions do occur, hook and line gear represents a low source serious injury or mortality to the various protected species involved. However, there is still the possibility that any continued fishing activity could result in some level of interaction, which would potentially have impacts on protected species. The effect of any impacts is also dependent on the resource condition of each protected species stock. If the non-ESA species are expected to maintain sustainable stock status even with continued fishery interactions, the action could be considered to have positive impacts; whereas any take of struggling or ESA-listed species would be considered negative. Based on this, and the resource condition of these protected species, all three alternatives are expected to have varying degrees of impacts to these species ranging from slight positive (for sustainable non-ESA stocks) to slight or moderate negative (for species below optimum sustainable levels). Any differences in actual effort between these alternatives would be minimal and is not expected to affect protected species interactions, given the gear used in this fishery. For these reasons, impacts to protected species are expected to remain the similar, regardless of alternative (Box ES-2; Section 7.3).

*Human Communities/Socioeconomic*

As previously stated, the purpose of this action is to increase recreational access and fishing opportunities in the black sea bass fishery through the creation of a Wave 1 recreational season. The No Action alternative (Alternative 1) is expected to have no impact on human communities because it maintains the current conditions in the recreational fishery, without the addition of a Wave 1 season. Compared to Alternative 1, Alternatives 2 and 3 are both expected to have slight positive socioeconomic impacts, as both would create additional open recreational black sea bass seasons during Wave 1 in 2018. Although overall catch and effort are not expected to increase in either of these alternatives, a season during Wave 1 creates fishing opportunity at a time when there are few other available recreational target species, and in later seasons can be supplemented by several other available recreational species. Therefore, unless market conditions change substantially in the near future, it is expected Alternatives 2 and 3 would result in slight positive socioeconomic impacts. Compared to each other, Alternative 3 may result in slightly more positive impacts than Alternative 2 due to the longer Wave 1 season. However, the overall socioeconomic impacts for the recreational fishery will ultimately depend on the management measures that will be implemented in state and Federal waters following the Wave 1 season in spring of 2018. Overall, Alternative 1 is expected to result in no impact on human communities, while Alternatives 2 and 3 are both expected to result in slight positive socioeconomic impacts (Box ES-2; Section 7.4).

<b>Box ES-2. Summary of the expected impacts of alternatives considered in this document. A minus sign (-) signifies a negative impact, a plus sign (+) signifies a positive impact, and zero (0) indicates no impact. A “sl” in front of a sign indicates a minor effect.</b>				
<b>Alternative</b>	<b>Black Sea Bass and Non-Target Species</b>	<b>Physical Habitat</b>	<b>Protected Resources</b>	<b>Socio-economic</b>
<b>Alternative 1</b> (Non-Preferred: No Action/ <i>Status quo</i> )	sl +	0	sl + / -	0
<b>Alternative 2</b> (Preferred)	sl +	0	sl + / -	sl +
<b>Alternative 3</b> (Non-Preferred)	sl +	0	sl + / -	sl +

**Cumulative Impacts**

NMFS analyzed the impacts of the alternatives presented in this document on the biological environment, physical habitat, protected species, and social and human communities. When the proposed action (i.e., the preferred alternative) is considered in conjunction with all the other impacts from past, present, and reasonably foreseeable future actions, it is not expected to result in any significant impacts, positive or negative. Therefore, there are no significant cumulative effects on the human environment associated with the action proposed in this document (Section 7.5).

**Conclusions**

A description and discussion of the expected environmental impacts, as well as any cumulative impacts, resulting from each of the alternatives considered in this document are provided in section

7. The preferred alternative is not associated with significant impacts to the biological, social or economic, or physical environment individually or in conjunction with other actions under National Environmental Protection Act (NEPA); therefore, a “Finding of No Significant Impact” is warranted.

## 2. LIST OF ACRONYMS AND ABBREVIATIONS

ABC	Acceptable Biological Catch
ACL	Annual Catch Limit
ACT	Annual Catch Target
ALWTRP	Atlantic Large Whale Take Reduction Plan
AM	Accountability Measure
AO	Administrative Order
AP	Advisory Panel
ASM	At Sea Monitoring Program
ASMFC	Atlantic States Marine Fisheries Commission
ATGTRS	Atlantic Trawl Gear Take Reduction Strategy
ATGTRT	Atlantic Trawl Gear Take Reduction Team
ASSRT	Atlantic Sturgeon Status Review Team
BMSY	Biomass at MSY
Board	ASMFC Summer Flounder, Scup, and Black Sea Bass Management Board
CEA	Cumulative Effects Analysis
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
Commission	Atlantic States Marine Fisheries Commission
Council	Mid-Atlantic Fishery Management Council
CPUE	Catch Per Unit Effort
CV	Coefficient of Variation
DPS	Distinct Population Segment
DPSWG	Data Poor Stocks Working Group
EA	Environmental Assessment
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act
F	Fishing Mortality Rate
F <sub>MSY</sub>	Fishing Mortality Rate at Maximum Sustainable Yield
FMP	Fishery Management Plan
FR	Federal Register
FONSI	Finding of No Significant Impact
GARFO	Greater Atlantic Regional Fisheries Office
GOM	Gulf of Maine
IRFA	Initial Regulatory Flexibility Analysis
LOF	List of Fisheries
MAFMC	Mid-Atlantic Fishery Management Council
MC	Monitoring Committee
MMPA	Marine Mammal Protection Act
MRFSS	Marine Recreational Fisheries Statistical Survey
MRIP	Marine Recreational Information Program
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MSY	Maximum Sustainable Yield
NAO	National Oceanic and Atmospheric Administration Administrative Order
NEFSC	Northeast Fisheries Science Center
NEFOP	Northeast Fisheries Observer Program
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OFL	Overfishing Limit

OY	Optimum Yield
PBR	Potential Biological Removal
PRA	Paperwork Reduction Act
RFA	Regulatory Flexibility Act
RHL	Recreational Harvest Limit
SARC	Stock Assessment Review Committee
SAW	Stock Assessment Workshop
SBA	Small Business Administration
SI	Serious Injury
SSB	Spawning Stock Biomass
SSB <sub>MSY</sub>	Spawning Stock Biomass at Maximum Sustainable Yield
SSC	Scientific and Statistical Committee
STDN	Sea Turtle Disentanglement Network
USFWS	United States Fish and Wildlife Service
VECs	Valued Ecosystem Components
VTR	Vessel Trip Report

### 3. TABLE OF CONTENTS

1.	EXECUTIVE SUMMARY .....	II
2.	LIST OF ACRONYMS AND ABBREVIATIONS.....	VII
3.	TABLE OF CONTENTS .....	9
4.	INTRODUCTION AND BACKGROUND .....	12
4.1	PURPOSE AND NEED OF THE ACTION.....	12
4.2	BACKGROUND ON DEVELOPMENT OF 2018 BLACK SEA BASS RECREATIONAL WAVE 1 MODIFICATION	13
5.	MANAGEMENT ALTERNATIVES .....	14
5.1	ALTERNATIVE 1 – NON-PREFERRED: NO ACTION/ <i>STATUS QUO</i> .....	15
5.2	ALTERNATIVE 2 – PREFERRED: FEBRUARY 2018 RECREATIONAL SEASON .....	15
5.3	ALTERNATIVE 3 – NON-PREFERRED: WAVE 1 (JANUARY AND FEBRUARY) RECREATIONAL SEASON .....	16
5.4	CONSIDERED BUT REJECTED ALTERNATIVE.....	17
6.	DESCRIPTION OF THE AFFECTED ENVIRONMENT AND FISHERIES .....	17
6.1	MANAGED SPECIES AND NON-TARGET SPECIES.....	18
6.1.1	<i>Black Sea Bass</i> .....	18
6.1.2	<i>Non-Target Species</i> .....	19
6.2	PHYSICAL ENVIRONMENT AND ESSENTIAL FISH HABITAT .....	19
6.2.1	<i>Physical Environment</i> .....	19
6.2.2	<i>Essential Fish Habitat (EFH)</i> .....	22
6.2.3	<i>Fishery Impact Considerations</i> .....	25
6.3	ESA AND MMPA PROTECTED SPECIES .....	25
6.3.1	<i>Species and Critical Habitat Not Likely to be Affected by the Proposed Action</i> .....	26
6.3.2	<i>Species Potentially Affected by the Proposed Action</i> .....	27
6.3.3	<i>Recreational Fisheries Interactions</i> .....	30
6.4	HUMAN COMMUNITIES.....	31
7.	ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES .....	32
7.1	IMPACTS OF THE ALTERNATIVES ON BLACK SEA BASS AND NON-TARGET SPECIES .....	36
7.1.1	<i>Alternative 1 (No Action/Status Quo)</i> .....	36
7.1.2	<i>Alternative 2 (Preferred)</i> .....	37
7.1.3	<i>Alternative 3 (Non-Preferred)</i> .....	38
7.2	IMPACTS OF THE ALTERNATIVES ON PHYSICAL HABITAT .....	38
7.2.1	<i>Alternative 1 (No Action/Status Quo)</i> .....	39
7.2.2	<i>Alternative 2 (Preferred)</i> .....	39
7.2.3	<i>Alternative 3 (Non-Preferred)</i> .....	39
7.3	IMPACTS OF THE ALTERNATIVES ON PROTECTED RESOURCES .....	40
7.3.1	<i>Alternative 1 (No Action/Status Quo)</i> .....	40
7.3.2	<i>Alternative 2 (Preferred)</i> .....	42
7.3.3	<i>Alternative 3 (Non-Preferred)</i> .....	42
7.4	HUMAN COMMUNITIES (SOCIOECONOMIC) IMPACTS OF THE ALTERNATIVES .....	43
7.4.1	<i>Alternative 1 (No Action/Status Quo)</i> .....	43
7.4.2	<i>Alternative 2 (Preferred)</i> .....	44
7.4.3	<i>Alternative 3 (Non-Preferred)</i> .....	44
7.5	CUMULATIVE EFFECTS ANALYSIS.....	45
7.5.1	<i>Consideration of the VECs</i> .....	46
7.5.2	<i>Geographic Boundaries</i> .....	46
7.5.3	<i>Temporal Boundaries</i> .....	46
7.5.4	<i>Actions Other Than Those Proposed in this Document</i> .....	46
7.5.5	<i>Magnitude and Significance of Cumulative Effects</i> .....	53
7.5.6	<i>Preferred Action on all the VECs</i> .....	61
8.	APPLICABLE LAWS .....	63
8.1	MAGNUSON-STEVENS FISHERY CONSERVATION AND MANAGEMENT ACT NATIONAL STANDARDS.....	63
8.2	NEPA FINDING OF NO SIGNIFICANT IMPACT (FONSI).....	63
8.3	ENDANGERED SPECIES ACT .....	68
8.4	MARINE MAMMAL PROTECTION ACT.....	69

8.5	COASTAL ZONE MANAGEMENT ACT.....	69
8.6	ADMINISTRATIVE PROCEDURE ACT.....	69
8.7	SECTION 515 (DATA QUALITY ACT).....	70
8.8	PAPERWORK REDUCTION ACT (PRA).....	71
8.9	RELATIVE TO FEDERALISM/EXECUTIVE ORDER 13132.....	71
8.10	ENVIRONMENTAL JUSTICE/ EXECUTIVE ORDER 12898.....	71
8.11	REGULATORY IMPACT REVIEW (RIR).....	71
8.12	REGULATORY FLEXIBILITY ACT ANALYSIS.....	73
8.12.1	<i>Basis and Purpose of the Rule</i> .....	74
8.12.2	<i>Description of Regulated Entities</i> .....	74
8.12.3	<i>Number of Regulated Entities</i> .....	75
8.12.4	<i>Economic Impacts of Proposed Measure on Regulated Entities</i> .....	76
8.12.5	<i>Significant Alternatives to the Proposed Rule</i> .....	77
8.12.6	<i>Recordkeeping and Reporting</i> .....	77
8.12.7	<i>Conflict with Other Federal Rules</i> .....	78
9.	LITERATURE CITED.....	79
10.	POINT OF CONTACT.....	81

**LIST OF TABLES**

<b>Table 1:</b>	2018 black sea bass recreational alternatives, associated measures and requirements.	15
<b>Table 2:</b>	Composition of Ecological Marine Units (EMUs) off New England and the Mid-Atlantic (Greene et al. 2010). EMUs which account for less than 1% of the surface area of these regions are not shown. ....	22
<b>Table 3:</b>	Essential Fish Habitat descriptions for federally-managed species/life stages that are vulnerable to bottom tending fishing gear in the U.S. northeast shelf ecosystem. ....	23
<b>Table 4:</b>	Species Protected Under the ESA and/or MMPA that may occur in the Affected Environment of the Black Sea Bass Fishery. Marine mammal species (cetaceans and pinnipeds) italicized and in bold are considered MMPA strategic stocks. <sup>1</sup> .....	25
<b>Table 5:</b>	Percentage of State by state recreational harvest (in pounds) taken from state vs. federal waters in 2016. <sup>a</sup> .....	31
<b>Table 6:</b>	State-by-state recreational harvest of black sea bass (in thousands of fish) for all waves, Maine through Cape Hatteras, North Carolina, 2007 through 2016.....	32
<b>Table 7:</b>	General definitions for impacts and qualifiers relative to resource condition (i.e., baseline). ....	34
<b>Table 8:</b>	Baseline conditions of VECs considered in this action. ....	35
<b>Table 9:</b>	Impacts of Past (P), Present (Pr), and Reasonably Foreseeable Future (RFF) Actions on the five VECs (not including those actions considered in this document). ....	49
<b>Table 10:</b>	Summary of the effects of past, present, and reasonably foreseeable future actions on the managed resources, including target and non-target species. ....	54
<b>Table 11:</b>	Summary of the effects of past, present, and reasonably foreseeable future actions on the physical environment, habitat and EFH. ....	56

**Table 12:** Summary of the effects of past, present, and reasonably foreseeable future actions on protected species. .... 58

**Table 13:** Summary of the effects of past, present, and reasonably foreseeable future actions on human communities. .... 60

**Table 14:** Magnitude and significance of the cumulative, additive, and synergistic effects of the 2018 preferred alternative, as well as past (P), present (PR), and reasonably foreseeable future (RFF) actions. .... 62

**Table 15:** Summary of Federally permitted for-hire participation within the black sea bass fishery and during the recreational Wave 1 (January – February) season. .... 76

## ***ENVIRONMENTAL ASSESSMENT***

### **4. INTRODUCTION AND BACKGROUND**

This document was developed in accordance with the Magnuson-Stevens Fishery Conservation and Management Act (MSA)<sup>1</sup> and the National Environmental Policy Act (NEPA), the former being the primary domestic legislation governing fisheries management in the U.S. Exclusive Economic Zone (EEZ). This document was also developed in accordance with the Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan (FMP), which details the management regime for these fisheries. The FMP and subsequent amendments are available at: <http://www.mafmc.org>.

The Environmental Assessment (EA) contained in this document examines the impacts of the management alternatives on the human environment. Aspects of the human environment that are likely to be directly or indirectly affected by the actions proposed in this document are described as valued ecosystem components (VECs; Beanlands and Duinker 1984). Valued ecosystem components (VECs) make up the affected environment and are defined as the managed species (i.e. black sea bass) and non-target species; physical habitat, including essential fish habitat (EFH) for the managed species and non-target species; species protected under the Endangered Species Act (ESA) and/or the Marine Mammal Protection Act (MMPA); and human communities (i.e., the social and economic aspects of the environment). The impacts of the alternatives are evaluated with respect to these VECs. The expected impacts of the alternatives are described in section 7.0 of this document.

#### **4.1 Purpose and Need of the Action**

In 2017, the results of the 2016 benchmark assessment showed that the black sea bass stock is not overfished, overfishing is not occurring, biomass is 2.3 times higher than the biomass target, and the fishing mortality is 25% below Fmsy. Recreational and charter/party black sea bass fisherman from several Atlantic states have requested more access to this abundant resource, specifically in the winter season when fewer other species are available to target. The black sea bass recreational fishery was most recently open during Wave 1 (January and February) in 2013. This season has remained closed in recent years due to concerns over the lack of data collection during this time and the impact that the winter harvest would have on the remaining busier summer and fall seasons; increasing the risk of exceeding the annual recreational harvest limit. The purpose of this action is to modify recreational management measures for the 2018 black sea bass fishery to include a winter season in federal waters. This action is needed to provide additional recreational opportunities and equitable access at a time of year when options are limited. States that participate in the proposed fishery will be required to adjust their recreational measures through the Commission process to account for estimated catch during the additional winter season. Recreational measures for the remainder of 2018, including those to accommodate the proposed season, will be developed by the Council and Commission beginning with their joint meeting in

---

<sup>1</sup> MSA portions retained plus revisions made by the MSA Reauthorization Act of 2006.

Annapolis, MD in December 2017. However, this federal action is necessary to enable winter access prior to the establishment of those measures, and to minimize the potential for exceeding the recreational annual catch limit (ACL) in the midst of uncertainty regarding state participation.

#### **4.2 Background on Development of 2018 Black Sea Bass Recreational Wave 1 Modification**

Historically, black sea bass was an important component of the Wave 1 (January – February) recreational offshore fishery, particularly among the for-hire sector that had the vessel capabilities to travel offshore during that time of year. Recreational management measures in Wave 1 have become progressively more restrictive since the mid-2000's, with the implementation of additional restrictions to constrain landings to the recreational harvest limit (RHL), in an effort to reduce fishing mortality and promote stock rebuilding. The Wave 1 recreational black sea bass fishery closed in 2010 to account for overages in 2009. This fishery has remained closed since that time, with the exception of one opening in 2013.

The Council considered re-opening the Wave 1 fishery in 2014 for federally permitted for-hire vessels in federal waters for the 2015 fishing season, but ultimately decided against it due to implications for the remaining recreational fishing year and the potential disproportionate impacts to states that may not participate in the Wave 1 fishery. The results of the 2016 benchmark assessment, which showed that the black sea bass stock is not overfished and overfishing is not occurring, led the Council and Board to again reconsider opening a Wave 1 recreational fishery for black sea bass at their February 2017 meeting. The assessment indicated the black sea bass stock was at 229% of the biomass target and the fishing mortality was 25% below  $F_{msy}$  in 2015. With such a healthy, abundant stock, and recreational fishermen requesting more access during the more restrictive winter season, a Wave 1 black sea bass fishery could increase fishing opportunity at a low risk to the resource.

Throughout subsequent August and October 2017 meetings, the Council and Board discussed ways to modify the 2018 recreational management measures to include a Wave 1 winter season while adhering to the ACL and RHL. Although the Council and Board explored several options for a Wave 1 fishery at their joint meeting in August 2017, none were approved at that meeting. After much deliberation, both the Council and Board approved the final recommendation for a 2018 February-only season with the maintained recreational measures of a 15-fish per-angler possession limit, and a 12.5-inch minimum size at their respective October meetings.

