UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
GREATER ATLANTIC REGIONAL FISHERIES OFFICE
55 Great Republic Drive
Gloucester, MA 01930

August 4, 2021

Ms. Laura Mensch
Principal Planner, Regulatory Programs Manager
Delaware Coastal Programs
Dept. of Natural Resources and Environmental Control
100 West Water Street
Dover, DE 19901

RE: Federal Consistency Determination for Amendment 7 to the Atlantic Bluefish Fishery Management Plan

Dear Ms. Mensch:

NOAA's National Marine Fisheries Service requests your review of the subject regulatory action and your concurrence with our determination that this federal action is consistent with the Delaware Coastal Zone Management Program (CZMP) and its enforceable policies.

The Mid-Atlantic Fishery Management Council adopted Amendment 7 to the Atlantic Bluefish Fishery Management Plan (FMP) on June 8, 2021, in consultation with the Atlantic States Marine Fisheries Commission's Bluefish Board. The purpose of this action is to update the Bluefish FMP using the best information available by revising quota allocations and management procedures. This amendment would: Revise the Bluefish FMP goals and objectives; establish updated allocation percentages of bluefish quota between the commercial and recreational fishery sectors, as well as commercial quota among the states of Maine through Florida, to be applied through future specifications actions; initiate a rebuilding plan for the bluefish stock that was declared overfished in 2019; revise the procedures to transfer quota between commercial and recreational fishery sectors; and revise administrative measures that determine how the FMP accounts for management uncertainty.

Based on a review of Delaware's enforceable coastal zone management policies, and the analyses contained in the draft environmental assessment for Amendment 7, we have preliminarily determined that the Bluefish FMP and the management provisions it includes, are consistent to the maximum extent practicable with these policies. The management measures implemented under this FMP are intended to conserve the bluefish resource that occurs in Delaware state waters by monitoring and managing catch, preventing overfishing, and promoting rebuilding of the stock; thereby promoting sustainable utilization. Therefore, this action and the continued operation of the Bluefish FMP are consistent with Delaware's CZMP and its enforceable policies; including those specified at Sections 5.11.2.1, 5.11.4.1, and 5.21.1.3.3, to protect valuable fish and wildlife, and manage all wildlife resources to protect them from negative impacts and adverse effects.

Further details of this action, including the draft environmental assessment that supports the conclusion that this action is consistent to the maximum extent practicable with Delaware's

enforceable coastal zone management policies, can be found at *https://www.mafmc.org/actions/bluefish-allocation-amendment*. We intend publish a rule to proposing regulations to implement Amendment 7 in the *Federal Register* in September 2021.

Any future action carried out in accordance with the Bluefish FMP and associated provisions, including routine updates to management measures, are also hereby determined to be consistent with the policies of the Delaware CZMP. We intend to reconsider this consistency determination and consult with your agency for any future amendments or other substantial modification actions to the Bluefish FMP, whether through subsequent individual or omnibus actions.

This letter is submitted pursuant to provisions of 15 CFR 930 *et seq*., and section 307 of the Coastal Zone Management Act of 1972, as amended. In accordance with those provisions, we are requesting that you review this letter and supporting information, and advise us of your concurrence with or objection to our consistency determination. In the event that there is no response from your agency within 60 days of your receipt of this letter, we will presume that you are in agreement with our determination of consistency, as defined by 15 CFR 930.41.

Thank you for your assistance and cooperation with this matter. If you have any questions regarding this action, please contact Cynthia Ferrio at 978-281-9180, or Cynthia.Ferrio@noaa.gov.

Sincerely,

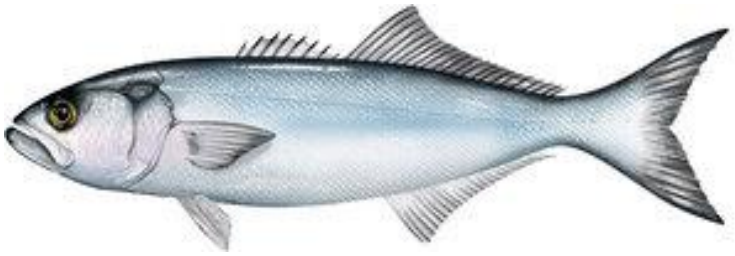
Michael Pentony
Regional Administrator

BLUEFISH ALLOCATION AND REBUILDING AMENDMENT

AMENDMENT 7 TO THE BLUEFISH FISHERY MANAGEMENT PLAN

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

July 2021



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

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1. EXECUTIVE SUMMARY

This document was prepared by the Mid-Atlantic Fishery Management Council (the Council or MAFMC) in consultation with the National Marine Fisheries Service (NMFS). This document was developed in accordance with all applicable laws and statutes as described in section 8.

The purpose of this amendment is to consider modifications to the Fishery Management Plan (FMP) goals and objectives, current allocations between the commercial and recreational sectors, current commercial allocations to the states, initiate a rebuilding plan, revise the quota transfer processes, and revise how the FMP accounts for management uncertainty.

The current sector-based and commercial state-to-state allocations were set in 2000 using data from 1981-1989 and have not been revised since that time. Recreational catch and harvest data are provided by the Marine Recreational Information Program (MRIP). In July 2018, MRIP released revisions to their time series of catch and harvest estimates based on adjustments for a revised angler intercept methodology (used to estimate catch rates) and a new effort estimation methodology (namely, a transition from a telephone-based effort survey to a mail-based effort survey). These revisions resulted in much higher recreational catch estimates compared to previous estimates, affecting the entire time series of data going back to 1981. These data revisions have management implications due to the fixed commercial/recreational allocation percentages defined in the FMP. These allocation percentages do not reflect the current understanding of the recent and historic proportions of catch and landings from the two sectors. Since these allocation percentages are defined in the Council and Commission FMPs, they cannot be modified without an FMP amendment. This amendment will consider whether the allocations are still appropriate and meeting the objectives of the FMP. In reviewing/adjusting the allocations, the need for transfers may be reduced, however, improvements to the transfer processes will also be reviewed.

Bluefish was deemed overfished with overfishing not occurring as a result of the 2019 Operational Assessment. Therefore, the Council is mandated to initiate a rebuilding plan within two years of notice by the Greater Atlantic Regional Fisheries Office (GARFO) Regional Administrator. Under a rebuilding plan, the stock will be considered rebuilt once spawning stock biomass reaches the target biomass (spawning stock biomass maximum sustainable yield proxy) of 198,717 mt. The Magnuson-Stevens Fishery Conservation and Management Act (MSA) requires the overfished stock to be rebuilt within ten years once the regional office notifies the Council of the overfished state. Under the current amendment timeline, the rebuilding plan would be implemented at the beginning of 2022.

This document describes all evaluated management alternatives (section 5) and their expected impacts on several components of the environment (section 7).

Summary of Amendment Alternatives and Impacts

The proposed action would implement modifications to the FMP goals and objectives, allocations between the commercial and recreational sectors, commercial allocations to the states, initiate a rebuilding plan, revise the quota transfer processes, and revise how the FMP accounts for management uncertainty. The proposed action is described in more detail in section 5 and the expected impacts are presented in ES Table 1.

The alternative sets in this amendment start at “alternative set 2” because the proposed revisions to the FMP goals and objectives was listed as an alternative set during the amendment development

process to adequately recruit public input. For this EA, the true alternative sets begin with the sector allocations (alternative set 2a).

Impacts of Alternative Sets 2-6 on Bluefish and Non-Target Species

Alternative Set 2: This section details the impacts associated with the sector allocations and the ability to phase-in the allocations over a specified duration. The duration to phase in allocation was set as the number of years required to rebuild the stock (as indicated by the preferred rebuilding plan). All the alternatives are slight - to slight + because they will maintain the current stock statuses of bluefish and non-target species (some of which are currently negative).