There was considerable discussion between the Council and Board about how catch from this winter season would be accounted for amongst the participating states and against the recreational ACL. This was further complicated by the lack of recent Marine Recreational Information Program (MRIP) data from the Wave 1 time-period to estimate potential landings during this proposed season. A combination of vessel trip report (VTR) data from federally permitted for-hire vessels in 2013 when the fishery was last open and MRIP data from Wave 6 was analyzed and expanded to estimate potential Wave 1 harvests based on participation in the fishery. The Council and Board agreed that in order to account for harvest during this additional winter season, a predetermined catch estimate would be deducted from the year's RHL, and any state that participates in the winter fishery must account for this catch when developing their management measures for the remainder of the fishing year. Monitoring actual catch from this Wave 1 season will still be difficult at this stage of development without increased reporting or accountability. Until additional recreational

monitoring is in place, this method of catch estimates and modified state measures will need to be used.

More details on these discussions and recommendations relevant to this action can be found in the briefing materials for the August 2017 and October 2017 Council meetings, at: <http://www.mafmc.org/briefing/august-2017> and <http://www.mafmc.org/briefing/october-2017>.

A summary of the different considerations and alternatives from the Council and Commission discussions is shown in Table 1.

## **5. MANAGEMENT ALTERNATIVES**

In October 2017, the Council recommended a Wave 1 modification to open the recreational black sea bass fishery for an additional winter season in 2018. The Council did not recommend other revisions to the existing recreational measures for black sea bass; therefore, any other measures in place will remain unchanged barring further review at the joint Council and Commission meeting in December 2017. Comprehensive descriptions of the regulations for this fishery, as detailed in the Code of Federal Regulations (CFR) at 50 CFR 648 Subpart I, are available through the NMFS Greater Atlantic Regional Fisheries Office (GARFO) website: <http://www.greateratlantic.fisheries.noaa.gov/>.

The proposed recreational seasons, limits, and other management requirements associated with each of the alternatives are shown in Table 1. All alternatives were developed with the most recent VTR data when the Wave 1 black sea bass fishery was open, and the best recreational information available from the black sea bass fishery as a whole. Alternative 2, the preferred measure, would increase the opportunity to fish; by adding an extra month-long recreational season during the month of February while allowing only minimal risk to exceeding the annual RHL. Alternative 1, the non-preferred No Action/status quo alternative reflects the current specifications in place in 2018 and adds no additional winter recreational season; adding no additional opportunity or access. Non-preferred Alternative 3 offers the most recreational fishing opportunity, but has a risk of low participation and subsequent disproportionate burden on participating states to account for the estimated landings during the remainder of the year. Alternative 3 also places an unrealistic high administrative burden on regulators to complete the action in time for proper implementation that may not be feasible for 2018.

For each of the alternatives, recreational harvest limits are provisional and may be adjusted by NMFS in a 2018 specifications final rule. Further adjustments may also be necessary to the recreational management measures for the remainder of fishing year 2018. These will be published separately in the *Federal Register*.

**Table 1:** 2018 black sea bass recreational alternatives, associated measures and requirements.

	<b>Alternative 1</b>	<b>Alternative 2</b>	<b>Alternative 3</b>
	(No Action/ <i>Status Quo</i> )	(Preferred)	(Non-Preferred)
<b>Recreational Seasons</b>	May 15 - September 21, October 22 - December 31	February 1-28, May 15 - September 21, October 22 - December 31	January 1 – February 28, May 15 - September 21, October 22 - December 31
<b>Possession Limit</b>	15 fish/person	15 fish/person	15 fish/person
<b>Minimum Fish Size</b>	12.5 inches	12.5 inches	12.5 inches
<b>Other Requirements</b>	None	100,000 lb from RHL	250,000 lb from RHL
<b>Potential for Further Revision to 2018 Measures<sup>2</sup></b>	Yes	Yes	Yes

### 5.1 Alternative 1 – Non-Preferred: No Action/*Status Quo*

The No Action alternative includes recreational management measures for the 2018 fishing year that are identical to those currently outlined in the regulations. These measures were implemented in 2017 ([82 FR 24078](#)), and will remain in place until replaced by updated measures. They include an annual RHL of 3.66 million lb, a minimum fish size of 12.5 inches, a possession limit of 15 fish per angler, and summer and fall seasons only from May 15 through September 21, and October 22 through December 31.

Alternative 1 is the most restrictive of the three alternatives in terms of increasing recreational accessibility. This alternative does not create a Wave 1 recreational season, or provide additional recreational fishing opportunities in 2018. As such, it does not satisfy the purpose and need, and is a non-preferred alternative.

### 5.2 Alternative 2 – Preferred: February 2018 Recreational Season

This alternative would create an additional 28-day open season during the month of February for the 2018 recreational black sea bass fishery in federal waters. Other implemented recreational management measures would remain in place during this winter fishery (i.e., 12.5 in minimum fish size and 15 fish possession limit). The Council developed this alternative in October 2017 as the most reasonable option to increase winter recreational access on a reasonable timeline without unreasonably increasing the risk of exceeding the annual RHL or complicating the process of setting management measures for the remainder of the year.

Any harvest that occurs during the winter recreational fishery would need to be accounted for and evaluated against the recreational ACL and RHL. Therefore, any catch from this February fishery would require participating states to make adjustments to their recreational management measures

---

<sup>2</sup> Recreational measures for the remainder of 2018 will be developed by the Council and Commission beginning with their joint December meeting for implementation in spring 2018

for the rest of the year. The Council and Commission are recommending the 2018 RHL for the remainder of the fishing year (3.66 million lb) be reduced by a catch estimate of 100,000 lb to account for expected harvest during this February season. Because there are currently no MRIP survey estimates collected for Wave 1, this catch estimate is based on 2013 VTR data from federally permitted for-hire vessels scaled and expanded to account for potential effort from the private/rental and shore modes. Only the states that decide to participate in this February fishery would account for the estimated catch when developing their management measures for the remainder of the fishing year to ensure the 2018 RHL is not exceeded. Federal measures for the rest of the 2018 recreational fishery will be developed as usual through the winter for implementation in spring 2018.

This alternative creates more recreational fishing opportunity and access, with minimal administrative burden and a manageable season length that decreases the likelihood of overharvesting too early in the fishing year. For these reasons, Alternative 2 best satisfies the stated purpose and need, and is the preferred alternative.

### **5.3 Alternative 3 – Non-Preferred: Wave 1 (January and February) Recreational Season**

This alternative would open an additional season for the 2018 recreational black sea bass fishery during the entirety of Wave 1 (January and February) in federal waters. As in Alternative 2, the implemented recreational management measures of a 12.5-in minimum fish size and 15-fish possession limit would remain in place during this winter fishery, and any catch from this Wave 1 recreational season would be accounted for only by the states that participate. The Council developed this alternative at their joint meeting in August 2017 as an option to adequately increase winter recreational access by restoring the entire historic Wave 1 recreational season in the black sea bass fishery.

As with Alternative 2, any catch from this Wave 1 fishery would require adjustments to the RHL to account for winter harvest. The Council and Commission are recommending the RHL for the remainder of the fishing year would be reduced by a catch estimate of 250,000 lb to account for expected harvest during this Wave 1 season. This estimate is based on Council analyses of historic (1996-2009) and 2013 VTR data for Wave 1 from federally permitted for-hire vessels scaled and expanded to account for potential effort from the private/rental and shore modes. This analysis shows that between the two months of Wave 1, January typically accounts for about 64% of the recreational catch, and only 37% of black sea bass in Wave 1 were caught in February. Only the states that decide to participate in this Wave 1 fishery would account for the estimated catch when developing their management measures for the remainder of the fishing year to ensure the annual RHL is not exceeded. Federal measures for the rest of the recreational fishery will be developed as usual through the winter for implementation in spring.

While Alternative 3 does create more recreational fishing access and opportunities than the other alternatives, there are also complications in the timeline to implement this alternative for 2018. In order to establish this Wave 1 fishery for 2018, the final rule would need to be effective before the January 1 start of the season. With the current regulatory process and appropriate time needed to consider and approve this type of action, there is the potential to implement a fishery for February, but a January deadline would not be achievable. State participation in this winter fishery for 2018 is also difficult to predict on such short notice, which creates the potential for a disproportionate

burden on the few participating states when accounting for the higher catch estimate later in the year. Therefore, Alternative 3 is not the preferred alternative at this time.

#### **5.4 Considered but Rejected Alternative**

One additional option was also considered by the Council and Board at their joint meeting in August 2017, but was ultimately rejected from consideration. This alternative would open a Wave 1 recreational fishery for black sea bass under a Letter of Authorization (LOA) program. The implemented recreational management measures of a 12.5-in minimum fish size and 15-fish possession limit would remain in place during this winter fishery. This additional winter season from January 1 through February 28 would be open to any vessel owners who obtain a valid LOA through the program, but the remaining recreational black sea bass seasons (May 15 through September 21 and October 22 through December 31) would not require the LOA. This type of program could greatly expand potential recreational opportunity by allowing any vessel owner to participate, provided they obtain an LOA and abide by all requirements contained within. Increased reporting requirements through the LOA program would also improve the available landings information for this time of year in the black sea bass fishery. However, initial participation could take more time due to the added administrative burden on both NMFS (to develop and establish the program) and participants (applications and increased reporting).

The Council and Board developed this alternative as an option to increase recreational fishing access and Wave 1 data in the black sea bass fishery in 2018. However, due to the limited catch and effort data currently available on the recreational black sea bass fishery during Wave 1, the uncertainty around state participation, and the potential disproportionate impacts to state recreational fisheries later in the year as a result of this uncertainty, the Council decided that this alternative would not be feasible in 2018. There are also complications in the timeline of this alternative. In order to implement this Wave 1 fishery for 2018, the final rule would need to be effective before January 1. With the current regulatory process and appropriate time needed to consider and approve this type of action, this deadline would not be achievable. For these reasons, the Council ultimately decided against considering this alternative for 2018. Despite the choice to not pursue this option, the Council and Board did support an LOA program for a Wave 1 recreational fishery in future years when there has been more time to gauge state interest in participation, gather landings data, and adequately prepare the regulatory requirements. The Council has also agreed to initiate work on the implementation of such an LOA program for the future.

## **6. DESCRIPTION OF THE AFFECTED ENVIRONMENT AND FISHERIES**

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

The VECs include:

- Managed species and non-target species
- Physical environment and habitat

- Protected species
- Human communities

The following sections describe the recent condition of the VECs.

## **6.1 Managed Species and Non-Target Species**

The following sections briefly describe the recent biological conditions of the black sea bass stock and other stocks commonly caught in fisheries targeting black sea bass.

### **6.1.1 Black Sea Bass**

Black sea bass are protogynous hermaphrodites, meaning the majority are born females and some individuals later transition to males. Black sea bass are commonly associated with physical structures such as reefs, although they utilize a variety of habitats including open bottom. Both 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 (NEFSC 2017) spent a great deal of time analyzing and simulating various datasets to gain a better understanding on how these life history characteristics impact the assessment and the black sea bass population. Regarding the protogynous life history, results indicate the stock is more robust to exploitation than previously thought due to factors such as a sex ratio that is not highly skewed and the contribution of secondary males to spawning success. As a result, SSB calculations were defined as male and female mature biomass. Most stock assessments of mid-Atlantic species rely heavily on data collected during the Northeast Fisheries Science Center's (NEFSC's) biannual bottom trawl survey and other state conducted fishery independent trawl surveys. A closer examination of trawl catches from these surveys shows there is no significant difference in the number or length frequency of sea bass caught right near physical habitat (e.g. reefs) or up to distances 11 miles from the physical habitat indicating trawl surveys are viable surveys that can be appropriately used as tuning indices in the stock assessment.

The northern stock of black sea bass (i.e., black sea bass north of Cape Hatteras, North Carolina) was under a rebuilding plan from 2000 until 2009. Black sea bass were declared rebuilt based on the findings of the Data Poor Stocks Working Group (DPSWG), which performed a benchmark stock assessment for black sea bass in 2008 (DPSWG 2009).

The most recent benchmark stock assessment for black sea bass was completed in December 2016. This assessment indicated that the black sea bass stock north of Cape Hatteras, NC is not overfished and overfishing is not occurring. The model-estimated SSB in 2015 was 48.89 million pounds (22,176 mt), 2.3 times SSB at maximum sustainable yield,  $SSB_{MSY} = 21.31$  million pounds (9,667 mt). The fishing mortality rate (F) in 2015 was 0.27, below the fishing mortality threshold reference point ( $F_{MSY}$  Proxy = F40%) of 0.36 (NEFSC 2017).

Annual catch specifications for black sea bass are recommended by the Council and Commission, and have provisions called accountability measures (AMs) that reduce landings limits in following years if overages in the commercial or recreational ACLs occur. These measures help to mitigate negative biological impacts from the overages.

### **6.1.2 Non-Target Species**

Non-target species are those species caught incidentally while targeting other species. Non-target species may be retained or discarded. Northeast Fisheries Observer Program (NEFOP) data from 2011-2015 indicate that spiny dogfish, sea robins (striped, northern, and unclassified), scup, summer flounder, skates (little, winter, and unclassified), Jonah crabs, silver hake, and American lobsters were the most commonly caught species on trips for which black sea bass made up at least 75% of the landings (by weight; a proxy for directed black sea bass trips). It should be noted that this NEFOP data is based on observer data collected during targeted commercial trips, and not during recreational fishing activity. However, given the lack of available data on the Wave 1 recreational fishery, and comparable location and timing to those observed commercial black sea bass trips, the NEFOP observer dataset serves as a reasonable proxy for the non-target species likely to be encountered. All these species, except northern and striped sea robins, are managed by the Mid-Atlantic or New England Fishery Management Councils and/or the ASMFC. Northern and striped sea robins are not managed.

Management specifications for the Council-managed species include AMs to address overages in ACLs through reductions in landings limits in following years. AMs for black sea bass take discards into account. These measures help to mitigate negative impacts from discards.

According to the most recent stock assessment information, scup (NEFSC 2015a), little skate (NEFSC 2015b), spiny dogfish (NEFSC 2015c), silver hake (NEFSC 2011), and the Gulf of Maine/Georges Bank stock of American lobster (ASMFC 2015) are not overfished and overfishing is not occurring. Overfishing is occurring for summer flounder (Terceiro 2016) and winter skate (NEFSC 2015c), though neither stock is overfished. The southern New England stock of American lobster is depleted, but not experiencing overfishing (ASMFC 2015). Jonah crab, and northern and striped sea robins have not been assessed, therefore their overfished and overfishing status is unknown.

## **6.2 Physical Environment and Essential Fish 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 largely drawn from Stevenson et al. (2004), unless otherwise noted.

### **6.2.1 Physical Environment**

Black sea bass inhabit the northeast U.S. shelf ecosystem, which includes the area from the Gulf of Maine south to Cape Hatteras, extending seaward from the coast to the edge of the continental shelf, including the slope sea offshore to the Gulf Stream. The northeast shelf ecosystem includes the Gulf of Maine, Georges Bank, the Mid-Atlantic Bight, and the continental slope.

The Gulf of Maine is an 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 of the 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)<sup>3</sup>, and benthic organisms.<sup>4</sup> 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 (Table 2).

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 of the world’s oceans, the western North Atlantic is experiencing changes to the physical environment as a result of 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

---

<sup>3</sup> Seabed form contains the categories of depression, mid flat, high flat, low slope, side slope, high slope, and steep slope.

<sup>4</sup> See Greene et al. 2010 for a description of the methodology used to define EMUs.

conditions such as temperature (e.g. Weinberg 2005, Lucey and Nye 2010, Nye et al. 2011, Pinsky et al. 2013, Gaichas et al. 2015).

**Table 2:** Composition of Ecological Marine Units (EMUs) off New England and the Mid-Atlantic (Greene et al. 2010). EMUs which account for less than 1% of the surface area of these regions are not shown.

<b>Ecological Marine Unit</b>	<b>Percent Coverage</b>
High Flat Sand	13%
Moderate Flat Sand	10%
High Flat Gravel	8%
Side Slope Sand	6%
Somewhat Deep Flat Sand	5%
Low Slope Sand	5%
Moderate Depression Sand	4%
Very Shallow Flat Sand	4%
Side Slope Silt/Mud	4%
Moderate Flat Gravel	4%
Deeper Depression Sand	4%
Shallow Depression Sand	3%
Very Shallow Depression Sand	3%
Deeper Depression Gravel	3%
Shallow Flat Sand	3%
Steep Sand	3%
Side Slope Gravel	3%
High Flat Silt/Mud	2%
Shallow Depression Gravel	2%
Low Slope Gravel	2%
Moderate Depression Gravel	2%
Somewhat Deep Depression Sand	2%
Deeper Flat Sand	1%
Shallow Flat Gravel	1%
Deep Depression Gravel	1%
Deepest Depression Sand	1%
Very Shallow Depression Gravel	1%

### **6.2.2 Essential Fish Habitat (EFH)**

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 3 summarizes EFH in the

northeast shelf ecosystem for federally-managed species and lifestages that are vulnerable to bottom tending fishing gear.

The northern population of black sea bass (i.e., black sea bass north of Cape Hatteras, North Carolina) spawns in the Mid-Atlantic Bight continental shelf, primarily between Cape Hatteras, North Carolina, and Cape Cod, Massachusetts, during the spring through the fall. Spawning begins in the spring off North Carolina and Virginia, and progresses north into southern New England waters in the summer through the fall. The duration of larval stage and habitat-related settlement cues are unknown. Distribution and habitat use of this pelagic stage may only partially overlap with that of the egg stage. Adult black sea bass are very structure-oriented, especially during their summer coastal residency. Unlike juveniles, they tend to enter only larger estuaries and are most abundant along the coast. Larger fish tend to be found in deeper water than smaller fish. A variety of coastal structures are known to attract black sea bass, including shipwrecks, rocky and artificial reefs, mussel beds and other objects or source of shelter on the bottom. In the warmer months, inshore, resident adult black sea bass are usually found associated with structured habitats. EFH for black sea bass includes pelagic waters, structured habitat (e.g., sponge beds), rough bottom shellfish, sand and shell, from the Gulf of Maine through Cape Hatteras, North Carolina.

**Table 3:** Essential Fish Habitat descriptions for federally-managed species/life stages that are vulnerable to bottom tending fishing gear in the U.S. northeast shelf ecosystem.