Alternative Set 3: This section details the impacts associated with the commercial allocations to the states, the ability to phase-in the allocations over a specified duration, implementation of a trigger approach, and minimum default allocation. All the alternatives are slight - to slight + because they will maintain the current stock statuses of bluefish and non-target species (some of which are currently negative).

Alternative Set 4: This section details the impacts associated with each rebuilding plan on bluefish and non-target species. The expected impacts of not implementing a rebuilding plan (status quo) on bluefish are moderate - given there are no anticipated improvements to stock status through development of a rebuilding plan. All other alternatives are expected to be slight + for bluefish as they will improve stock status and range from slight – to slight + for non-target species because current stock statuses will be maintained (some of which are currently negative).

Alternative Set 5: This section details the impacts associated with the sector transfers and transfer cap. All impacts are expected to be slight - to slight +. Given transfers will not occur while the stock is overfished and/or overfishing is occurring, both 5a-1 and 5a-2 are anticipated to have similar, yet negligible impacts on the bluefish resource and non-target species in the short term. In the long term, 5a-2 and 5b-2 are anticipated to have impacts that are negative to a greater degree than 5a-1 and 5b-1 since the alternative allows for transfers to go in either direction, creates more opportunity to harvest bluefish, and allows for transfers to scale with biomass (and interact with non-target species).

Alternative Set 6: This section details the impacts associated with modifying how the Council accounts for management uncertainty. Impacts are expected to be negligible to slight + for the bluefish resource, and negligible for non-target species because the alternatives apply to the management process yet offers more flexibility to effectively account for uncertainty.

Impacts of Alternative Sets 2-6 on Physical Habitat

Alternative Sets 2-6: In the Executive Summary, all alternative sets are presented jointly in terms of their impacts on habitat because each alternative is expected to present slight - to negligible impacts (except for alternative set 6, which is anticipated to have solely negligible impacts because the alternatives apply to the management process yet offers more flexibility to effectively account for uncertainty) on habitat.

Only those gear types which contact the bottom impact physical habitat. The actions proposed in this document are relevant to both the commercial and recreational bluefish fisheries. The recreational fishery is almost exclusively a hook and line fishery. Recreational hook and line gears generally have minimal impacts on physical habitat and EFH in this region (Stevenson et al. 2004). Weighted hook and line gear can contact the bottom, but the magnitude and footprint of any

impacts resulting from this contact is likely minimal. Thus, the recreational fisheries are expected to have very minor or no impacts on habitat.

The limited commercial fishery for bluefish is primarily prosecuted with gill net gear and has limited contact with the bottom. Thus, the magnitude and footprint of any impacts resulting from this contact are also likely minimal.

Ultimately, the gear used in the bluefish fisheries has minimal impacts on EFH and any gear contact with ocean bottom would occur in regions that are already heavily fished.

Impacts of Alternative Sets 2-6 on Protected Species

Alternative Sets 2-6: In the Executive Summary, all alternative sets are presented jointly in terms of their impacts on protected species because each alternative is expected to present slight - to slight + impacts on MMPA protected species and slight - to negligible impacts on ESA-listed species (except for alternative set 6, which is anticipated to have solely negligible impacts for MMPA protected and ESA-listed species because the alternatives apply to the management process yet offers more flexibility to effectively account for uncertainty).

There are many non-ESA listed marine mammals that, even with continued fishery interactions, are maintaining an optimum sustainable level (i.e., PBR levels have not been exceeded) over the last several years. For these stocks/species, it appears that the fishery management measures that have been in place over this timeframe have resulted in levels of effort that result in 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. However, given these interaction do still occur, the expected impacts on MMPA protected species range from slight - to slight +.

Similar to MMPA protected species, interactions with ESA listed species are already very rare, but when interactions do occur, they are most common in the commercial fishery due to the use of bottom trawl and gillnet gear. By definition, all ESA-listed species are in poor condition and any take can negatively impact that species' recovery. The risk of an interaction is strongly associated with the amount of gear in the water, the duration of time the gear is in the water (e.g., tow time, soak time), and the presence of listed species in the same area and time as the gear, with risk of an interaction increasing with increases in of any of these factors. For these reasons, the expected impacts on ESA listed species is slight - to negligible.

Socioeconomic Impacts of Alternative Sets 2-6

Alternative Set 2: This section details the impacts associated with the sector allocations and the ability to phase-in the allocations over a specified duration. The duration to phase in allocation was set as the number of years required to rebuild the stock (as indicated by the preferred rebuilding plan). All the alternatives are slight - to slight + because they either keep the allocations status quo or increase the allocations to the recreational sector, which is responsible for approximately 90% of overall bluefish catch. Increasing the recreational allocation creates more recreational opportunity. Decreased commercial allocations do decrease commercial opportunities, but the ongoing rebuilding plan is anticipated to increase overall biomass and thus, increase the quotas used to constrain harvest in the long term. Ultimately, by achieving a positive stock status through rebuilding, small shifts in allocations will still be constrained by management measures and result in similar impacts to the human communities that are currently being

experienced. In the long term, the preferred alternative is expected to offer slight + impacts to both sectors, as quotas increase.

Alternative Set 3: This section details the impacts associated with the commercial allocations to the states, the ability to phase-in the allocations over a specified duration, a trigger approach, and implementing a minimum default allocation.

The socioeconomic impacts of the existing allocations vary from state to state. Some states report negative economic impacts associated with current allocations due to a mismatch between their current allocation and their fishery capacity and/or bluefish availability in their waters. Commercial fishermen that land bluefish within a state that consistently harvests less than its quota have the benefit of operating within an unconstrained fishery. Future fluctuations in stock size are less likely to restrict fishing effort and mitigate revenue losses within that state. Each state manages their fishery differently in terms of total number of participants, trip limits, seasons, and other measures. A restriction in one or more of these measures is the driver of the social and economic impacts to industry participants. For example, a restriction in the daily trip limit will likely have an outsized impact on larger vessels compared to smaller vessels which may already harvest bluefish under the newly imposed daily trip limit.

The proposed allocation alternatives and sub-alternatives (i.e., phase-in, trigger, minimum default allocations) incorporate more recent data that are reflective of current state-specific performance and have the potential to increase economic efficiency. Nonetheless, any reduction in allocation may limit a state's potential for market expansion and future increases in landings and ex-vessel revenue compared to the no action alternative. Revenue is also variable in nature and is influenced by fluctuations in costs and prices. For these reasons, impacts to the human communities vary from state to state, but are expected to range from slight - to slight +.

Alternative Set 4: This section details the impacts associated with each rebuilding plan on the human communities. For all alternatives except status quo (which are high - because a rebuilding plan must be implemented), impacts are expected to be slight - to slight +.

The rebuilding plan should be as short as possible while considering the needs of the fishing communities that depend on the resource and accounting for the uncertainty inherent in the cyclical and environmentally driven nature of the stock. Ultimately, the impacts associated with alternatives 4b-d are slight - to slight +. Given the spread in projected catch over the course of the plans, alternative 4c may be a fair middle point that considers both the biological and social requirements as required in MSA. Furthermore, alternatives 4c and 4d offer catches that increase steadily over the duration of the rebuilding plan, as compared to the constant harvest approach (4b) which rebuilds as quickly as possible with low harvest limits. Therefore, 4c and 4d may be positive to a greater degree than 4b since they offer higher gross and average revenues to the commercial sector compared. Furthermore, 4b has the potential to be particularly damaging to the commercial sector. The culmination of rebuilding plan alternative 4b could create an instability in market supply and weaken supply chain linkages in addition to offering the lowest economic returns to the commercial sector. This in turn could compound the commercial sector's economic burden by imposing several years of reduced market share due to low quotas during the rebuilding period.

Alternative Set 5: This section details the impacts associated with sector transfers and transfer cap on the human communities.