Species	Life Stage	Geographic Area of EFH	Depth (meters)	Bottom Type
American plaice	juvenile	GOM, including estuaries from Passamaquoddy Bay to Saco Bay, ME and from Massachusetts Bay to Cape Cod Bay	45 - 150	Fine grained sediments, sand, or gravel
American plaice	adult	GOM, including estuaries from Passamaquoddy Bay to Saco Bay, ME and from Massachusetts Bay to Cape Cod Bay	45 - 175	Fine grained sediments, sand, or gravel
Atlantic cod	juvenile	GOM, GB, eastern portion of continental shelf off SNE, these estuaries: Passamaquoddy Bay to Saco Bay, Massachusetts Bay, Boston Harbor, Cape Cod Bay, Buzzards Bay	25 - 75	Cobble or gravel
Atlantic cod	adult	GOM, GB, eastern portion of continental shelf off SNE, these estuaries: Passamaquoddy Bay to Saco Bay, Massachusetts Bay, Boston Harbor, Cape Cod Bay, Buzzards Bay	10 - 150	Rocks, pebbles, or gravel
Atl halibut	juvenile	GOM and GB	20 - 60	Sand, gravel, or clay
Atl halibut	adult	GOM and GB	100 - 700	Sand, gravel, or clay
Barndoor skate	juvenile/ adult	Eastern GOM, GB, SNE, Mid-Atlantic Bight to Hudson Canyon	10-750, most < 150	Mud, gravel, and sand
Black sea bass	juvenile	GOM to Cape Hatteras, NC, including estuaries from Buzzards Bay to Long Island Sound, Gardiners Bay, Barnegat Bay to Chesapeake Bay, Tangier/ Pocomoke Sound, and James River	1 - 38	Rough bottom, shellfish/ eelgrass beds, manmade structures, offshore clam beds, and shell patches
Black sea bass	adult	GOM to Cape Hatteras, NC, including Buzzards Bay, Narragansett Bay, Gardiners Bay, Great South Bay, Barnegat Bay to Chesapeake Bay, and James River	20 - 50	Structured habitats (natural and manmade), sand and shell substrates preferred
Clearnose skate	juvenile/ adult	GOM, along continental shelf to Cape Hatteras, NC, including the estuaries from Hudson River/Raritan Bay south to the Chesapeake Bay mainstem	0 – 500, most < 111	Soft bottom and rocky or gravelly bottom
Haddock	juvenile	GB, GOM, and Mid-Atlantic south to Delaware Bay	35 - 100	Pebble and gravel
Haddock	adult	GB, eastern side of Nantucket Shoals, and throughout GOM	40 - 150	Broken ground, pebbles, smooth hard sand, and smooth areas between rocky patches

Species	Life Stage	Geographic Area of EFH	Depth (meters)	Bottom Type
Little skate	juvenile/ adult	GB through Mid-Atlantic Bight to Cape Hatteras, NC; includes estuaries from Buzzards Bay south to mainstem Chesapeake Bay	0-137, most 73 - 91	Sandy or gravelly substrate or mud
Ocean pout	eggs	GOM, GB, SNE, and Mid-Atlantic south to Delaware Bay, including the following estuaries: Passamaquoddy Bay to Saco Bay, Massachusetts Bay and Cape Cod Bay	<50	Generally sheltered nests in hard bottom in holes or crevices
Ocean pout	juvenile	GOM, GB, SNE, Mid-Atlantic south to Delaware Bay and the following estuaries: Passamaquoddy Bay to Saco Bay, Massachusetts Bay, and Cape Cod Bay	< 50	Close proximity to hard bottom nesting areas
Ocean pout	adult	GOM, GB, SNE, Mid-Atlantic south to Delaware Bay and the following estuaries: Passamaquoddy Bay to Saco Bay, MA Bay, Boston Harbor, and Cape Cod Bay	< 80	Smooth bottom near rocks or algae
Pollock	adult	GOME, GB, SNE, and Mid-Atlantic south to New Jersey and the following estuaries: Passamaquoddy Bay, Damariscotta R., MA Bay, Cape Cod Bay, Long Island Sound	15 – 365	Hard bottom habitats including artificial reefs
Red hake	juvenile	GOM, GB, continental shelf off SNE, and Mid-Atlantic south to Cape Hatteras, including the following estuaries: Passamaquoddy Bay to Saco Bay, Great Bay, MA Bay to Cape Cod Bay; Buzzards Bay to CT River, Hudson River, Raritan Bay, and Chesapeake Bay	< 100	Shell fragments, including areas with an abundance of live scallops
Red hake	adult	GOM, GB, continental shelf off SNE, Mid-Atlantic south to Cape Hatteras, these estuaries: Passamaquoddy Bay to Saco Bay, Great Bay, MA Bay to Cape Cod Bay; Buzzards Bay to CT River, Hudson River, Raritan Bay, Delaware Bay, and Chesapeake Bay	10 - 130	In sand and mud, in depressions
Redfish	juvenile	GOM, southern edge of GB	25 - 400	Silt, mud, or hard bottom
Redfish	adult	GOM, southern edge of GB	50 - 350	Silt, mud, or hard bottom
Rosette skate	juvenile/ adult	Nantucket shoals and southern edge of GB to Cape Hatteras, NC	33-530, most 74-274	Soft substrate, including sand/mud bottoms
Scup	juvenile/ adult	GOM to Cape Hatteras, NC, including the following estuaries: MA Bay, Cape Cod Bay to Long Island Sound, Gardiners Bay to Delaware inland bays, and Chesapeake Bay	0-38 for juv 2-185 for adult	Demersal waters north of Cape Hatteras and inshore estuaries (various substrate types)
Silver hake	juvenile	GOM, GB, continental shelf off SNE, Mid-Atlantic south to Cape Hatteras and the following estuaries: Passamaquoddy Bay to Casco Bay, ME, MA Bay to Cape Cod Bay	20 – 270	All substrate types
Summer Flounder	juvenile/ adult	GOM to Florida – estuarine and over continental shelf to shelf break	0-250	Demersal/estuarine waters, varied substrates. Mostly inshore in summer and offshore in winter.
Smooth skate	juvenile/ adult	Offshore banks of GOM	31–874, most 110- 457	Soft mud (silt and clay), sand, broken shells, gravel and pebbles
Thorny skate	juvenile/ adult	GOM and GB	18-2000, most 111- 366	Sand, gravel, broken shell, pebbles, and soft mud
Tilefish	juvenile/ adult	Outer continental shelf and slope from the U.S./Canadian boundary to the Virginia/North Carolina boundary	100 - 300	Burrows in clay (some may be semi-hardened into rock)
White hake	juvenile	GOM, southern edge of GB, SNE to Mid-Atlantic and the following estuaries: Passamaquoddy Bay, ME to Great Bay, NH, Massachusetts Bay to Cape Cod Bay	5 - 225	Seagrass beds, mud, or fine grained sand

Species	Life Stage	Geographic Area of EFH	Depth (meters)	Bottom Type
Winter flounder	adult	GB, inshore areas of GOM, SNE, Mid- Atlantic south to Delaware Bay and the estuaries from Passamaquoddy Bay, ME to Chincoteague Bay, VA	1 - 100	Mud, sand, and gravel
Winter skate	juvenile/ adult	Cape Cod Bay, GB, SNE shelf through Mid-Atlantic Bight to North Carolina; includes the estuaries from Buzzards Bay south to the Chesapeake Bay mainstem	0 - 371, most < 111	Sand and gravel or mud
Witch flounder	juvenile	GOM, outer continental shelf from GB south to Cape Hatteras	50 - 450 to 1500	Fine grained substrate
Witch flounder	adult	GOME, outer continental shelf from GB south to Chesapeake Bay	25 - 300	Fine grained substrate
Yellowtail flounder	adult	GB, GOM, SNE and Mid-Atlantic south to Delaware Bay and these estuaries: Sheepscot River and Casco Bay, ME, MA Bay to Cape Cod Bay	20 - 50	Sand or sand and mud

### 6.2.3 Fishery Impact Considerations

The principal gears used in the recreational fisheries for black sea bass are rod and reel and handline. These hook and line gears rarely contact the surrounding habitat, and have minimal adverse impacts on EFH in the region (Stevenson et al. 2004).

### 6.3 ESA and MMPA Protected Species

Numerous protected species inhabit the affected environment of the Summer Flounder, Scup, and Black Sea Bass FMP (Table 4). 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 and the following sections; 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 cusk, alewife, and blueback herring can be found at: <http://www.nmfs.noaa.gov/pr/species/esa/candidate.htm>.

**Table 4:** Species Protected Under the ESA and/or MMPA that may occur in the Affected Environment of the Black Sea Bass Fishery. Marine mammal species (cetaceans and pinnipeds) italicized and in bold are considered MMPA strategic stocks.<sup>1</sup>

Species	Status	Potentially affected by this action?
<b>Cetaceans</b>		
<i>North Atlantic right whale (Eubalaena glacialis)</i>	<i>Endangered</i>	<i>Yes</i>
<i>Humpback whale, West Indies DPS (Megaptera novaeangliae)</i>	Protected (MMPA)	Yes
<i>Fin whale (Balaenoptera physalus)</i>	<i>Endangered</i>	<i>Yes</i>
<i>Sei whale (Balaenoptera borealis)</i>	<i>Endangered</i>	<i>Yes</i>
<i>Blue whale (Balaenoptera musculus)</i>	<i>Endangered</i>	<i>No</i>

Species	Status	Potentially affected by this action?
<b>Sperm whale (<i>Physeter macrocephalus</i>)</b>	<b>Endangered</b>	<b>No</b>
Minke whale ( <i>Balaenoptera acutorostrata</i> )	Protected (MMPA)	Yes
<b>Pilot whale (<i>Globicephala spp.</i>)<sup>2</sup></b>	<b>Protected (MMPA)</b>	<b>No</b>
Pygmy sperm whale ( <i>Kogia breviceps</i> )	Protected (MMPA)	No
Dwarf sperm whale ( <i>Kogia sima</i> )	Protected (MMPA)	No
Risso's dolphin ( <i>Grampus griseus</i> )	Protected (MMPA)	No
Atlantic white-sided dolphin ( <i>Lagenorhynchus acutus</i> )	Protected (MMPA)	No
Short Beaked Common dolphin ( <i>Delphinus delphis</i> )	Protected (MMPA)	No
Atlantic Spotted dolphin ( <i>Stenella frontalis</i> )	Protected (MMPA)	No
Striped dolphin ( <i>Stenella coeruleoalba</i> )	Protected (MMPA)	No
<b>Bottlenose dolphin (<i>Tursiops truncatus</i>)<sup>3</sup></b>	<b>Protected (MMPA)</b>	<b>Yes</b>
Harbor porpoise ( <i>Phocoena phocoena</i> )	Protected (MMPA)	No
<b>Sea Turtles</b>		
Leatherback sea turtle ( <i>Dermochelys coriacea</i> )	Endangered	Yes
Kemp's ridley sea turtle ( <i>Lepidochelys kempii</i> )	Endangered	Yes
Green sea turtle, North Atlantic DPS ( <i>Chelonia mydas</i> )	Threatened	Yes
Loggerhead sea turtle ( <i>Caretta caretta</i> ), Northwest Atlantic Ocean DPS	Threatened	Yes
Hawksbill sea turtle ( <i>Eretmochelys imbricate</i> )	Endangered	No
<b>Fish</b>		
Shortnose sturgeon ( <i>Acipenser brevirostrum</i> )	Endangered	No
Atlantic salmon ( <i>Salmo salar</i> )	Endangered	No
Atlantic sturgeon ( <i>Acipenser oxyrinchus</i> )		
<i>Gulf of Maine DPS</i>	Threatened	Yes
<i>New York Bight DPS, Chesapeake Bay DPS, Carolina DPS &amp; South Atlantic DPS</i>	Endangered	Yes
Cusk ( <i>Brosme brosme</i> )	Candidate	Yes
Alewife ( <i>Alosa pseudoharengus</i> )	Candidate	Yes
Blueback herring ( <i>Alosa aestivalis</i> )	Candidate	Yes
<b>Pinnipeds</b>		
Harbor seal ( <i>Phoca vitulina</i> )	Protected (MMPA)	No
Gray seal ( <i>Halichoerus grypus</i> )	Protected (MMPA)	No
Harp seal ( <i>Phoca groenlandicus</i> )	Protected (MMPA)	No
Hooded seal ( <i>Cystophora cristata</i> )	Protected (MMPA)	No
<b>Critical Habitat</b>		
North Atlantic Right Whale	ESA (Protected)	No
Northwest Atlantic DPS of Loggerhead Sea Turtle	ESA (Protected)	No
<sup>1</sup> A strategic stock is defined under the MMPA as a marine mammal stock for which: (1) the level of direct human-caused mortality exceeds the potential biological removal 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 a threatened or endangered species under the ESA, or is designated as depleted under the MMPA (Section 3 of the MMPA of 1972).		
<sup>2</sup> There are 2 species of pilot whales: short finned ( <i>G. melas melas</i> ) and long finned ( <i>G. macrorhynchus</i> ). Due to the difficulties in identifying the species at sea, they are often just referred to as <i>Globicephala spp.</i>		
<sup>3</sup> This includes the Western North Atlantic Offshore, Northern Migratory Coastal, and Southern Migratory Coastal Stocks of Bottlenose Dolphins. See marine mammal stock assessment reports ( <a href="http://www.nmfs.noaa.gov/pr/sars/region.htm">http://www.nmfs.noaa.gov/pr/sars/region.htm</a> ) for further details.		

### 6.3.1 Species and Critical Habitat Not Likely to be Affected by the Proposed Action

Based on available information, it has been determined that this action is not likely to affect multiple ESA listed and/or marine mammal protected species (see Table 4). Further, this action is not likely to adversely affect any critical habitat for the species listed in Table 4. This determination was made because either the occurrence of the species is not known to overlap with the recreational

black sea bass fishery and/or there have never been documented interactions between the species and this fishery (NMFS NEFSC FSB 2015, 2016, 2017; Palmer 2017; see [http://www.nefsc.noaa.gov/fsb/take\\_reports/nefop.html](http://www.nefsc.noaa.gov/fsb/take_reports/nefop.html); <http://www.nmfs.noaa.gov/pr/sars/region.htm>). In the case of critical habitat, this determination has been made because the recreational black sea bass fishery 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 therefore, will not result in the destruction or adverse modification of critical habitat (NMFS 2014; NMFS 2015a,b).

### **6.3.2 Species Potentially Affected by the Proposed Action**

Table 4 provides a list of protected sea turtle, marine mammal, and fish species present in the affected environment of the black sea bass fishery, 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 (<http://www.nmfs.noaa.gov/pr/sars/region.htm>; <http://www.nmfs.noaa.gov/pr/interactions/fisheries/lof.html>). 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 was 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. Reasonable and prudent measures and terms and conditions were also issued with the ITS to minimize impacts of any incidental take.

Up until recently, the 2013 Opinion remained in effect; however, new information on North Atlantic right whales has been made available that may reveal effects of the fisheries analyzed in the 2013 Opinion that may not have been previously considered. 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. Until replaced, the Summer Flounder, Scup, and Black Sea Bass FMP is currently covered by the incidental take statement authorized in NMFS 2013 Opinion.

As 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 it is necessary to consider (1) species occurrence in the affected environment of the fishery and how the fishery 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 black sea bass

fishery is provided below, while information on protected species interactions with specific fishery gear is provided in section 6.3.3.

### **6.3.2.1 Sea Turtles**

Both hard shell and leatherback sea turtles are known to migrate through the waters of the Northwest Atlantic continental shelf. This section contains a brief summary of the occurrence and distribution of sea turtles in the affected environment of the black sea bass fishery. 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; TEWG 1998, 2000, 2007, 2009; NMFS and USFWS 2007a, 2007b; Conant et al. 2009; NMFS and USFWS 2013), 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).

*Hard-shelled sea turtles:* In U.S. Northwest Atlantic waters, hard-shelled turtles commonly occur throughout the continental shelf from Florida to Cape Cod, MA, although their presence varies with the seasons due to changes in water temperature (Braun-McNeill et al. 2008; Braun & Epperly 1996; Epperly et al. 1995a,b; Mitchell et al. 2003; Shoop & Kenney 1992; TEWG 2009; Blumenthal et al. 2006; Braun-McNeill & Epperly 2004; Griffin et al. 2013; Hawkes et al. 2006; Hawkes et al. 2011; Mansfield et al. 2009; McClellan & Read 2007; Mitchell et al. 2003; Morreale & Standora 2005). 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 (Braun-McNeill & Epperly 2004; Epperly et al. 1995a,b,c; Griffin et al. 2013; Morreale & Standora 2005), occurring in Virginia foraging areas as early as late April and on the most northern foraging grounds in the Gulf of Maine (GOM) in June (Shoop & Kenney 1992). The trend is reversed in the fall as water temperatures cool. The majority leave the Gulf of Maine by September, but some remain in Mid-Atlantic and Northeast areas until November. By December, sea turtles have migrated south to waters offshore of North Carolina, particularly south of Cape Hatteras, and further south, although hard-shelled sea turtles can occur year-round in waters off Cape Hatteras and south (Epperly et al. 1995b; Griffin et al. 2013; Hawkes et al. 2011; Shoop & Kenney 1992).

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

### **6.3.2.2 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; NMFS 1991, 2005, 2010, 2011, 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; Waring et al. 2016). 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 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 each whale species please refer to: NMFS 1991, 2005, 2010, 2011, 2012, and marine mammal stock assessment reports provided at: <http://www.nmfs.noaa.gov/pr/sars/region.htm>.

### **6.3.2.3 Small Cetaceans and Pinnipeds**

Table 4 lists the small cetaceans that may occur in the affected environment of the black sea bass fishery. 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. For additional information on the biology and range wide distribution of each species of small cetacean provided in Table 4, please refer to the marine mammal stock assessment reports provided at: <http://www.nmfs.noaa.gov/pr/sars/region.htm>.

### **6.3.2.4 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, 2012, 2015; Erickson et al. 2011; Wirgin et al. 2012; Waldman et al. 2013; O'Leary et al. 2014; Wirgin et al. 2015a,b; ASMFC 2017). 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; ASMFC 2017); 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 2017).

### 6.3.3 Recreational Fisheries Interactions

As noted in section 6.2.3, the recreational component of the black sea bass fishery is 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. 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. As provided in Table 4, sea turtle species, Atlantic sturgeon, bottlenose dolphins, and several species of large whales have the potential to interact with hook and line gear.

Large whales are known to interact with hook and line gear; however, in the most recent (2010-2014) 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 (89.5% observed/reported whales had a serious injury value of 0; 10.5% had a serious injury value of 0.75; none of the cases resulted in mortality; Henry et al. 2016; Palmer 2017).<sup>5</sup> In fact, 85.0% 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. 2016). 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.* 2016; Hayes *et al.* 2017; Palmer 2017).

As provided in Table 4, there are numerous small cetaceans that will occur in the affected environment of the black sea bass fishery. However, of these species, only bottlenose dolphin stocks have been identified (primarily through stranding records/data) as vulnerable to entanglement 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).<sup>6</sup> Based on this, although interactions with hook and line gear are possible, relative to other gear types, such as

---

<sup>5</sup> Any injury leading to a significant health decline (e.g., skin discoloration, lesions near the nares, fat loss, increased cyanid loads) is classified as a serious injury (SI) and will result in a SI value set at 1 (Henry *et al.* 2015).

<sup>6</sup> Stranding data provided in Waring *et al.* 2015 and Hayes et al. 2017 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.* (2014) 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.

gillnet or trawl gear, hook and line gear represents a low source serious injury or mortality to any bottlenose dolphin stock (Waring et al. 2014; Waring et al. 2016; Palmer 2017).

ESA listed species of sea turtles are known to interact with hook and line gear, particularly in nearshore southern waters (e.g., Virginia, south; Sea Turtle Disentanglement Network (STDN); NMFS 2013; Palmer 2017). Serious injury and mortality to sea turtles can be incurred by hook and line gear interactions, and can pose a risk to these species. 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.

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 (ASMFC 2017; NMFS 2013; NMFS 2011b).

#### 6.4 Human Communities

Black sea bass support an important recreational fishery. In 2015, recreational anglers landed an estimated 3.89 million pounds, and landings have been increasing since 2011. Most recreational black sea bass landings occur in state waters when the fish migrate inshore during the warm summer months, especially Massachusetts, Rhode Island, and Connecticut. MRIP data show that in 2016, about 65% of black sea bass harvested by recreational fishermen were caught in state waters, and about 35% in federal waters, although state by state percentage caught varies (Table 5). In recent years, the majority of black sea bass have been harvested in New Jersey, New York, Connecticut, Rhode Island and Massachusetts. These five states account for 94% of all black sea bass harvest north of Cape Hatteras in 2016 (Table 6). For-hire vessels carrying passengers in federal waters must obtain a federal party/charter permit to catch black sea bass. In 2016, 749 party and charter boats held federal recreational black sea bass permits. Many of these vessels also held recreational permits for summer flounder and scup. MRIP data indicate that 84% of harvest in 2016 came from private anglers, and 16% came from party/charter boats.

**Table 5:** Percentage of State by state recreational harvest (in pounds) taken from state vs. federal waters in 2016.<sup>a</sup>

	<b>MA</b>	<b>RI</b>	<b>CT</b>	<b>NY</b>	<b>NJ</b>	<b>DE</b>	<b>MD</b>	<b>VA</b>
<b>State Waters (≤ 3 miles)</b>	94%	83%	95%	49%	36%	8%	51%	9%
<b>Federal Waters (&gt; 3 miles)</b>	6%	17%	5%	51%	64%	92%	49%	91%

<sup>a</sup>Note: North Carolina is omitted due to post-stratification of harvest north of Cape Hatteras.

**Table 6:** State-by-state recreational harvest of black sea bass (in thousands of fish) for all waves, Maine through Cape Hatteras, North Carolina, 2007 through 2016.

State	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
ME	-	-	-	-	0	0	-	-	-	-
NH	-	-	-	0	-	3	12	0	0	0
MA	149	246	431	702	195	520	292	457	343	392
RI	44	52	36	160	50	103	75	214	234	255
CT	24	60	<1	16	8	111	110	397	331	436
NY	410	260	566	543	274	322	353	469	877	1,033
NJ	725	580	583	687	148	735	345	468	310	294
DE	93	23	37	21	43	40	37	24	23	24
MD	39	26	33	36	47	33	30	68	58	80
VA	36	38	115	30	19	4	21	19	39	29
NC	9	9	3	11	31	4	8	<1	2	<1
<b>Total</b>	<b>1,528</b>	<b>1,294</b>	<b>1,806</b>	<b>2,207</b>	<b>817</b>	<b>1,874</b>	<b>1,282</b>	<b>2,118</b>	<b>2,215</b>	<b>2,543</b>

## 7. ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVES

The purpose of this action is to create recreational black sea bass fishing opportunities during Wave 1 while maintaining catch within the 2018 recreational ACL. The Council-preferred modification to achieve this goal is Alternative 2, which includes an additional 28-day open season during the month of February, and a reduction of 100,000 lb of estimated catch from the annual RHL to be accounted for in the recreational management measures (bag limit, minimum size, and seasons) of participating states for the remainder of the 2018 fishing year.

This EA analyzes the expected impacts of each of the alternatives described in section 5 on each VEC. When considering these impacts, the alternatives are compared to the current condition of the VEC. Each alternative, including the No Action alternative, is also compared to each of the other alternatives in terms of impacts. The No Action alternative assumes that the current management regimes and fishery operations will continue into the future with no changes. It is not possible to quantify with confidence how effort will change under each alternative; therefore, expected changes are described qualitatively. Impacts of alternatives on the VECs are described both in terms of their direction (negative, positive, or no impact) and their magnitude (slight, moderate, or high). Table 7 summarizes the main guidelines used for each VEC to determine the magnitude and direction of the impacts described in this section. The potential impacts of the action are dependent on the current resource condition of each VEC, and the specific process for these determinations is described in Table 7.

The VECs that could be affected by the proposed action are detailed in section 6.0, and the analysis in this section focuses on impacts relative to those; which include:

- Managed species and non-target species
- Physical environment and habitat
- Protected species

- Human communities

The recent conditions of the VECs include the biological conditions of the black sea bass stock, non-target stocks, and protected species over the most recent five years (sections 6.1 and 6.3). They also include the fishing practices and levels of effort and catch in the recreational black sea bass fishery over the most recent five years that data is available, as well as the economic characteristics of the fishery over the most recent three to five years (depending on the dataset; section 6.4). The recent conditions of the VECs also include the latest levels of habitat availability and quality (section 6.2). The current condition of each VEC is described in Table 8. The 2018 recreational management modifications for each alternative are shown in Table 1.

The recreational black sea bass fishery involved with this action is almost exclusively a hook and line fishery. This fishery is considered to have minimal impacts on all VECs other than managed species and human communities, as recreational hook and line gear does not generally create much, if any, impact to protected resources, non-target species, or habitat.

**Table 7:** General definitions for impacts and qualifiers relative to resource condition (i.e., baseline).

<b>General Definitions</b>				
<b>VEC</b>	<b>Resource Condition</b>	<b>Impact of Action</b>		
		<b>Positive (+)</b>	<b>Negative (-)</b>	<b>No Impact (0)</b>
Target and Non-target Species	Overfished status defined by the MSA	Alternatives that would maintain or are projected to result in a stock status above an overfished condition*	Alternatives that would maintain or are projected to result in a stock status below an overfished condition*	Alternatives that do not impact stock / populations
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 (e.g., no take)	Alternatives that result in interactions/take of listed resources, including actions that reduce interactions	Alternatives that do not impact ESA listed species
MMPA Protected Species (not also ESA listed)	Stock health may vary but populations remain impacted	Alternatives that will maintain takes below PBR and approaching the Zero Mortality Rate Goal	Alternatives that result in interactions with/take of marine mammal species that could result in takes above PBR	Alternatives that do not impact MMPA Protected Species
Physical Environment / Habitat / EFH	Many habitats degraded from historical effort and slow recovery time (see condition of the resources table for details)	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 (Socioeconomic)	Highly variable but generally stable in recent years (see condition of the resources table for details)	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 and social well-being of fishermen and/or communities
<b>Impact Qualifiers</b>				
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		
	Moderately (M) positive or negative	To an average degree (i.e., more than “slight”, but not “high”)		
	High (H), 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 MSA status, but this must be justified within the impact analysis.				

**Table 8:** Baseline conditions of VECs considered in this action.

VEC		Baseline Condition	
		Status/Trends, Overfishing?	Status/Trends, Overfished?
<b>Target stock (section 6.1.1)</b>	<b>Black sea bass</b>	No	No
<b>Non-target Species (principal species listed in section 6.1.2)</b>	<b>Spiny dogfish</b>	No	No
	<b>Striped sea robin</b>	Unassessed	Unassessed
	<b>Northern sea robin</b>	Unassessed	Unassessed
	<b>Scup</b>	No	No
	<b>Summer flounder</b>	Yes	No; SSB declining
	<b>Little skate</b>	No	No
	<b>Winter skate</b>	Yes	No
	<b>Jonah crab</b>	Unassessed	Unassessed
	<b>Silver hake</b>	No	No
	<b>American lobster</b>	No	No in GOM/GB; Depleted in SNE
<b>Habitat (6.2)</b>		The recreational fishery uses primarily hook and line gear which has minimal impacts, but typically adverse; Non-fishing activities have historically negative but site-specific effects on habitat quality.	
<b>Protected Resources (6.3)</b>	<b>Sea Turtles</b>	Leatherback and Kemp’s ridley sea turtles are classified as endangered under the ESA; loggerhead (NW Atlantic DPS) and green (North Atlantic DPS) sea turtles are classified as threatened.	
	<b>Fish</b>	Atlantic salmon, shortnose sturgeon, and the New York Bight, Chesapeake, Carolina, and South Atlantic DPSs of Atlantic sturgeon are classified as endangered under the ESA; the Atlantic sturgeon Gulf of Maine DPS is listed as threatened; cusk, blue herring, and river herring are candidate species.	
	<b>Large Whales</b>	All large whales in the Northwest Atlantic are protected under the MMPA. Of these large whales, North Atlantic right, fin, blue, sei, and sperm whales are also listed as endangered under the ESA. Pursuant to section 118 of the MMPA, Large Whale Take Reduction Plan was implemented to reduce humpback, North Atlantic right, and fin whale entanglement in vertical lines associated with fixed fishing gear (sink gillnet and trap/pot) and sinking groundlines.	
	<b>Small Cetaceans</b>	Pilot whales, dolphins and harbor porpoise are all protected under the MMPA. Pursuant to section 118 of the MMPA, the HPTRP and BDTRP was implemented to reduce bycatch of harbor porpoise and bottlenose dolphin stocks, respectively, in gillnet gear.	
	<b>Pinnipeds</b>	Gray, harbor, hooded, and harp seals are protected under the MMPA.	
<b>Human Communities (6.4)</b>		2016 data: <ul style="list-style-type: none"> <li>• 5.19 million lb of black sea bass were harvested recreationally from Maine through North Carolina</li> <li>• 749 party/charter permits for black sea bass</li> <li>• 291 for-hire vessels targeted black sea bass catch</li> <li>• 84% of harvest came from anglers on private or rental boats, and 16% came from party/charter boats</li> </ul>	

## **7.1 Impacts of the Alternatives on Black Sea Bass and Non-Target Species**

The three alternatives for this 2018 action have potential biological impacts to black sea bass and non-target species that range from no impact to slight positive relative to the current condition of the VEC. Overall, no alternatives are expected to alter fishing effort or activity substantially because the purpose of this action merely shifts a small amount of recreational fishing effort temporally within the year to a Wave 1 season. For black sea bass, no alternatives are expected to alter fishing effort substantially enough to have a significant impact on the stock status of the managed resource. As described in section 6.1.1, the current black sea bass stock is stable and not overfished, and expected to remain so under current fishing conditions. Therefore, all alternatives are expected to have a slight positive impact on black sea bass, because they would all allow the positive stock status to be maintained.

The alternatives are also likely to have slight positive impacts on identified non-target species in the directed recreational black sea bass fishery for the same reason. Most other species caught on directed black sea bass trips have a positive stock status, and none of them are classified as overfished (Table 8). Some of these species may be struggling more than others (such as summer flounder), but any non-target species that are caught on black sea bass trips are typically only done so in very low numbers due to the nature of the recreational black sea bass fishery, which primarily uses hook and line gear. Therefore, any additional impact to those struggling stocks would be negligible, and their non-overfished condition would not be expected to change as a result of this action. Given the likelihood that effort is not expected to change substantially under any of the alternatives (see sections 5 and 7.0), impacts on non-target species are expected to be slightly positive, due to the general lack of interaction, and maintained positive stock statuses.

There is very little difference between the alternatives with respect to potential changes in total effort and overall biological impacts on black sea bass and non-target resources because this action merely has the potential to shift recreational fishing effort temporally within the year. However, if the amount of fishing access created by additional open recreational season time is considered to affect the biological status of species to varying degrees between alternatives; the No Action alternative (Alternative 1) would be expected to have the most positive impact on black sea bass and non-target species due to the lack of an extra season, followed by Alternative 2 (preferred) with the shorter February season, and Alternative 3 (non-preferred) with the longest Wave 1 season.

### **7.1.1 Alternative 1 (No Action/*Status Quo*)**

As described in section 5.1, the No Action Alternative would maintain black sea bass recreational management measures for the 2018 fishing year currently outlined in the regulations, with no Wave 1 open season or other modifications. These measures were implemented based on the Council's Scientific and Statistical Committee's (SSC's) recommendations following the 2016 benchmark stock assessment for black sea bass, and are expected to maintain the current positive stock status without the stock becoming overfished. This alternative maintains the same RHL and management measures projected for the 2018 fishing year, and thus will not change fishing activity or effort from what was already considered during the development of those specifications in 2017. Because of this, Alternative 1 is expected to have a slight positive on black sea bass by maintaining to positive stock status.

Alternative 1 is also unlikely to impact non-target species. It is anticipated that interactions with non-target species will likely remain similar to what has been observed recently in the recreational fishery. Non-target species comprise a negligible proportion of the overall catch on directed recreational black sea bass trips, and under similar fishing effort this is likely to continue under the No Action alternative. None of top ten non-target species caught on directed black sea bass trips are considered overfished, though some may be struggling more than others. Therefore, Alternative 1 is also expected to have slight positive impacts on non-target species due to the very limited interactions in the recreational fishery and the expectation of maintained stable stock statuses of these species.

Relative to the other alternatives, the No Action alternative is expected to have similar slight positive biological impacts on both the black sea bass and non-target resources. Neither Alternatives 2 nor Alternative 3 represent substantial changes in fishing effort or overall biological impacts to black sea bass and non-target species. There is the potential for both Alternatives 2 and 3 to have slightly less positive impacts on non-target species that are already struggling to the temporal shifts in fishing effort; but overall these possibilities are negligible due to the very low potential for interaction with non-target species in the recreational fishery.

### **7.1.2 Alternative 2 (Preferred)**

Alternative 2 creates an additional open recreational black sea bass season during the month of February in 2018. As described in section 5.2, this season would maintain the 12.5-inch minimum size and 15-fish possession limit, and participating states would be responsible for accounting for a 100,000 lb catch estimate in their recreational management measures for the remainder of the fishing year to maintain fishing effort and keep harvest within the RHL. As a result, this alternative is not expected to increase or substantially change overall fishing effort in 2018; while it may temporally shift effort between recreational seasons. Because of this, Alternative 2 is expected to have a slight positive impact on the black sea bass resource, which is already stable and not overfished by maintaining this status.

For non-target species, the hook and line gear used in the recreational black sea bass fishery already minimizes the number of non-target species caught during directed black sea bass trips, and none of top ten non-target species caught on these trips are considered overfished, although some stocks such as summer flounder may be struggling more than others. Because Alternative 2 does not increase effort or substantially alter fishing activity, this alternative is expected to have a slight positive impact non-target species. As with Alternative 1, this is because none of the non-target stocks are expected to become overfished as a result of this action. There is the potential for this alternative to have a less positive impact on those non-target species that are already struggling due to the possible changes in temporal fishing effort distribution, but any of these impacts would be minimal because of the general lack of interaction in this fishery and the reasons described above.

Overall, Alternative 2 is expected to have slight positive impacts on both black sea bass and non-target species because of the maintenance of healthy stock statuses of those species involved. This alternative is expected to have similar biological impacts to Alternative 3, as both may shift fishing effort temporally throughout the recreational seasons, but are not expected to substantially change overall effort or catch. Compared to the No Action alternative, Alternative 2 may have a less positive impact on non-target species that are already struggling due to the temporal shifts in

fishing effort, but any impacts should be minimal. If temporal redistribution of effort does have any effect, the impacts of Alternative 2 on all biological resources would be more positive than Alternative 3, because it includes a shorter Wave 1 season and thus, less of a temporal change in effort.

### **7.1.3 Alternative 3 (Non-Preferred)**

Alternative 3 includes an additional open recreational black sea bass season in 2018 during MRIP Wave 1 (January and February). This alternative is similar to Alternative 2 except for the longer winter season and the resulting higher catch estimate of 250,000 lb to be accounted for by the participating states during the remainder of the year. As with Alternative 2, Alternative 3 may temporally shift effort between recreational seasons throughout the year, but it is not expected to increase or substantially change overall fishing effort in 2018. Thus, like the other alternatives, Alternative 3 is expected to have a slight positive impact on the black sea bass or non-target species resources. Similar to Alternative 2, Alternative 3 may have a slightly less positive impact on non-target species that are already struggling due to the potential temporal shifts in fishing effort, but any impacts are expected to be negligible because of the very low potential for interaction the recreational fishery. In this case, Alternative 3 would have the least positive impact of all of the alternatives due to the longest winter season, and Alternative 1 would still have the most positive with no additional season.

## **7.2 Impacts of the Alternatives on Physical Habitat**

All three alternatives for this 2018 action are expected to have no significant impacts on physical habitat. The black sea bass fishery operates in areas that have been fished for many years, for a variety of species and with a variety of gear types. Modifications to the recreational fishing season, resulting potential changes in fishing effort under the alternatives in this action are unlikely to further degrade habitat beyond its current state. However, none of the alternatives are expected to result in any improvements to current habitat conditions, and continued fishing effort may limit the recovery potential of some of the currently degraded areas. As previously discussed, the recreational black sea bass fishery is primarily conducted with hook and line gear, which only minimally interacts with and affects physical habitat, if at all. Based on these factors, these alternatives are not expected to actively improve or harm physical habitat conditions. Thus, all alternatives considered for this action are expected to have no impact on habitat and the physical environment.

If the shift in the temporal distribution of fishing effort created by this action's proposed Wave 1 recreational fishing season were considered enough of a variable to influence the potential impacts to habitat, Alternative 1 (No Action) would have the least negative impact because it does not create any additional recreational seasons. Under this comparison, Alternatives 2 and 3 would have similarly slightly negative habitat impacts, with Alternative 3 potentially being slightly more negative than Alternative 2 due to the longer additional season. However, Alternative 3 also has a greater RHL reduction for the remainder of 2018, which could represent less fishing later in the year and balance out any negative habitat effects from Wave 1. It is very difficult to differentiate impacts to physical habitat between these alternatives, as any differences in actual effort between the alternatives would not meaningfully affect habitat recovery potential. Therefore, all alternatives are expected to have negligible impacts, if any.

### **7.2.1 Alternative 1 (No Action/*Status Quo*)**

Under the No Action alternative, the 2018 black sea bass recreational management measures are identical to those currently outlined in the regulations with no additional Wave 1 open season or other modifications. As described in section 7.1.1, the existing hook and line recreational fishery already has little to no effect on the physical environment and habitat, and fishing effort is not expected to change under this alternative. Therefore, this alternative is expected to have no impact on habitat. Any continued fishing under this alternative may theoretically limit the recovery potential of impacted habitat areas, but these effects are negligible.

When compared to Alternatives 2 and 3, the No Action alternative would likely result in similar negligible to no impacts because fishing effort is not expected to change substantially under any of these three alternatives. Given that both Alternative 2 and Alternative 3 may temporally shift volume of fishing effort to a different time of the year, they may have a greater potential for slight negative impacts than Alternative 1.