Given transfers will not occur while the stock is overfished and/or overfishing is occurring, both 5a-1 and 5a-2 are anticipated to have similar, yet negligible impacts on the human communities in the short term. In the long term, 5a-2 is anticipated to have impacts that are positive to a greater degree than 5a-1 since the alternative allows for transfers to go in either direction and creates more opportunity harvest bluefish and increase overall revenue and angler satisfaction.

The economic impacts of 5a-1 (status quo, recreational to commercial sector transfers, only) are expected to continue to be negligible for the recreational sector and positive for the commercial sector. The commercial sector has historically utilized a portion of the additional transferred quota by increasing landings above the initial pre-transfer commercial allocation. The additional quota transferred from the recreational sector to the commercial sector may also contribute to increases in job opportunities and/or higher paying trips for crew members along with increases in revenues. A bi-directional transfer, suggested by alternative 5a-2, would only provide positive economic impacts to the recreational sector if a future quota transfer were large enough to allow for a liberalization of recreational measures. In the absence of an increase in the bag limit resulting from a higher post-transfer RHL, the recreational sector is likely to experience negligible economic impacts.

The economic impact of sector transfer caps on the commercial bluefish sector are investigated by comparing realized landings data to predicted landings under a 10% ABC cap transfer scenario over 2001-2019. Revenues are estimated as opposed to incorporating realized revenues in order to establish an equal comparison between the status quo transfer cap alternative (5b-1) and the 10% ABC transfer cap alternative (5b-2) and their economic implications. Quotas under alternative 5b-2 are estimated using the historic ABC's for each year and for each of the sector allocation sub-alternatives presented in section 5.1.1-5.1.5 (i.e., 2a-1 to 2a-5). Then 10% of the ABC is added to the pre-transfer quantities to produce the post-transfer values. Similar to other economic analyses, it is assumed that all allocated quota is landed when comparing the projected commercial quotas under alternative 5b-2 to the realized landings. It should be noted that in every year in the time series, realized landings have been less than the full allocation generated under the 5b-2 scenario. If the proposed transfer cap had been implemented over the time series, and all else was held constant, landings would not have been restricted by the transfer cap. Further, in some years (2001, 2015, and 2016) the realized post-transfer quantities are less than the 5b-2 scenario[1] such that a transfer cap equal to 10% of the ABC would not have impacted landings in these years even if the full historic post transfer landings had been fully utilized.

Ultimately, the status quo alternatives included impacts that range from slight - to slight + while, the preferred alternatives range from negligible to slight +. Both preferred alternatives offer more flexibility when deciding how, when, and where to send transfers and set a standard cap that scales with biomass (which is beneficial during a rebuilding plan).

Alternative Set 6: This section details the impacts associated with modifying how the Council accounts for management uncertainty. Impacts are expected to be negligible for the status quo alternative and negligible to slight + for the preferred alternative because the alternatives apply to the management process yet offers more flexibility to effectively account for uncertainty.

[1] The realized sector transfer was less than 10% of the ABC.

ES. Table 1: Expected impacts of alternative sets 2-6, relative to current conditions. A minus sign (-) signifies a negative impact and a plus sign (+) signifies a positive impact. None of the impacts are expected to be significant.