### **7.2.2 Alternative 2 (Preferred)**

Alternative 2 would create an additional open recreational black sea bass season during the month of February in 2018. As described above, black sea bass are caught predominantly with hook and line gear in the recreational fishery, which has no impact on essential fish habitat and habitat quality in the region because they do not contact the bottom. Under Alternative 2, overall fishing effort is not expected to increase or change substantially, despite the potential for change in the temporal distribution of that effort throughout the new season. The areas fished for black sea bass have been impacted by fishing operations year round in many fisheries over many years, and this alternative is not expected to result in additional negative impacts to areas which are not already impacted by the black sea bass and other fisheries. Given the limited impact of hook and line gear on habitat (section 6.2.3), habitat impacts from recreational fisheries under this alternative are expected to have no impact relative to current habitat conditions. However, continued fishing under this alternative may theoretically limit the recovery potential of impacted habitat areas, but these effects are negligible.

Thus, overall, Alternative 2 is expected to have no impact on physical habitat, including EFH. This is similar to the expected impacts of both Alternative 3 and the No Action alternative (Alternative 1), as all three alternative involve the recreational fishery which uses gear that typically does not interact with the physical habitat, and no alternatives represent a substantial change in effort or fishing activity. Alternatives 2 and 3 may have a greater potential for slight negative impacts compared to Alternative 1 due to the temporal redistribution of fishing effort between recreational seasons, but this effect is expected to be negligible.

### **7.2.3 Alternative 3 (Non-Preferred)**

Alternative 3 includes an additional 2018 open recreational black sea bass season during the entire Wave 1 period (January and February). As with Alternative 2, this action is not expected to increase fishing effort or substantially change fishing activity, despite the potential for change in the temporal distribution of that effort throughout the new seasons. Also, as earlier described, the gear used in the recreational fishery has minimal contact with the physical habitat, and thus no impact. However, Alternative 3 does not result in any improvements to current habitat conditions, and continued fishing effort may limit the recovery potential of some of the currently degraded areas. As with the other alternatives, any effects from this are minimal.

Similar to the other two alternatives, Alternative 3 is expected to have no impact on physical habitat. All alternatives use recreational gear that does not interact with the physical habitat, and no alternatives represent a substantial change in effort or fishing activity. Alternative 3 may have the greatest potential for slight negative impacts compared to the other alternatives due to the temporal redistribution of fishing effort between existing recreational seasons and the longest winter season, but this effect is expected to be negligible.

### **7.3 Impacts of the Alternatives on Protected Resources**

As described above (Section 6.3), the impacts on protected resources may vary between ESA-listed and MMPA-protected species. For ESA-listed species, any action that has the risk to result in take of ESA-listed species is expected to have negative impacts, including actions that reduce interactions. Under the MMPA, the impacts of the proposed alternatives would vary based on the stock condition of each protected species and the potential for each alternative to impact fishing effort. For marine mammal stocks/species that have their potential biological removal (PBR) level reached or exceeded, negative impacts would be expected from any alternative that has the potential to interact with these species or stocks. For marine mammal stocks/species that are at more sustainable levels (i.e., PBR levels have not been exceeded), any action not expected to change fishing behavior or effort such that interaction risks increase relative to what has been in the fishery previously, may have positive impacts by maintaining takes below the PBR level and approaching the Zero Mortality Rate Goal (Table 7). Taking the latter into consideration, the overall impacts on the protected resources VEC for each alternative will take into account impacts on 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 reached or exceeded their PBR level.

The recreational black sea bass fishery primarily uses hook and line gear. As provided in section 6.3, protected species interactions with hook and line gear have been documented for several species of large whales (ESA listed or MMPA protected), sea turtle species, Atlantic sturgeon, and bottlenose dolphin stocks. However, 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 species. Similarly, relative to other gear types, such as gillnet or trawl gear, hook and line interactions with bottlenose dolphin stocks, also represents low source of serious injury or mortality to these species. For ESA listed species of sea turtles and Atlantic sturgeon, interactions with hook and line gear have been documented, with serious injury or mortality incurred to these species. Based on this, and the resource condition of these protected species, all three alternatives are expected to have varying degrees of impacts to these species.

#### **7.3.1 Alternative 1 (No Action/*Status Quo*)**

As provided in section 6.3., ESA listed species of large whale, sea turtles, and Atlantic sturgeon, and MMPA protected (non-ESA listed) species of large whales and bottlenose dolphin stocks are vulnerable to interactions with hook and line gear. As the recreational black sea bass fishery uses hook and line gear, interactions with protected species are possible and therefore, depending on resource condition, some level of negative or positive impacts to protected species are possible. Taking into consideration fishing behavior/effort under the Alternative 1, as well the fact that interaction risks with protected species are strongly associated with amount, time, and location of gear in the water (with vulnerability of an interaction increasing with increases in of any or all of these factors), we determined that impacts to ESA listed species to be slight to moderately

negative, while impacts to MMPA protected species to be moderately negative to slight positive. Below, we provide support for this determination.

Under the No Action alternative, recreational management measures for the 2018 fishing year will be identical to those currently outlined in the regulations. Overall fishing effort, participation, and Federal size and possession limits for the 2018 recreational sea bass fishery are expected to remain consistent with current conditions. As a result, relative to current conditions, Alternative 1 is not expected to result in any significant changes in fishing behavior or effort in the recreational fishery. As fishing behavior and effort are not expected to change significantly from status quo conditions, the number of party/charter and private recreational trips, and thus, the presence and quantity of hook and line gear are also not expected to change significantly. As interaction risks with protected species (ESA listed and MMPA protected species) are strongly associated with amount, time, and location of gear in the water, with vulnerability of an interaction increasing with increases of any or all of these factors, continuation of “*status quo*” fishing behavior/effort is not expected to change any of these operating conditions. As a result, relative to current conditions, new or elevated (e.g., more gear) interaction risks to protected species (MMPA protected and ESA listed) are not expected.

Based on the above information, and taking into consideration available information on hook and line interaction risks to ESA listed species provided in section 6.3, impacts to ESA listed species are expected to be slight to moderately negative. For MMPA (non-ESA listed) protected species, as there are non-ESA listed marine mammal stocks/species whose populations may or may not be at optimum sustainable levels, impacts of Alternative 1 on non-ESA listed MMPA protected species are likely to range from moderate negative to slight positive. As noted above, there are some marine mammal stocks/species (i.e., bottlenose dolphin stocks; see section 6.3) that 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, the continued existence of these stocks/species is at risk. As a result, any potential for an interaction that may result in the serious injury or mortality to the animal is a detriment to the species/stocks ability to recover from this condition. As interactions with bottlenose dolphin stocks, a non-ESA listed marine mammals whose PBR levels have been exceeded, are possible under Alternative 1, and available information indicates that, albeit low, interactions have resulted in the mortality to these animals, Alternative 1 is likely to result in moderate negative impacts to this non-listed marine mammal stocks/species.

Alternatively, 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 (i.e., humpback and minke whales). For these stocks/species, it appears that the fishery management measures that have been in place over this timeframe have resulted in levels of effort that equate to interaction levels that are not expected to impair the stocks/species ability to remain at an optimum sustainable level. These fishery management measures, therefore, have resulted in indirect slight positive impacts to these non-ESA listed marine mammal species/stocks. 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. Taking this and the information provided in section 6.3 into consideration, as well as the fact that Alternative 1 is not expected to significantly change fishing effort relative to status quo, we expect impacts of Alternative 1 on these non-ESA listed species of marine

mammals 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).

### *Overall Impacts*

Overall, Alternative 1 is expected to have slight positive to moderate negative impacts on protected resources, with moderate negative to slight positive impacts likely on non-ESA listed marine mammals and slight to moderate negative impacts likely for ESA-listed species.

Relative to Alternative 2 and 3, Alternative 1 is expected to have neutral impacts to protected species as overall recreational fishing effort is not expected to significantly change between any of these alternatives. As a result, the risks and therefore, impacts to protected species are expected to remain the same, regardless of alternative.

### **7.3.2 Alternative 2 (Preferred)**

Alternative 2 would implement a modification to the 2018 black sea bass recreational management measures that would open an additional fishing season during the month of February. While this proposed action is designed to create more fishing opportunity and access for recreational fishermen, it is not expected to increase overall effort, because states that participate would be responsible for accounting for a 100,000 lb catch estimate in their recreational management measures for the remainder of the fishing year to maintain harvest within the RHL. Therefore, the only potential change in fishing activity under this alternative would be a shift in the temporal distribution of recreational fishing effort, which is not expected to be substantial.

Based on the above information, Alternative 2 will provide no incentive for effort to increase in the recreational fishery and in fact, effort is not expected to be any greater than that under the No Action (alternative 1). Based on this, overall impacts to protected species are expected to be similar to those provided above for Alternative 1, slight positive to moderate negative, with moderate negative to slight positive impacts likely on non-ESA listed marine mammals and slight to moderate negative impacts likely for ESA-listed species. For the rationale to support this determination, see Alternative 1. Relative to Alternatives 1 and 3, Alternative 2 will result in neutral impacts to protected species, as overall recreational fishing effort is not expected to significantly change between any of these alternatives. As a result, the risks and therefore, impacts to protected species are expected to remain the same, regardless of alternative.

### **7.3.3 Alternative 3 (Non-Preferred)**

Alternative 3 modifies the 2018 recreational black sea bass management measures to include an additional open season during the entire Wave 1 period (January and February). As with Alternative 2, this alternative is not expected to increase fishing effort because participating states would account for projected catch when developing their recreational measures for the rest of 2018. Therefore, the only potential change to fishing activity under this alternative would be a shift in the temporal distribution of recreational fishing effort, which would not be substantial.

Based on the above information, Alternative 3 will provide no incentive for effort to increase in the recreational fishery and in fact, effort is not expected to be any greater than that under the No Action (Alternative 1). Based on this, overall impacts to protected species are expected to be

similar to those provided above for Alternative 1, slight positive to moderate negative, with moderate negative to slight positive impacts likely on non-ESA listed marine mammals and slight to moderate negative impacts likely for ESA-listed species. For the rationale to support this determination, see Alternative 1. Alternatives 1 and 2, Alternative 3 will result in neutral impacts to protected species as overall recreational fishing effort is not expected to significantly change between any of these alternatives. As a result, the risks and therefore, impacts to protected species are expected to remain the same, regardless of alternative.

#### **7.4 Human Communities (Socioeconomic) Impacts of the Alternatives**

As discussed in Section 7.0, even though Alternatives 2 and 3 would increase recreational fishing access in the black sea bass fishery by creating additional open seasons during Wave 1, total effort and overall catch are not expected to increase for the year. This is because the annual RHL and recreational management measures of the participating states would be revised accordingly in each case to account for estimated catch during the extra open season. However, the Wave 1 seasons would create fishing opportunity at a time when there are few other available recreational target species, and in later seasons when black sea bass may be more restricted, there are several other available recreational species with which to supplement business. In addition, demand for party/charter trips targeting black sea bass have been relatively stable for the last several years and there is no indication that the recreational market environment will change in the next couple of years. Therefore, unless market conditions change substantially in the near future, it is expected Alternatives 2 and 3 would result in positive socioeconomic impacts ranging in magnitude from slight to moderate when compared to those observed under the No Action alternative (Alternative 1). Because it would create no change from the current conditions in the recreational fishery, Alternative 1 is expected to have no socioeconomic impact compared to current conditions. Compared to each other, Alternative 3 (non-preferred) would result in slightly more positive impacts than Alternative 2 (preferred) due to the longer Wave 1 season. However, the overall socioeconomic impacts for the recreational fishery will ultimately depend on the management measures that will be implemented in state and Federal waters following the Wave 1 season in spring of 2018.

##### **7.4.1 Alternative 1 (No Action/*Status Quo*)**

The No Action alternative, as described in Section 5.1 of this document, would maintain black sea bass recreational management measures (bag limit, minimum size, seasons) for the 2018 fishing year currently outlined in the regulations, with no additional Wave 1 open season or other modifications. There is very little information available to empirically estimate how sensitive the affected anglers might be to modifications to recreational management. If measures in both state and Federal waters remain *status quo*, it is expected that most anglers that fished for black sea bass in 2017 would continue to do so in 2018 and there would be no socioeconomic impact compared to current conditions.

Alternative 1 is the most restrictive alternative in terms of recreational fishing opportunity and access to the black sea bass resource, as no new Wave 1 seasons are added to the management measures. Demand for party/charter trips targeting black sea bass have been relatively stable in recent years and there is no indication that the recreational market environment will change in the near future. Therefore, unless market conditions change substantially in 2018, it is expected that Alternative 1 will have no impact on human communities. Even though Alternatives 2 and 3 are

not expected to increase overall fishing effort, the increase in recreational access during Wave 1 allows for fishing opportunities at a time when the available target species are limited. Thus, the expected no impact outcome of Alternative 1 is less favorable compared to the positive socioeconomic impacts of the other alternatives.

#### **7.4.2 Alternative 2 (Preferred)**

The preferred alternative (Alternative 2) would implement an additional open recreational black sea bass season during the month of February in 2018. As described in section 5.2, this season would maintain the 12.5-inch minimum size and 15-fish possession limit, and a catch estimate of 100,000 lb would be accounted for at the state level from those states that participate in the fishery in order to keep annual harvest within the RHL. As a result, this alternative is expected to increase recreational access in the black sea bass fishery at a time of year when other recreational opportunities are limited without increasing or substantially altering overall fishing effort in 2018.

As described in Alternative 1, there is very little information available to empirically estimate how sensitive the affected anglers might be to modifications to recreational management measures. The modification proposed by this alternative is likely to result in an increase in the demand for headboat or party/charter black sea bass trips in Federal waters during February, due to the additional open season at a time when other target species are limited. While effort during the February season will be offset by restrictions in state management measures later in the year, the benefit of winter is not expected to also be negated because there will be more options of other recreational species to target in later seasons to supplement lack of black sea bass business.

Overall, Alternative 2 is expected to result in slight positive socioeconomic impacts. This preferred alternative is positive when compared to the No Action alternative (Alternative 1) which is expected to have no socioeconomic impact, and has similar positive impacts as Alternative 3. There is the potential for Alternative 2 to have either slightly more or slightly less positive impacts than Alternative 3 due to the shorter winter season. This shorter season technically provides less additional winter fishing opportunity in the recreational black sea bass fishery, but it also creates less risk of disproportionate management measures later in the year depending on state participation (which is still largely unknown at this time).

Additional quantitative and qualitative economic analysis of the preferred alternative is presented in section 8.12.

#### **7.4.3 Alternative 3 (Non-Preferred)**

Under Alternative 3, the 2018 black sea bass recreational management measures would be modified to include an additional open season during the entirety of Wave 1 (January and February). Similar to Alternative 2, the states participating in this Wave 1 fishery would account for projected catch when developing their recreational measures for the rest of 2018 to ensure the RHL is not exceeded. The longer winter season and catch analyses determined a higher catch estimate of 250,000 lb for Alternative 3, which has the potential to require more restrictive state measures later in the year. As with Alternative 2, this alternative is not expected to alter overall fishing effort, although the temporal distribution of that effort may shift throughout the recreational seasons.

As previously mentioned, there is very little information available to empirically estimate how sensitive the affected anglers might be to adjustments to recreational management measures. However, the addition of a recreational black sea bass season during Wave 1, when there are limited fishing options in the party/charter industry and amongst other recreational fisheries, is expected to increase demand for those businesses and general angler satisfaction. As with Alternative 2, the potential benefits of this increased opportunity are not expected to be diminished by the balancing of effort that would take place later in the year when the participating states account for estimated catch with revised recreational management measures. The later summer and fall recreational seasons overlap with other popular recreational species that could supplement any loss of black sea bass catch due to additional restrictions.

While Alternative 3 does create more recreational fishing access and opportunities than the other alternatives because of the longest Wave 1 winter season, there are also complications in the timeline to implement this alternative for 2018. In order to establish this Wave 1 fishery for 2018, the action would need to be effective before the January 1 start of the season. With the current regulatory process and appropriate time needed to consider and approve this type of action, there is the potential to implement a fishery later in the month, but a January 1 deadline would not be feasible. A season that would only include part of January would not achieve the goal of an entire Wave 1 open season, and would complicate the calculation of estimated catch to properly account for recreational harvest throughout the rest of the year. State participation in a winter fishery for 2018 is also difficult to predict on such short notice, which creates the potential for a disproportionate burden on the participating states when offsetting the higher (and less confident) catch estimate later in the year.

Overall, Alternative 3 is expected to result in slight positive socioeconomic impacts. Compared to the other alternatives, Alternative 3 is more positive than the No Action alternative (Alternative 1) that is expected to have no socioeconomic impact, and has similarly positive impacts as Alternative 2. There is the potential for Alternative 3 to have slightly more positive impacts than Alternative 2 due to the longer winter season, but this alternative may also have less positive impacts if there is inconsistent state participation and disproportionate modifications to management measures to account for the larger catch estimate for the remainder of 2018. Alternative 3 may also be less positive than Alternative 2 because of the additional administrative burden it places on regulators in order to implement the alternative in a timely manner and open a Wave 1 season in time for January.

## **7.5 Cumulative Effects Analysis**

A cumulative effects analysis (CEA) is required by the Council on Environmental Quality (CEQ; 40 CFR part 1508.7). The purpose of 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 black sea bass fisheries.

### **7.5.1 Consideration of the VECs**

The VECs that exist within the black sea bass fishery environment are identified in section 6.0 of this document. The following sections discuss the significance of the cumulative effects on these same VECs identified below:

- Managed resource (black sea bass) and non-target species
- Physical environment and habitat
- Protected species
- Human communities

### **7.5.2 Geographic Boundaries**

The analysis of the impacts of this action focuses on alternatives related to the recreational harvest of black sea bass. The Western Atlantic Ocean is the core geographic scope for each of the VECs. The core geographic scopes for managed species are management units (section 6.1). 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 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 harvest or processing of the managed species (section 6.4).

### **7.5.3 Temporal Boundaries**

The temporal scope of past and present actions is primarily focused on actions that occurred after FMP implementation (1996 for 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 (2023) into the future beyond the analyzed time frame of the alternatives described in this document. 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.

### **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. Table 9 presents meaningful past (P), present (Pr), or reasonably foreseeable future (RFF) actions other than those considered in this document. The impacts of these actions are described qualitatively as the actual impacts are too complex to be quantified in a meaningful way. When any of these abbreviations (P, Pr, or RFF), occur together it indicates that some past actions are still relevant to the present and/or future actions.

#### *Past and Present Actions*

The historical management practices of the Council have resulted in overall positive impacts on the health of the black sea bass stock (section 7.5.5.1). The Council has taken many actions to manage the associated 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, in the long-term, promote positive effects on human communities.

Non-fishing activities that introduce chemical pollutants, sewage, changes in water temperature, salinity, dissolved oxygen, and suspended sediment into the marine environment pose a risk to all VECs. Human-induced non-fishing activities tend to be localized in nearshore areas and marine project areas where they occur. Examples of these activities include agriculture, 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 have a slight negative to no impact, since a large portion of these populations have a limited or minor exposure to these local non-fishing perturbations.

In addition to guidelines mandated by the MSA, NMFS reviews these types of effects through the review processes required by section 404 of the Clean Water Act and section 10 of the Rivers and Harbors Act for certain activities that are regulated by federal, state, and local authorities. The jurisdiction of these activities is "waters of the U.S." and includes both riverine and marine habitats.

#### *Reasonably Foreseeable Future Actions*

Non-fishing activities permitted under other Federal agencies (e.g. beach nourishment, offshore wind facilities, etc.) 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). 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 substantially affect habitat.

Under section 662 of the Fish and Wildlife Coordination Act, "whenever the waters of any stream or other body of water are proposed or authorized to be impounded, diverted, the channel deepened, or the stream or other body of water otherwise controlled or modified for any purpose whatever, including navigation and drainage, by any department or agency of the U.S., or by any public or private agency under federal permit or license, such department or agency first shall consult with the U.S. Fish and Wildlife Service (USFWS), Department of the Interior, and with the head of the agency exercising administration over the wildlife resources of the particular state wherein the" activity takes place. This act provides another avenue for review of actions by other federal and state agencies that may impact resources that NMFS manages in the reasonably foreseeable future.

NMFS and the USFWS share responsibility for implementing the ESA. The ESA requires NMFS to designate critical habitat (i.e. areas that contain physical or biological features essential to conservation, which may require special management considerations or protection) for any species it lists under the ESA and to develop and implement recovery plans for threatened and endangered species. The ESA also allows NMFS to review actions by other entities that may impact endangered and protected species whose management units are under NMFS' jurisdiction, while USFWS consults on actions that may impact other protected species.

#### *Non-Fishing Impacts - Global Climate Change*

Global climate change will affect 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 and stressors (described in this section).

Results from the Northeast Fisheries Climate Vulnerability Assessment indicate that climate change could have overall directional impacts on Council-managed species that range from negative to positive, depending on the adaptability of these species to the changing environment (Hare et al. 2016). Based on this assessment, black sea bass was determined to have 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 occur 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. Black sea bass were also determined to have moderate biological sensitivity to climate change, given their complexity in reproduction and early life history requirements. The assessment also demonstrated that black sea bass are likely vulnerable to distribution shifts as the result of climate change, and that recruitment will likely increase as temperatures warm and more spawning occurs in the region. Adult distribution will likely extend northward and the species may move into the Gulf of Maine permanently.

Overall, future mitigation and adaptation strategies to climate change may mitigate some of these impacts. The science of predicting, evaluating, monitoring and categorizing these changes continues to evolve.

**Table 9:** Impacts of Past (P), Present (Pr), and Reasonably Foreseeable Future (RFF) Actions on the five VECs (not including those actions considered in this document).

Action	Description	Impacts on Black Sea Bass and Non-Target Species	Impacts on Habitat and EFH	Impacts on Protected Species	Impacts on Human Communities
P, Pr Original FMPs and subsequent FMP Amendments and Frameworks	Established commercial and recreational management measures	<b>Indirect Positive</b> Regulatory tool available to rebuild and manage stocks and to regulate fishing effort	<b>Indirect Positive</b> Reduced fishing effort	<b>Indirect Positive</b> Regulated fishing effort	<b>Indirect Positive</b> Benefited domestic businesses
P, Pr, RFF Specifications for managed resources	Establish quotas, recreational harvest limits, and other fishery regulations (commercial and recreational)	<b>Indirect Positive</b> Regulatory tool to specify catch limits, and other regulations; allows response to annual stock updates	<b>Indirect Positive</b> Reduced effort levels; gear requirements	<b>Indirect Positive</b> Regulated fishing effort; gear requirements	<b>Indirect Positive</b> Benefited domestic businesses
P, Pr, RFF Standardized Bycatch Reporting Methodology	Established acceptable level of precision and accuracy for monitoring of bycatch in fisheries	<b>No Impact</b> May improve data quality for monitoring total removals	<b>No Impact</b> Will not affect distribution of effort	<b>No Impact</b> May increase observer coverage and will not affect distribution of effort	<b>Uncertain – Likely Indirect Negative</b> May impose an inconvenience on vessel operations
P, Pr, RFF Agricultural runoff	Nutrients applied to agricultural land are introduced into aquatic systems	<b>Indirect Negative</b> Reduced habitat quality	<b>Direct Negative</b> Reduced habitat quality	<b>Indirect Negative</b> Reduced habitat quality	<b>Indirect Negative</b> Reduced habitat quality negatively affects resource
P, Pr, RFF Port maintenance	Dredging of coastal, port and harbor areas for port maintenance	<b>Uncertain – Likely Indirect Negative</b> Dependent on mitigation effects	<b>Uncertain – Likely Direct Negative</b> Dependent on mitigation effects	<b>Direct and Indirect Negative</b> Potential interactions with protected species; reduced habitat quality/availability; dependent on mitigation efforts	<b>Uncertain – Likely Mixed</b> Dependent on mitigation effects

**Table 9 (continued):** Impacts of Past (P), Present (Pr), and Reasonably Foreseeable Future (RFF) Actions on the five VECs (not including those actions considered in this document).

Action	Description	Impacts on Black Sea Bass and Non-Target Species	Impacts on Habitat and EFH	Impacts on Protected Species	Impacts on Human Communities
P, Pr, RFF Beach nourishment	Offshore mining of sand for beaches and placement of sand to nourish beach shorelines	<b>Indirect Negative</b> Localized decreases in habitat quality	<b>Direct Negative</b> Reduced habitat quality	<b>Direct and Indirect Negative</b> Reduced habitat quality; dredge interactions; dependent on mitigation efforts	<b>Mixed</b> Positive for mining companies, tourism; possibly negative for fishing industry if reduced landings result from reduced availability because of negative habitat impacts
P, Pr, RFF Marine transportation	Expansion of port facilities, vessel operations and recreational marinas	<b>Indirect Negative</b> Localized decreases in habitat quality	<b>Direct Negative</b> Reduced habitat quality	<b>Direct and Indirect Negative</b> Reduced habitat quality/availability; potential for interactions (ship strikes) with protected species	<b>Mixed</b> Positive for some interests, potential displacement for others
P, Pr, RFF Offshore disposal of dredged materials	Disposal of dredged materials	<b>Indirect Negative</b> Reduced habitat quality	<b>Direct Negative</b> Reduced habitat quality	<b>Indirect Negative</b> Reduced habitat quality; dependent on mitigation efforts	<b>Indirect Negative</b> Reduced habitat quality negatively affects resource viability
P, Pr, RFF Renewable and Non-renewable Offshore and Nearshore Energy Development	Transportation of oil, gas, and electric through pipelines & cables; Construction of oil platforms, wind facilities, liquefied natural gas facilities; Additional port development infrastructure	<b>Uncertain – Likely Indirect Negative</b> Dependent on mitigation effects	<b>Uncertain – Likely Direct Negative</b> Reduced habitat quality; offshore platforms may benefit structure oriented fish species habitat	<b>Direct and Indirect Negative</b> Reduced habitat quality; Sound Exposure (physical injury or behavioral harassment); dependent on mitigation efforts	<b>Uncertain – Likely Mixed</b> Dependent on mitigation effects

**Table 9 (continued):** Impacts of Past (P), Present (Pr), and Reasonably Foreseeable Future (RFF) Actions on the five VECs (not including those actions considered in this document).

Action	Description	Impacts on Black Sea Bass and Non-Target Species	Impacts on Habitat and EFH	Impacts on Protected Species	Impacts on Human Communities
P, Pr, RFF Deep Sea Corals Amendment to the Mackerel, Squid, and Butterfish FMP	Prohibits the use of bottom-tending gear in certain areas known or highly likely to contain deep sea corals.	<b>Direct Positive</b> If areas protected from bottom trawling result in increased productivity	<b>Direct Positive</b> Reduced gear impacts in protected areas	<b>Uncertain mixed</b> Possible reduced gear interactions in protected areas, but impacts depend on how/where effort is shifted	<b>Mixed</b> Negative impacts to fishermen who previously used bottom-tending gear in protected areas; positive impacts due to potential increased productivity of some species.
RFF NEFMC Omnibus Deep Sea Coral Amendment	Amendment to protect deep sea corals from the impacts of fishing gear in the NEFMC region	<b>Direct Positive</b> If areas protected from bottom trawling result in increased productivity	<b>Direct Positive</b> Reduced gear impacts in protected areas	<b>Uncertain mixed</b> Possible reduced gear interactions in protected areas, but impacts depend on how/where effort is shifted	<b>Mixed</b> Negative impacts to fishermen who previously used bottom-tending gear in protected areas; positive impacts due to potential increased productivity of some species.
Pr, RFF Unmanaged Forage Omnibus Amendment	Prohibits development of new and expansion of existing directed commercial fisheries on unmanaged forage species in MAFMC waters until the Council can consider available scientific information and potential impacts	<b>Indirect Positive</b> Is intended to protect the food source for a variety of species in the Mid-Atlantic	<b>No Impact</b> Is not likely to result in a substantial change in overall fishing effort.	<b>Indirect Positive</b> Intended to protect the food source for a variety of species in the Mid-Atlantic; may slightly decrease fishing effort and thus the potential for gear interaction.	<b>Mixed</b> Could have positive impacts by maintaining a food source for several fish stocks. Could have negative impacts for fishermen who already harvest unmanaged forage species.

**Table 9 (continued):** Impacts of Past (P), Present (Pr), and Reasonably Foreseeable Future (RFF) Actions on the five VECs (not including those actions considered in this document).

Action	Description	Impacts on Black Sea Bass and Non-Target Species	Impacts on Habitat and EFH	Impacts on Protected Species	Impacts on Human Communities
RFF Comprehensive Summer Flounder and Black Sea Bass Amendments	Updates to several aspects of the FMP for summer flounder and black sea bass, including FMP goals and objectives and allocation schemes	<b>Direct Positive</b> Will improve management of summer flounder and black sea bass fisheries	<b>Uncertain – Likely No Impact</b> Depending on actions implemented, will not likely result in significant changes to fishing behavior	<b>Uncertain – Likely No Impact or Indirect Positive</b> Depending on actions implemented, may reduce likelihood of interactions	<b>Uncertain - Likely Mixed</b> Positive for some interests, potential negative socioeconomic impacts for others
RFF Omnibus Observer Coverage Amendment	Measures to implement industry-funded monitoring coverage in some FMPs above levels required by SBRM	<b>Likely Indirect Positive</b> May improve monitoring and reporting for managed resources	<b>Uncertain – Likely No Impact</b> Depending on actions implemented, will not likely result in significant changes to fishing behavior	<b>Uncertain – No Impact or Indirect Positive</b> May improve monitoring and reporting for protected resources interactions	<b>Likely Direct Negative</b> Likely to impose additional costs on fishing operations
Pr, RFF Scup Gear Restricted Areas Framework	Consider modifications to the scup Gear Restricted Areas (GRAs)	<b>Direct Positive</b> Will ensure that GRAs remain effective tools for minimizing scup bycatch	<b>Uncertain – Likely No Impact or Indirect Positive</b> Depending on changes made, could reduce gear impacts	<b>Uncertain – Likely No Impact to Indirect Positive</b> Depending on changes made, could reduce encounters	<b>Uncertain - Likely Indirect Mixed</b> Depending on changes, could benefit scup fishery and could negatively or positively impact small mesh fisheries
RFF Convening of Take Reduction Teams (periodically)	Recommend measures to reduce mortality and injury to marine mammals and sea turtles	<b>Indirect Positive</b> Will improve data quality for monitoring total removals; Reducing availability of gear could reduce bycatch	<b>Indirect Positive</b> Reducing availability of gear could reduce gear impacts	<b>Direct Positive</b> Reducing amount of gear in water could reduce encounters	<b>Indirect Negative</b> Reducing availability of gear could reduce revenues

### **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, as well as past, present, and future actions, must be taken into account. The following section describes the expected effects of these actions on each VEC.

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

Those past, present, and reasonably foreseeable future actions which may impact black sea bass and non-target species, and the direction of those potential impacts, are summarized in Table 10. The indirectly negative actions described in Table 10 are localized in nearshore and marine areas where the projects occur; therefore, the magnitude of those impacts on the managed resources is expected to be limited due to limited exposure to the populations at large. 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 the managed resources is not quantifiable.

NMFS has several means under which it can review non-fishing actions of other federal or state agencies that may impact NMFS' managed resources prior to permitting or implementation of those projects. This serves to minimize the extent and magnitude of indirect negative impacts those actions could have on resources under NMFS' jurisdiction.

Past fishery management actions taken through the respective FMPs and the annual specifications process have had a positive cumulative effect on the managed resources. It is anticipated that the future management actions described in Table 10 will have additional indirect positive effects on the managed resources through actions which reduce and monitor bycatch, protect habitat, and protect the ecosystem services on the productivity of managed species depends. Overall, the past, present, and reasonably foreseeable future actions that are truly meaningful to the managed resources have had positive cumulative effects.

Catch limits, commercial quotas and recreational harvest limits 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. The impacts of annual specification of 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 action described in this document would positively reinforce the past and anticipated positive cumulative effects on the managed resources by achieving the objectives specified in the respective FMPs. While there is the possibility for a slight temporal redistribution of effort due to the proposed action, overall recreational fishing effort is not expected to increase or substantially change. Therefore, the proposed action would not have any significant effect on the managed resources individually or in conjunction with other anthropogenic activities (Table 10).

**Table 10:** Summary of the effects of past, present, and reasonably foreseeable future actions on the managed resources, including target and non-target species.

<b>Action</b>	<b>Past to Present</b>	<b>Reasonably Foreseeable Future</b>
Original FMPs and subsequent amendments and frameworks	Indirect Positive	
Annual specifications	Indirect Positive	
Standardized Bycatch Reporting Methodology	No Impact	
Agricultural runoff	Indirect Negative	
Port maintenance	Uncertain – Likely Indirect Negative	
Beach nourishment – offshore sand mining	Indirect Negative	
Beach nourishment – sand placement	Indirect Negative	
Marine transportation	Indirect Negative	
Offshore disposal of dredged materials	Indirect Negative	
Renewable & non-renewable offshore & nearshore energy development	Uncertain – Likely Indirect Negative	
MAFMC and NEFMC Deep Sea Corals Amendments		Indirect Positive
Scup GRA revisions		Direct Positive
Omnibus Observer Coverage Amendment		Indirect Positive
Comprehensive Summer Flounder and Black Sea Bass Amendments		Direct Positive
Unmanaged Forage Omnibus Amendment		Indirect Positive
Scup commercial quota period framework		Indirect Positive
Convening Gear Take Reduction Teams (periodically)		Indirect Positive
Summary of past, present, and future actions, excluding those proposed in this document	Overall, actions have had or will have positive impacts on managed resources	

### **7.5.5.2 Magnitude and Significance of Cumulative Effects on Physical Environment and Habitat**

Those past, present, and reasonably foreseeable future actions which may impact the physical environment and habitat (including EFH), and the direction of those potential impacts, are summarized in Table 11. The direct and indirect negative actions described in Table 11 are localized in nearshore and marine project areas where they occur; therefore, the magnitude of those impacts on habitat is expected to be limited due to limited exposure of habitat at large. 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 habitat is not quantifiable.

NMFS has several means under which it can review non-fishing actions of other Federal or state agencies that may impact NMFS' managed resources and the habitat on which they rely prior to permitting or implementation of those projects. This serves to minimize the extent and magnitude of direct and indirect negative impacts those actions could have on habitat utilized by species under NMFS' jurisdiction.

Past fishery management actions taken through the respective FMPs and 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 resources. It is anticipated that the future management actions described in Table 11 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 resources 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. Overall, the past, present, and reasonably foreseeable future actions that are truly meaningful to habitat have had no impact to positive cumulative effects.

The proposed action described in this document would not significantly change the past and anticipated cumulative effects on habitat and thus would not have any significant effect on habitat individually or in conjunction with other anthropogenic activities (Table 11).

**Table 11:** Summary of the effects of past, present, and reasonably foreseeable future actions on the physical environment, habitat and EFH.

<b>Action</b>	<b>Past to Present</b>	<b>Reasonably Foreseeable Future</b>
Original FMPs and subsequent amendments and frameworks	Indirect Positive	
Annual specifications	Indirect Positive	
Standardized Bycatch Reporting Methodology	No Impact	
Agricultural runoff	Direct Negative	
Port maintenance	Uncertain – Likely Direct Negative	
Beach nourishment – offshore sand mining	Direct Negative	
Beach nourishment – sand placement	Direct Negative	
Marine transportation	Direct Negative	
Offshore disposal of dredged materials	Direct Negative	
Renewable & non-renewable offshore & nearshore energy development	Uncertain – Likely Direct Negative	
MAFMC and NEFMC Deep Sea Corals Amendments		Direct Positive
Scup GRA revisions		Uncertain – Likely No Impact or Indirect Positive
Omnibus Observer Coverage Amendment		Uncertain – Likely No Impact
Comprehensive Summer Flounder and Black Sea Bass Amendments		Uncertain – Likely No Impact to Indirect Positive
Unmanaged Forage Omnibus Amendment		No Impact
Scup quota period framework		No Impact
Convening Gear Take Reduction Teams (periodically)		Indirect Positive
Summary of past, present, and future actions, excluding those proposed in this document	Overall, actions have had or will have no impact to positive impacts on habitat	

### **7.5.5.3 Magnitude and Significance of Cumulative Effects on Protected Species**

Those past, present, and reasonably foreseeable future actions which may impact protected species, and the direction of those impacts, are summarized in Table 12. The indirectly negative actions described in Table 12 are localized in nearshore and marine project areas where they occur; therefore, the magnitude of those impacts on protected species is expected to be limited due to limited exposure of the populations at large. 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 protected species is not quantifiable.

NMFS has several means under which it can review non-fishing actions of other Federal or state agencies that may impact protected species prior to permitting or implementation of those projects. This serves to minimize the extent and magnitude of indirect negative impacts those actions could have on protected species under NMFS' jurisdiction.

Past fishery management actions taken through the respective FMPs and annual specifications process have had a positive cumulative effect on protected species through the reduction of fishing effort (and thus reduction in potential interactions) and implementation of gear requirements. It is anticipated that future management actions, described in Table 12, will result in additional indirect positive effects on protected species. These impacts could be broad in scope. Overall, the past, present, and reasonably foreseeable future actions that are truly meaningful to protected species have had a positive cumulative effect.

The proposed actions described in this document would not change the past and anticipated cumulative effects on protected species and thus would not have any significant effect on protected species individually or in conjunction with other anthropogenic activities (Table 12).