Alternative	Detail	Impacts					
		Target Species	Non-Target Species	Habitat	MMPA Protected	ESA-Listed	Human Communitites
Commercial/Recreational Allocation Alternatives		**Impacts to the Commercial/Recreational Allocation**					
2a-1	83% Rec, 17% Comm (Status quo)	Slight - to Slight +	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +
2a-2	89% Rec, 11% Comm	Slight - to Slight +	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +
2a-3	87% Rec, 13% Comm	Slight - to Slight +	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +
2a-4	86% Rec, 14% Comm	Slight - to Slight +	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +
2a-5	84% Rec, 16% Comm	Slight - to Slight +	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +
2b-1	No Phase-in	Slight - to Slight +	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +
2b-2	Phase-in	Slight - to Slight +	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +
Commercial Allocations to the States Alternatives		**Impacts to the Commercial Allocations to the States**					
3a-1	Status quo	Slight - to Slight +	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +
3a-2	5 year	Slight - to Slight +	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +
3a-3	10 year	Slight - to Slight +	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +
3a-4	1981-1989 and 2019-2018	Slight - to Slight +	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +
3b-1	No Phase-in	Slight - to Slight +	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +
3b-2	Phase-in	Slight - to Slight +	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +
3c-1	No Trigger	Slight - to Slight +	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +
3c-2	Pre-Transfer Trigger	Slight - to Slight +	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +	Slight - to Negligble	Slight - to Slight +
3c-3	Post Transfer Trigger	Slight - to Slight +	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +	Slight - to Negligble	Slight - to Slight +
3d-1	No Minimum Default Allocation	Slight - to Slight +	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +
3d-2	0.10% - Minimum Default Allocation	Slight - to Slight +	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +
3d-3	0.25% - Minimum Default Allocation	Slight - to Slight +	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +
Rebuilding Plan Alternatives		**Impacts to the Rebuilding Plan**					
4a	Status quo/No action	Moderate -	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +	Slight - to Negligible	High -
4b	Constant harvest	Slight +	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +
4c	P* approach	Slight +	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +
4d	Constant F	Slight +	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +
Sector Transfers Alternatives		**Impacts to the Sector Transfers**					
5a-1	No Action/Status quo	Slight - to Slight +	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +
5a-2	Allow transfer both ways	Slight - to Slight +	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +	Slight - to Negligible	Negligible to Slight +
5b-1	No Action/Status quo	Slight - to Slight +	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +
5b-2	Sector transfer cap: 10%	Slight - to Slight +	Slight - to Slight +	Slight - to Negligible	Slight - to Slight +	Slight - to Negligible	Negligible to Slight +
Management Uncertainty Alternatives		**Impacts to the Management Uncertainty**					
6a	No Action/Status quo	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
6b	Post Sector-Split	Negligible to Slight +	Negligible	Negligible	Negligible	Negligible	Negligible to Slight +

Cumulative Impacts

The Council analyzed the impacts of all alternatives on the biological environment, physical habitat, protected species, and human communities. When the proposed action (i.e., all preferred alternatives) is considered in conjunction with all other impacts from past, present, and reasonably foreseeable future actions, it is not expected to result in any significant impacts, positive or negative; therefore, no significant cumulative effects on the human environment are associated with the proposed action (section 7.5).

Conclusions

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

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 Bluefish 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
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_{MSY}	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
ITS	Incidental Take Statement
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
P*	Probability of Overfishing (Rebuilding Plan Utilizing the Council's Risk Policy)
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_{MSY}	Spawning Stock Biomass at Maximum Sustainable Yield
SSC	Scientific and Statistical Committee
STDN	Sea Turtle Disentanglement Network
TED	Turtle Excluder Device
USFWS	United States Fish and Wildlife Service
VECs	Valued Ecosystem Components
VTR	Vessel Trip Report

3. TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

4. INTRODUCTION AND BACKGROUND

4.1. Purpose and Need for the Action

The purpose of this amendment is to consider modifications to the Fishery Management Plan (FMP) goals and objectives, current allocations between the commercial and recreational sectors, current commercial allocations to the states, initiate a rebuilding plan, revise the quota transfer processes, revise how the FMP accounts for management uncertainty, and revise *de minimis* provisions in the Commission's plan.