**Table 12:** Summary of the effects of past, present, and reasonably foreseeable future actions on protected species.

<b>Action</b>	<b>Past to Present</b>	<b>Reasonably Foreseeable Future</b>
Original FMP and subsequent amendments and frameworks	Indirect Positive	
Annual specifications	Indirect Positive	
Standardized Bycatch Reporting Methodology	No Impact	
Agricultural runoff	Indirect Negative	
Port maintenance	Direct and Indirect Negative	
Beach nourishment	Direct and Indirect Negative	
Marine transportation	Direct and Indirect Negative	
Offshore disposal of dredged materials	Direct and Indirect Negative	
Renewable & non-renewable offshore & nearshore energy development	Direct and Indirect Negative	
MAFMC and NEFMC Deep Sea Corals Amendments		Uncertain Mixed
Scup GRA revisions		Uncertain – Likely No Impact or Indirect Positive
Omnibus Observer Coverage Amendment		Uncertain – Likely Indirect Positive
Comprehensive Summer Flounder and Black Sea Bass Amendments		Uncertain – Likely No Impact or Indirect Positive
Unmanaged Forage Omnibus Amendment		Indirect Positive
Scup quota period framework		Uncertain - Likely No Impact or Indirect Negative
Convening Gear Take Reduction Teams (periodically)		Positive
Summary of past, present, and future actions, excluding those proposed in this document	Overall, actions have had, or will have, positive impacts on protected species	

#### **7.5.5.4 Magnitude and Significance of Cumulative Effects on Human Communities**

Those past, present, and reasonably foreseeable future actions which may impact human communities and the direction of those potential impacts are summarized in Table 13. The indirectly negative actions described in Table 13 are localized in nearshore areas and marine project areas where they occur; therefore, the magnitude of those impacts on human communities is expected to be limited in scope. Those actions may displace fishermen from project areas. Agricultural runoff may be much broader in scope, and the impacts of nutrient inputs to the coastal ecosystem may larger in magnitude. This may result in indirect negative impacts on human communities by reducing resource availability; however, this effect is not quantifiable.

NMFS has several means under which it can review non-fishing actions of other Federal or state agencies prior to permitting or implementation of those projects. This serves to minimize the extent and magnitude of indirect negative impacts those actions could have on human communities.

Past fishery management actions taken through the respective FMP and annual specifications process have had both positive and negative cumulative effects on human communities by benefiting domestic fisheries through sustainable fishery management practices while also sometimes reducing the availability of the resource to fishery participants. Sustainable management practices are, however, expected to yield broad positive impacts to fishermen, their communities, and businesses. Even actions with short-term negative impacts (such as a decrease in quota to rebuild a stock) are intended to bring about positive impacts in the long-term (a stable and rebuilt stock to fish on into the future). It is anticipated that the future management actions described in Table 13 will result in positive effects for human communities due to sustainable management practices, although additional indirect negative effects on the human 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 positive cumulative effects.

Catch limits, commercial quotas, and recreational harvest limits 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. The impacts from annual specification of management measures on the managed species (and modifications to those measures) are largely dependent on how effective those measures are in meeting their intended objectives and the extent to which mitigating measures are effective. While the proposed action would increase access for recreational fishermen by creating additional open seasons during Wave 1, total effort and overall catch are not expected to increase for the year. However, the Wave 1 season would create fishing opportunity at a time when there are few other available recreational target species, and in later seasons when black sea bass may be more restricted, there are several other available recreational species with which to supplement business and angler focus. In addition, demand for party/charter trips targeting black sea bass have been relatively stable for the last several years and there is no indication that the recreational market environment will change in the next couple of years. Therefore, the proposed action is expected to align with the previously implemented specifications and avoid excessive overages of the RHL.

Overages may cause impacts to some for-hire fishermen by unexpected reductions in their opportunities to earn revenues from recreational fisheries in the year during which the overages are deducted. Similarly, there may be general decreased recreational harvest opportunities in the

form of reduced harvest limits and more restrictive management measures (e.g. minimum fish size, possession limits, fishing seasons) implemented to address overages.

Despite the potential for negative short-term effects on human communities from reduced quotas or more restrictive measures, positive long-term effects are expected due to the long-term sustainability of the managed stocks. Overall, the proposed action described in this document would not change the past and anticipated cumulative effects on human communities and thus, would not have any significant effect on human communities individually, or in conjunction with other anthropogenic activities (Table 13).

**Table 13:** Summary of the effects of past, present, and reasonably foreseeable future actions on human communities.

Action	Past to Present	Reasonably Foreseeable Future
Original FMPs and subsequent amendments and frameworks		Indirect Positive
Annual specifications		Indirect Positive
Standardized Bycatch Reporting Methodology		Uncertain – Likely Indirect Negative
Agricultural runoff		Indirect Negative
Port maintenance		Uncertain – Likely Mixed
Beach nourishment – offshore sand mining		Mixed
Beach nourishment – sand placement		Positive
Marine transportation		Mixed
Offshore disposal of dredged materials		Indirect Negative
Renewable & non-renewable offshore & nearshore energy development		Uncertain – Likely Mixed
MAFMC and NEFMC Deep Sea Corals Amendments		Mixed
Scup GRA revisions		Direct Positive
Omnibus Observer Coverage Amendment		Likely Direct Negative
Comprehensive Summer Flounder and Black Sea Bass Amendments		Uncertain – Likely Mixed
Unmanaged Forage Omnibus Amendment		Mixed
Scup quota period framework		Uncertain - Likely Mixed
Convening Gear Take Reduction Teams (periodically)		Indirect Negative
Summary of past, present, and future actions, excluding those proposed in this document	Overall, actions have had, or will have, positive impacts on human communities.	

### **7.5.6 Preferred Action on all the VECs**

The preferred alternative (i.e. the proposed action) is described in section 5.1.2, and includes an additional 28-day open season during the month of February for the 2018 recreational black sea bass fishery. The direct and indirect impacts of the proposed action on the VECs are described in sections 7.1 through 7.4, and is summarized in Table 14. The magnitude and significance of the cumulative effects, including additive and synergistic effects of the proposed actions, as well as past, present, and future actions, have been taken into account.

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. The additional open recreational season during the month of February increases access to the healthy stock for recreational and party/charter fishermen, but the estimated catch is accounted for later in the year, so overall effort is not expected to substantially change. Therefore, impacts from the preferred alternative should be similar to those observed in recent years. The preferred alternative is consistent with other management measures and actions that have been implemented in the past for this fishery. The proposed action is part of a broader management scheme for the black sea bass fishery. This management scheme has helped to 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 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 (Table 14).

There are no significant cumulative effects associated with the preferred alternative based on the information and analyses presented in this document and in past FMP documents (Table 14). Cumulatively, through 2022, it is anticipated that the preferred alternative will result in generally positive, if minimal impacts on the all VECs. Overall, the past, present, and reasonably foreseeable future actions that are truly meaningful to the VECs have had a positive cumulative effect.

**Table 14:** Magnitude and significance of the cumulative, additive, and synergistic effects of the 2018 preferred alternative, as well as past (P), present (PR), and reasonably foreseeable future (RFF) actions.

<b>VEC</b>	<b>Status in 2017</b>	<b>Net Impact of P, Pr, and RFF Actions</b>	<b>Impact of the Preferred Action for 2018</b>	<b>Significant Cumulative Effects</b>
<b>Managed Species</b>	Complex and Variable (section 6.1)	Positive (see sections 7.5.4 and 7.5.5.1)	Slight Positive (see section 7.1)	<b>None</b>
<b>Non-target Species</b>	Complex and Variable (section 6.1)	Positive (see sections 7.5.4 and 7.5.5.1)	Slight Positive (see section 7.1)	<b>None</b>
<b>Habitat</b>	Complex and Variable (section 6.2)	No Impact to Positive (see sections 7.5.4 and 7.5.5.2)	No Impact (see section 7.2)	<b>None</b>
<b>Protected Resources</b>	Complex and Variable (section 6.3)	Positive (see sections 7.5.4 and 7.5.5.3)	Slight Positive to Moderate Negative (see section 7.3)	<b>None</b>
<b>Human Communities</b>	Complex and Variable (section 6.4)	Likely mixed (see sections 7.5.4 and 7.5.5.4)	Slight Positive (see section 7.4)	<b>None</b>

## **8. APPLICABLE LAWS**

### **8.1 Magnuson-Stevens Fishery Conservation and Management Act National Standards**

Section 301 of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) requires that FMPs contain conservation and management measures that are consistent with the ten National Standards. The proposed action described in this EA is confined to processes defined within the FMP. Actions within the FMP have been deemed consistent with the National Standards; therefore, the proposed action is similarly consistent. The most recent FMP Amendments describe how the management actions implemented comply with the National Standards. First and foremost, NMFS 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, on a continuing basis, the optimum yield for black sea bass and the U.S. fishing industry. NMFS uses the best scientific information available (National Standard 2) and manages black sea bass throughout its range (National Standard 3). These management measures 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 fishery (National Standard 6), they avoid unnecessary duplication (National Standard 7), they take into account the fishing communities (National Standard 8), and they promote safety at sea (National Standard 10). Finally, the proposed action is consistent with National Standard 9, which addresses bycatch in fisheries. NMFS has implemented many regulations that have indirectly acted to reduce fishing gear impacts on EFH. By continuing to meet the National Standards requirements of the MSA through future FMP amendments, framework actions, and the annual specification setting process, NMFS will ensure that cumulative impacts of these actions will remain positive overall for the managed resources, the ports and communities that depend on these fisheries, and the Nation as a whole.

### **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 National Oceanic and Atmospheric Administration 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 proposed action is not expected to result in significant impacts on any of the VECs, nor will this action result in overall significant effects, either beneficial or adverse. The preferred alternative in this document modifies the open recreational seasons for black sea bass in 2018 to create an additional February season as a way to increase fishing opportunity consistent with FMP objectives and the recommendations of the Council and Commission. The proposed action is designed to allow recreational anglers to better achieve the optimum yield of the fishery without exceeding the RHL. While minor changes in the temporal distribution of recreational fishing effort may result from implementation of the preferred alternative due to the additional winter season,

overall effort is not expected to change due to the redistribution of recreational harvest between the seasons and revised state management measures later in the year (see sections 5 and 7). Because effort is not expected to change substantially, the impacts of this action on all VECs are expected to be similar to the No Action alternative, which do not currently have significant impacts on the VECs. The proposed action is expected to have slight positive biological impacts on black sea bass and non-target species because it would maintain the stock statuses above overfished levels, and no impact on the physical environment including EFH due to the lack of interaction in the recreational fishery. This action may have varying impacts on protected species, ranging from slight positive on non-ESA marine mammals to moderate negative on ESA-listed species. In general, the purpose of this action is to create additional access and opportunity in the recreational black sea bass fishery, and thus the action is expected to have slight positive impacts on human communities. Full descriptions of the expected impacts of the preferred action are fully described in section 7.

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

The proposed action is not expected to alter the manner in which the industry conducts fishing activities for the target species. Therefore, no changes in fishing behavior that would affect safety are anticipated. The overall effect of the proposed action on this fishery, including the communities in which they operate, 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 proposed action is not expected to alter fishing methods or activities or to substantially increase fishing effort. Recreational fishing already occurs in the impacted area, and although it is possible that historic or cultural resources such as shipwrecks could be present, vessels try to avoid fishing too close to wrecks due to possible loss or entanglement of fishing gear. Therefore, it is not likely that the proposed action 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 impacts of the proposed measures on the human environment are described in section 7.0 of the EA. This action merely modifies the open recreational seasons for black sea bass in 2018. The proposed action is based on measures contained in the FMP, which have been in place for many years. In addition, the peer-reviewed scientific information upon which this action is based is the best and most recent information available for the fishery. Thus, the measures contained in this action are not expected to be highly controversial.

*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 proposed action on the human environment are described in section 7 of this document. This action merely modifies the open recreational seasons for black sea bass in 2018, and is not expected to alter fishing methods or activities, to increase fishing effort, or to substantially change the spatial and/or temporal distribution of current fishing effort. Therefore,

the proposed action is 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 proposed action merely modifies the open recreational seasons for black sea bass in 2018, and is not expected to increase fishing effort or substantially change the spatial and/or temporal distribution of current fishing effort. When new stock assessments or other biological information on black sea bass and other impacted species become available in the future, this action will be adjusted consistent with the FMP and MSA. No modifications contained in the proposed action result in significant effects, nor do they represent a decision in principle about a future consideration. 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 proposed action is not expected to have individually insignificant, but cumulatively significant impacts. The synergistic interaction of improvements in the efficiency of the fishery is expected to generate insignificant positive impacts overall. The proposed action, together with past, present, and reasonably foreseeable future actions, is 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 proposed action on the human environment are described in section 7 of this EA. The proposed action is not expected to alter fishing practices beyond adding an open recreational season in 2018. 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 proposed action 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 ESA of 1973?*

The primary gear type used in the recreational black sea bass fishery is hook and line gear. As described in section 6.3, protected species interactions with hook and line gear have been documented for several species of large whales (ESA listed or MMPA protected), sea turtle species, Atlantic sturgeon, and bottlenose dolphin stocks. However, relative to other gear types, such as fixed gear, hook and line gear represents a low source serious injury or mortality to the various protected species involved.

The proposed action is not expected to alter overall fishing operations, increase of fishing effort, or substantially alter the spatial and/or temporal distribution of current fishing effort (sections 5.2 and 7) in a manner that would increase interaction rates with protected species. However, there is

still the possibility that any continued fishing activity could result in some level of interaction, which would potentially have impacts on protected species. The effect of any impacts is also dependent on the resource condition of each protected species stock. Based on this, and as described in section 7.3, current condition level of fishing effort is expected to result in moderate negative impacts for ESA-listed species because they are not expected to contribute to the recovery of these populations.

This action falls within the range of impacts considered in the Batched Fisheries Biological Opinion for the Black Sea Bass Fishery (December 16, 2013). However, 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.

*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 proposed action is 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. This action has also been found to be consistent with other applicable laws (sections 8.3 - 8.12).

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

The primary gear type used in the recreational black sea bass fishery is hook and line gear. As described in section 6.3, protected species interactions with hook and line gear have been documented for several species of large whales (ESA listed or MMPA protected) and bottlenose dolphin stocks. However, relative to other gear types, such as fixed gear, hook and line gear represents a low source serious injury or mortality to the various protected species involved.

The proposed action is not expected to alter fishing methods or activities. This action merely modifies the open recreational seasons for black sea bass in 2018, and is not expected to increase fishing effort or substantially alter the spatial and/or temporal distribution of current fishing effort. 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 (i.e., humpback and minke whales). For these stocks/species, the proposed action would have indirect slight positive impacts because the continuation of current operating conditions is not expected to result in exceedance of any of these stocks/species PBR level. Therefore, this action is not expected to adversely affect MMPA protected species (section 6.3).

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

The impacts of this action on managed fish species, including target and non-target species, are described in section 7.1. The proposed action was designed to allow recreational anglers increased

access to better achieve the optimum yield of the fishery without exceeding the RHL. There are relatively few non-target fish species that are typically caught in meaningful numbers on directed recreational black sea bass trips. Of these few interactions, the non-target species most commonly caught on these trips is spiny dogfish, which is not overfished and overfishing is not occurring. As described in sections 5 and 7, given the RHL estimated catch adjustment and the requirement for participating states to account for winter catch in the revision of later season recreational management measures, overall effort is not expected to increase substantially from projected 2018 levels. The proposed action is not expected to have any significant adverse impacts on managed fish species.

*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 to the ocean, coastal habitats, and/or EFH as defined under the MSA and identified in the FMP. The principal gears used in the recreational fishery for black sea bass are rod and reel and handline. These gears have minimal adverse impacts on EFH in the region (Stevenson et al. 2004). Additionally, the areas recreationally fished for black sea bass have been heavily fished for many years, and are unlikely to be degraded further as the result of this action.

*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 proposed action is not expected to have significant impacts on the natural or physical environment, including vulnerable marine or coastal ecosystems. Nor is the proposed action expected to alter fishing methods or activities, to increase fishing effort, or to substantially change the spatial and/or temporal distribution of current fishing effort. The recreational black sea bass fishery is primarily a hook and line fishery with gear that does not contact the bottom. Additionally, the areas recreationally fished for black sea bass have been fished for a variety of species for many years, and this action is not expected to change the core locations or impacts of black sea bass fishing activity. While some black sea bass 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 FR 90246; December 14, 2016). The proposed action in this document is not expected to alter 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 proposed action is not expected to have a substantial impact on biodiversity and ecosystem function within the affected area. This action merely modifies the open recreational seasons for black sea bass in 2018, and is not expected to alter fishing methods or activities. The proposed action is not expected to increase fishing effort or substantially change the spatial and/or temporal distribution of current fishing effort. Therefore, the biodiversity and ecosystem function within the fishing area should not be affected by this action.

16. *Can the proposed action reasonably be expected to result in the introduction or spread of a nonindigenous species?*

This action modifies the 2018 recreational black sea bass fishery to include an additional winter season during MRIP Wave 1. There is no evidence or indication that this fishery has ever resulted in the introduction or spread of nonindigenous species. The proposed action is not expected to alter fishing methods or activities and it is not expected to increase fishing effort or substantially change the spatial and/or temporal distribution of current fishing effort. Therefore, it is highly unlikely that the proposed action 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 the 2018 Black Sea Bass Recreational Wave 1 Modification, it is hereby determined that the 2018 Black Sea Bass Recreational Wave 1 Modification 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.

---

*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 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 our analysis of the proposed action into consideration, we do not expect the proposed action, in conjunction with other activities, to result in jeopardy to 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 Magnuson-Stevens Act 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 6.3 7.3 of this EA contain an assessment of the impacts of the proposed action on marine mammals. None of the measures proposed in this document are expected to alter fishing methods or activities; therefore, this action is not expected to affect marine mammals or critical habitat in any manner not considered in previous consultations on the fisheries. 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. NMFS previously made determinations that the FMP was consistent with each state's coastal zone management programs, and each coastal state concurred in these consistency determinations. Since the proposed action does not propose any substantive changes from the FMP, NMFS has determined that this action is consistent to the maximum extent practicable with the coastal zone management plans and policies of the coastal states in this region (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 proposed action 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 meetings held on February 14-16, 2017 in Kitty Hawk, NC; August 8-10, 2017 in Philadelphia, PA; and October 10-12 in Riverhead, NY; and
- Joint Council and Board meetings held on May 10, 2017 in Alexandria, Virginia; and August 9, 2017 in Philadelphia, PA; and
- Commission meeting on October 15-19, 2017 in Norfolk, Virginia.

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 EA proposes a modification to the black sea bass recreational management measures for 2018 to include an additional Wave 1 winter season. The document includes a description of the alternatives considered, the rationale for selecting the preferred action, and any changes to the implementing regulations of the FMP. As such, this document serves as a supporting document for the proposed rule. These proposed modifications implement the FMP's conservation and management goals consistent with the MSA as well as all other existing applicable laws.

The action contained within this document was developed to be consistent with the FMP, 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), and will have further opportunity to comment on this 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 Marine Mammal Protection Act).

### ***Objectivity of Information Product***

The category of information product that applies here is “Natural Resource Plans.” Section 8.0 describes how this document was developed to be consistent with any applicable laws, including 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 EA which evaluates the impacts of those alternatives (section 7.0). 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 black sea bass fishery.

The policy choices (i.e., management measures) proposed to be implemented by this document are supported by the available information. The management measures contained in the document are designed to meet the conservation goals and objectives of the FMP.

The review process for this action involves Council, NEFSC, GARFO, and NMFS headquarters. The document was prepared by GARFO staff with expertise in black sea bass resource issues, habitat issues, economics, and social sciences. The NEFSC technical review is conducted by senior level scientists with specialties in fisheries ecology, population dynamics and biology, as well as economics and social anthropology. The Council review process involves public meetings at which affected stakeholders can comment on proposed management measures. Review by

GARFO is conducted by those with expertise in fisheries management and policy, habitat conservation, protected resources, and compliance with the applicable law. Final approval of the action and clearance of the rule is conducted by staff at NOAA Fisheries Headquarters, the Department of Commerce, and the U.S. Office of Management and Budget.

### **8.8 Paperwork Reduction Act (PRA)**

The Paperwork Reduction Act (PRA) concerns the collection of information. The intent of the PRA 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. There are no changes to the existing reporting requirements previously approved under this FMP for vessel permits, dealer reporting, or vessel logbooks. This action does not contain a collection-of-information requirement for purposes of the PRA.

### **8.9 Relative to Federalism/Executive Order 13132**

This document 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**

This EO 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 affect overall participation in the black sea bass fishery; thus, no negative economic or social effects in the context of EO 12898 are anticipated. Therefore, the proposed action is thus 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 (RIR)**

#### ***Introduction***

Executive Order (EO) 12866 requires a Regulatory Impact Review (RIR) in order to enhance planning and coordination with respect to new and existing regulations. This EO requires the Office of Management and Budget (OMB) to review regulatory programs that are considered to be “significant.” Section 7.4 assesses of the costs and benefits of the proposed action and found the impacts to be minimally positive or negligible compared to current conditions. The analysis included in this RIR further demonstrates that this action is not a “significant regulatory action” because it will not affect in a material way the economy or a sector of the economy.

Executive Order 12866 requires a review of proposed regulations to determine whether or not the expected effects would be significant, where a significant regulatory action is one that may:

1. Have an annual effect on the economy of \$100 million or more, or 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;
2. Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
3. Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or
4. Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the EO.

### ***Description of Management Objectives***

A complete description of the purpose and objectives of this action is found under Section 4.0 of this document. 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 as follows:

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 these objectives, this action seeks to modify the 2018 recreational management measures in Federal waters to create an additional winter season in attempt to better achieve, but not exceed, the 2018 RHL. This action is taken under the authority of the MSA and regulations at 50 CFR part 648. There are no expected adverse impacts on yield, management compatibility, or enforcement.

### ***Affected Entities***

A description of the entities affected by this action, specifically the stakeholders of the recreational black sea bass fishery, is provided in this 2018 Black Sea Bass Recreational Wave 1 Modification EA's Regulatory Flexibility Act Analysis (Section 8.12).

### ***Problem Statement***

The purpose of the proposed action is described in Section 4.0 of this document.

### ***Description of the Alternatives***

Executive Order 12866 mandates that proposed measures be analyzed below in terms of: (1) changes in net benefits and costs to stakeholders, (2) changes to the distribution of benefits and costs within the industry, (3) changes in income and employment, (4) cumulative impacts of the regulation, and (5) changes in other social concerns. The proposed action is described in Section

5.0 of this document. As described in Section 7.4, the proposed action is expected to have minimally positive or no economic impacts to stakeholders; specifically people that fish recreationally for black sea bass and any businesses that support that activity. The purpose of this action is to create more recreational fishing opportunity in the winter season when there are fewer other species available to target. This adds to the revenue potential for charter/party entities and recreational businesses during this time. Therefore, the economic impacts of this action are expected to be minimally positive. Because this proposed season is voluntary and the exact number of participants in this fishery are unknown at this time, it is not possible to quantify the degree of potential economic benefit that the Federal fishery may have. Similarly, because the full 2018 fishing year measures will not be developed until spring of 2018, we cannot determine how substantial the changes may be that are required for participating states. Even so, it is expected that stakeholders could offset the effects of potential reductions in available black sea bass catch later in the year by targeting other species, and this action should not have a negative economic impact of the fishery.

#### ***Determination of Executive Order 12866 Significance***

The proposed action does not constitute a significant regulatory action under EO 12866 for the following reasons. As described in Section 7.4 and 8.12, the proposed action may have minimal positive impacts, but not significant impacts for recreational anglers and associated businesses. In addition, there should be no interactions with activities of other agencies and no impacts on entitlements, grants, user fees, or loan programs. The proposed action is also similar to actions taken each year that set black sea bass recreational management measures, and as such does not raise novel legal or policy issues. As such, the proposed action is not considered significant as defined by EO 12866.

#### **8.12 REGULATORY FLEXIBILITY ACT ANALYSIS**

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: 1) to increase agency awareness and understanding of the impact of their regulations on small business; 2) to require that agencies communicate and explain their findings to the public; and 3) to encourage agencies to use flexibility and to provide regulatory relief to small entities.

The RFA emphasizes predicting significant adverse impacts on small entities as a group distinct from other entities and on the consideration of alternatives that may minimize the impacts, while still achieving the stated objective of the action. When an agency publishes a proposed rule, it must either: (1) certify that the action will not have a significant adverse impact on a substantial number of small entities, and support such a certification declaration with a factual basis, demonstrating this outcome, 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 (IRFA) that describes the impact of the proposed rule on small entities.

The sections below provide the supporting analysis to assess whether the proposed regulations will have a “significant impact on a substantial number of small entities.”

### **8.12.1 Basis and Purpose of the Rule**

This action is taken under the authority of the MSA and regulations at 50 CFR part 648. A complete description of the purpose and need and objectives of this proposed rule is found in section 4.0. The proposed action would modify the recreational management measures for the black sea bass fishery in 2018 create an additional winter season in attempt to increase recreational fishing access and opportunity while still constraining landings within the 2018 RHL. Section 5.0 contains a full description of the alternatives analyzed in this document. Additional background information on the alternatives can be found in section 4.0.

As described in sections 4.0 and 5.0, the proposed action is consistent with the best scientific information available and the most recent recommendations of the Council and Board. The proposed modification to the 2018 black sea bass recreational management measures includes an additional 28-day fishing season during the month of February (Alternative 2). Estimated catch during this winter season would be accounted for in the participating states' recreational management measures for the remainder of the year when other species are more available to supplement recreational harvest. This preferred alternative would increase recreational fishing access and opportunity while still constraining landings within the recreational harvest limit.

In addition to the preferred alternative, two non-preferred alternatives are considered in this document. Alternative 1 is a *status quo*/no action alternative, which would maintain the existing recreational management measures for 2018 with no modifications or additional seasons to increase fishing access (see section 5.1). More specifically, this includes a recreational black sea bass fishery with a 12.5-inch minimum fish size, a 15-fish possession limit, and seasons from May 15 through September 21 and October 22 through December 31. This alternative would not necessarily cause any harm to the fishery, but would not provide any benefit either. Selecting the no action alternative would represent potential missed economic opportunity for recreational entities.

Non-preferred Alternative 3 modifies the 2018 recreational management measures to include an additional recreational season for the entirety of Wave 1 (January and February), with other management measures (i.e. fish size and possession limit) remaining the unchanged. This alternative is similar to the preferred alternative, and would create more recreational fishing opportunity in 2018 with a longer additional season. However, given the lack of recreational data available during Wave 1 and uncertainty around participation in a winter season, it is not possible to quantify the degree of potential economic impact that a longer Wave 1 season may have. There is the potential for disproportionate impacts to state recreational fisheries later in the year as well, due to higher estimated catch than actual participation. Because of the higher risk with minimal additional benefit compared to the proposed alternative this alternative is non-preferred.

### **8.12.2 Description of Regulated Entities**

The small entities that would be affected by this action are recreational for-hire operations holding Federal black sea bass party/charter permits. Anglers are not considered "entities" under the RFA and thus economic impacts on private recreational anglers are not discussed here.

The Small Business Administration defines a small business in the commercial fishing industry as a firm (or entity) with total annual receipts (gross revenues) not in excess of \$11.0 million. A small business in the recreational for-hire fishery is a firm with receipts of up to \$7.5 million. These small business size standards are applied for RFA purposes only.

The affected entities are described in detail in section 8.11.1.6 of the EA that established the initial 2018 specifications (MAFMC 2015; the December 2015 EA). Recent landing patterns among ports are presented in the December 2015 EA in section 6.4.3 and an analysis of permit data is found in section 6.4.4. A description of the black sea bass fisheries is presented in section 6.0 of this document and section 3.0 of Amendment 13 to the FMP (MAFMC 2002). A description of ports and communities that are dependent on black sea bass is found in section 3.4.2 of Amendment 13 to the FMP. Additional information on "Community Profiles for the Northeast US Fisheries" can be found at <http://www.nefsc.noaa.gov/read/socialsci/communityProfiles.html>.

This is an action in the recreational fishery only and does not impact commercial entities.

### **8.12.3 Number of Regulated Entities**

The current ownership data set used for this analysis is based on calendar year 2016 (the most recent complete year available) and contains average gross sales associated with those permits for calendar years 2014 through 2016. According to the vessel ownership data (see description of data set above) 406 for-hire permits that generated revenues from recreational fishing for various species during the 2014-2016 period. Of these permits there were 328 that were not affiliated with any other ownership group. The remaining 78 for-hire vessels were comprised of affiliated ownership groups with between 2 and 6 for-hire vessels for a total of 359 for-hire affiliate firms; all of which are categorized as small businesses. Based on the three-year average (2014-2016) combined gross receipts from all fishing activities, including commercial fishing, these affiliated entities earned 99% of all sales from their for-hire business. The aggregate three-year average earnings from all for-hire fishing activity for these small entities was \$53.1 million. Three-year average receipts per entity ranged from under \$10,000 for 99 small entities to over one million dollars for 11 small entities. Although it is not possible to derive what proportion of the overall revenues came from specific fishing activities, further analysis conducted by the Council and NMFS during the development of this action identified that in 2016 there were 291 for-hire entities that recreationally caught black sea bass catch (

Table 15). In 2013, the last year that a Wave 1 recreational black sea bass fishery was open, 331 for-hire firms caught black sea bass recreationally; however, only 39 of those were active during the Wave 1 period. While these are the best available estimates of potential participation in the winter season proposed by this action, these numbers are not necessarily indicative of the number of entities that will actually participate.

The analysis of the proposed action made use of quantitative approaches when possible. Where quantitative data on revenues or other business-related metrics that would provide insight to potential impacts were not available to inform the analyses, qualitative analyses were conducted.

**Table 15:** Summary of Federally permitted for-hire participation within the black sea bass fishery and during the recreational Wave 1 (January – February) season.

<b>Year</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>
<b>Federal Black Sea Bass Permit Holders</b>	881	868	904	902	819	808	802	763	778	749
<b>Permit Holders with Black Sea Bass Catch</b>	342	330	333	358	322	320	331	297	324	291
<b>Permit Holders with Black Sea Bass Catch during Wave 1*</b>	26	21	28	10	8	34	39	7	12	26

\*The Wave 1 fishery was closed from 2010-2012 and 2014-2016

#### **8.12.4 Economic Impacts of Proposed Measure on Regulated Entities**

The Council recommended proposed action is the addition of a February recreational season to the black sea bass fishery in 2018 to satisfy the Magnuson-Stevens Act requirements to ensure fish stocks are not subject to overfishing, while allowing the greatest access to the fishery, and opportunity to achieve optimum yield.

The proposed action modifies the current 2018 recreational management measures of a 12.5-inch size limit, a 15-fish possession limit, and seasons from May 15 – September 21 and October 22 – December 31 to include an additional 28-day open season during the month of February in federal waters. A catch estimate of 100,000 lb will be removed from the 3.66 million lb RHL for the remainder of the year, and only the states that participate in the February season will be responsible for accounting for this catch in the development their recreational management measures through the Commission process for the rest of 2018. If the state measures are ultimately not expected to constrain harvest to the adjusted RHL, NMFS may adjust the Federal waters measures accordingly. The Council and Board will determine 2018 recreational management measures in late 2017 and early 2018, for full implementation in the spring of 2018.

The proposed action is designed to increase fishing opportunity in the 2018 recreational black sea bass fishery while maintaining harvest within the recreational harvest limit and annual catch limit. Business entities that hold charter/party permits and are active participants in the fishery may benefit if they decide to participate in this new fishing season. This action would allow recreational access to black sea bass in Federal waters during the month of February, when there are fewer

other species available to target. This could increase business, and adds to the revenue potential of charter/party entities in this “off” season. Although there would be some level of reduced black sea bass catch in the later summer and fall seasons to account for harvest from this extra winter season, for-hire entities should be able to continue to generate revenue and book trips by supplementing business with other available target species during these peak fishing seasons. Therefore, the economic impacts of this action are expected to be minimally positive.

The potential impacts of the proposed action on regulated entities are directly tied to the voluntary participation of those entities. Because the exact number of participants in this proposed season are unknown at this time, it is not possible to quantify the degree of potential economic benefit that the action may have. Similarly, because the full 2018 fishing year measures will not be developed until spring of 2018, we cannot determine how substantial the required changes may be for participating states and their entities. There is no information regarding how the potential changes to the recreational harvest limit for black sea bass later in the year will affect the demand for party/charter boat trips. Currently, the market demand for this sector is relatively stable. Under a controlled harvest limit decrease as proposed, the demand for party/charter boat trips would be expected to decrease. However, because this reduction and changes would be taking place at a time when other popular recreational species are available, and should only affect those entities that also received an additional season of black sea bass fishing through this action, the net economic impacts are expected to be minimal or positive. Though the specific measures to be implemented by the states are still being determined, the demand for party/charter trips is expected to remain relatively stable in 2018. If more restrictive management measures are implemented as a result of this action, some anglers may transfer their effort to other species (e.g., summer flounder, scup, spot, bluefish, weakfish, striped bass, tautog, pelagics, etc.) resulting in very little change in overall fishing effort. While general statements regarding potential changes in the fishery due to changes in the RHL are made in this document, the effects of specific 2018 measures cannot be described at this time, as they have not been determined. These effects will be examined and described in a later document when these measures are developed.

#### **8.12.5 Significant Alternatives to the Proposed Rule**

Two non-preferred alternatives to the proposed action (No Action/*status quo* and opening during the entirety of Wave 1) were also considered in this analysis. The No Action alternative (Alternative 1) maintains the current recreational seasons for black sea bass (May 15 through September 21, and October 22 through December 31), with no additional seasons or changes to the projected measures. This alternative is not preferred, as it does not increase any access or opportunity in the recreational black sea bass fishery. There would be no negative impact to small entities, but this alternative does not satisfy the purpose of the action or take advantage of the favorable stock assessment results to provide any added benefit to the recreational fishery.

The other non-preferred alternative considered (Alternative 3) has the possibility to result in higher net benefits and create more economic opportunity than the proposed action; however, it also has a higher risk of having the opposite effect and negatively impacting the recreational black sea bass fishery overall. Alternative 3 opens an additional recreational black sea bass season for the entirety of Wave 1 (January and February) in 2018, with other management measures (i.e. fish size and possession limit) remaining unchanged. This alternative is similar to the proposed action except for the longer winter season, potentially creating more recreational fishing opportunity. However, given the lack of recreational data available during Wave 1 and uncertainty around participation

in a winter season, it is not possible to quantify the degree of potential economic impact that a longer Wave 1 season may have. There is the potential for disproportionate impacts to state recreational fisheries later in the year as well, due to higher estimated catch than actual participation. Because of the higher risk with minimal additional benefit compared to the proposed alternative this alternative is non-preferred.

#### **8.12.6 Recordkeeping and Reporting**

This proposed action does not propose new reporting or recordkeeping measures. There are no changes to existing reporting requirements. The owner of any party or charter boat issued a black sea bass permit other than a moratorium permit and carrying passengers for hire must submit an accurate daily fishing log report for each charter or party fishing trip that lands black sea bass. If such a vessel is also issued another permit that requires regular reporting, a fishing log report is required for each trip regardless of species retained.

#### **8.12.7 Conflict with Other Federal Rules**

This proposed action will not duplicate, overlap, or conflict with any other Federal rules.

## 9. LITERATURE CITED

- ASMFC (Atlantic States Marine Fisheries Commission). 2015. American lobster benchmark stock assessment and peer review report. Available at: <http://www.asmfc.org/fisheries-science/stock-assessments>
- 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.
- Beanlands, G.E., and P. N. Duinker. 1984. Ecological framework adjustment for environmental impact assessment. *Journal of Environmental Management*. 8:3.
- 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.
- 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.
- 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.
- DPSWG (Northeast Data Poor Stocks Working Group). 2009. The Northeast Data Poor Stocks Working Group report, December 8-12, 2008 meeting. Part A. Skate species complex, deep sea red crab, Atlantic wolffish, scup, and black sea bass. Northeast Fisheries Science Center Reference Document 09-02; 496 p.
- 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.
- 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.
- 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.
- 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.
- MAFMC (Mid-Atlantic Fishery Management Council). 2015. 2016-2018 Specifications to the Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan. 169 p. Available at: <https://www.greateratlantic.fisheries.noaa.gov/regs/2015/November/15sfcbbsb20162018specsprea.pdf>
- NEFSC (Northeast Fisheries Science Center). 2015a. 60<sup>th</sup> Northeast Regional Stock Assessment (60<sup>th</sup> SAW) assessment report. Northeast Fisheries Science Center Reference Document 15-08; 870 p.
- NEFSC (Northeast Fisheries Science Center). 2015b. 2015 NE skate stock status update. Available at: <http://www.nefmc.org/calendar/sept.-1-2015-ssc-meeting> (item 2.3).

NEFSC (Northeast Fisheries Science Center). 2015c. Update on the status of spiny dogfish in 2015 and projected harvests at the  $F_{MSY}$  proxy and Pstar of 40%. Available at: <http://www.mafmc.org/ssc-meetings/2015/sept-16-17>

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/>.

NMFS and USFWS (National Marine Fisheries Service and U.S. Fish and Wildlife Service). 2013. Leatherback sea turtle (*Dermodochelys coriacea*) 5 year review: summary and evaluation. Silver Spring, Maryland: National Marine Fisheries Service. 91 p.

NMFS NEFSC FSB (National Marine Fisheries Service Northeast Fisheries Science Center Fisheries Statistics Branch). 2015. Northeast Fisheries Observer Program: incidental take reports. Omnibus data request + supplemental data for 2014.

NMFS NEFSC FSB (National Marine Fisheries Service Northeast Fisheries Science Center Fisheries Statistics Branch). 2016. Northeast Fisheries Observer Program: incidental take reports. Omnibus data request + supplemental data for 2015

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.

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/>.

Waring, G.T., E. Josephson, K. Maze-Foley, and P.E. Rosel, editors. 2014a. 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](http://www.nmfs.noaa.gov/pr/sars/pdf/atl2014_final.pdf)

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](http://www.nmfs.noaa.gov/pr/sars/pdf/atlantic2015_final.pdf)

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.

## **10. POINT OF CONTACT**

**Cynthia Hanson**  
Sustainable Fisheries Division  
NMFS  
55 Great Republic Drive  
Gloucester, MA 01930  
(978) 281-9180