The current sector-based and commercial state-to-state allocations were set in 2000 using data from 1981-1989 and have not been revised since that time. Recreational catch and harvest data are provided by the Marine Recreational Information Program (MRIP). In July 2018, MRIP released revisions to their time series of catch and harvest estimates based on adjustments for a revised angler intercept methodology (used to estimate catch rates) and a new effort estimation methodology (namely, a transition from a telephone-based effort survey to a mail-based effort survey). These revisions resulted in much higher recreational catch estimates compared to previous estimates, affecting the entire time series of data going back to 1981. These data revisions have management implications due to the fixed commercial/recreational allocation percentages defined in the FMP. These allocation percentages do not reflect the current understanding of the recent and historic proportions of catch and landings from the two sectors. Since these allocation percentages are defined in the Council and Commission FMPs, they cannot be modified without an FMP amendment. This amendment will consider whether the allocations are still appropriate and meeting the objectives of the FMP. In reviewing/adjusting the allocations, the need for transfers may be reduced, however, improvements to the transfer processes will also be reviewed.

Bluefish was deemed overfished with overfishing not occurring as a result of the 2019 Operational Assessment. Therefore, the Council is mandated to initiate a rebuilding plan within two years of notice by the Greater Atlantic Regional Fisheries Office (GARFO) Regional Administrator. Under a rebuilding plan, the stock will be considered rebuilt once spawning stock biomass reaches the target biomass (spawning stock biomass maximum sustainable yield proxy) of 198,717 mt. The Magnuson-Stevens Fishery Conservation and Management Act (MSA) requires the overfished stock to be rebuilt within ten years once the regional office notifies the Council of the overfished state. Under the current amendment timeline, the rebuilding plan would be implemented at the beginning of 2022.

Several other issues identified during scoping for this action were considered by the Council and Board for inclusion in this amendment but have since been removed. Some of those issues will be taken up through other initiatives or actions. More information on removed issues is available in past meeting documents and meeting summaries for this amendment, available at: https://www.mafmc.org/actions/bluefish-allocation-amendment.

4.2. FMP Goals and Objectives

The Bluefish FMP is cooperatively managed by the Council and the Atlantic States Marine Fisheries Commission (ASMFC or Commission). The Council and ASMFC's Bluefish Board (the Board) are considering revisions to the existing FMP goals and objectives for bluefish through this amendment. The no action/status quo option keeps the existing FMP goals and objectives that were developed in 1991. The proposed FMP goals and objectives include revisions based on input provided by the public, bluefish advisory panel members, and Council and Board members. Given

the bluefish fishery is dynamic and experiences change over short periods of time, the proposed FMP goals and objectives are more reflective of the current needs of the fishery and all its stakeholders, as indicated during the scoping process for this amendment.

4.2.1. Current FMP Goals and Objectives

Goal: Conserve the bluefish resource along the Atlantic coast.

Objective 1: Increase understanding of the stock and of the fishery.

Objective 2: Provide the highest availability of bluefish to U.S. fishermen while maintaining, within limits, traditional uses of bluefish.

Objective 3: Provide for cooperation among the coastal states, the various regional marine fishery management councils, and federal agencies involved along the coast to enhance the management of bluefish throughout its range.

Objective 4: Prevent recruitment overfishing.

Objective 5: Reduce the waste in both the commercial and recreational fisheries.

4.2.2. Proposed FMP Goals and Objectives

Goal 1: Conserve the bluefish resource through stakeholder engagement to maintain sustainable recreational fishing and commercial harvest.

Objective 1.1: Achieve and maintain a sustainable spawning stock biomass and rate of fishing mortality.

Objective 1.2: Promote practices that reduce release mortality within the recreational and commercial fishery.

Objective 1.3: Maintain effective coordination between the National Marine Fisheries Service, Council, Commission, and member states by promoting compliance and to support the development and implementation of management measures.

Objective 1.4: Promote compliance and effective enforcement of regulations.

Objective 1.5: Promote science, monitoring, and data collection that support and enhance effective ecosystem-based management of the bluefish resource.

Goal 2: Provide fair and equitable access to the fishery across all user groups throughout the management unit.

Objective 2.1: Ensure the implementation of management measures provides fair and equitable access to the resource across all user groups within the management unit.

Objective 2.2: Consider the economic and social needs and priorities of all groups that access the bluefish resource in the development of new management measures.

Objective 2.3: Maintain effective coordination with stakeholder groups to ensure optimization of economic and social benefits.

The proposed changes and additions to the Bluefish FMP goals and objectives are anticipated to have neutral to positive social impacts [2] to bluefish fishery stakeholders. The majority of comments submitted during the scoping process were in support of revising the goals and objectives altogether and an even larger majority supported revising at least some of the current goals and objectives. The proposed Goal 1 commits to stakeholder engagement in the interest of maintaining sustainable recreational fishing and commercial harvest. A commitment to stakeholder engagement is likely to improve attitudes about the FMP among bluefish fishery stakeholders. The

[2] Social impacts are impacts that directly affect the human communities with focus outside of the economics.

proposed Goal 2 ensures fair and equitable access to the fishery across all user groups. According to Crew Survey results in 2012 and 2018, the majority of commercial crew and hired captains reported that they believe the regulations in their primary fishery are too restrictive and fewer than half agree that the fines associated with breaking the rules are fair. For at least the commercial harvest user group, the proposed Goal 2, ensuring fair and equitable access, would likely have positive impacts on their attitudes towards the FMP and its objectives. There may be positive or negative social impacts to the various recreational angling sectors as the Council and Board consider mode-specific regulations.

5. MANAGEMENT ALTERNATIVES

The alternative sets in this amendment start at "alternative set 2" because the proposed revisions to the FMP goals and objectives was listed as an alternative set during the amendment development process to adequately recruit public input. For this EA, the true alternative sets begin with the sector allocations (alternative set 2a).

Alternative set 2a describes the alternatives for commercial and recreational allocations for bluefish. The range of allocation alternatives includes options that would maintain the current allocations, as well as options to revise allocations based on updated data using modified base years. Alternative set 2b describes options to phase in any allocation changes over multiple years.

Under the current FMP for bluefish, the Acceptable Biological Catch (ABC) equals the fishery level Annual Catch Limit (ACL), which is then divided into a commercial and recreational Annual Catch Target (ACT) based on the allocation percentages defined in the FMP. Sector-specific expected discards are subtracted from the sector-specific ACTs to derive a commercial quota and a Recreational Harvest Limit (RHL).

Commercial discards are considered negligible within the bluefish fishery (NEFSC 2015). Recreational discards are estimates based on the MRIP B2s (released alive). Managers assume a 15% mortality rate on the released alive fish (NEFSC 2015). The number of fish are converted to weight by multiplying by the average weight of landed fish coastwide in a given year. This approach assumes that the weight of released fish is equal to the weight of landed fish.

Aside from the status quo option (alternative 2a-1), the following approaches revise the allocation percentages based on modified base years or different data sets.

5.1. Commercial and Recreational Allocation Alternatives

One alternative must be selected from alternative set 2a and 2b. Only one alternative can be selected from each set.

Table 1 lists the alternatives under consideration for the commercial and recreational bluefish allocation percentages based on both catch and landings data. The current allocations for bluefish are based on commercial and recreational landings data from 1981-1989 that have not been updated with a renewed understanding of historic fishery performance. The current allocations for bluefish are represented by the no action/status quo alternative (alternative 2a-1, highlighted in green in Table 1). Outside of the status quo alternative, all alternatives increase the recreational allocation and decrease the commercial allocation. These alternatives are more reflective of recent trends within the fishery. Table 2 details the percent change for each allocation alternative by sector.

The alternatives listed in Table 3 consider if any changes to the allocation percentages considered through alternative sets 2a should occur in a single year (alternative 2b-1, no phase-in) or if the change should be spread out over 4, 5, or 7 years (alternatives 2b-2). The Council and Board agreed that if alternative 2b-2 is selected, the duration over which new allocations will be phased-in will match the duration of the selected rebuilding plan (alternatives 4a-4d). The choice of whether to use a phase-in approach, and the phase-in approach duration, may depend on the magnitude of allocation change proposed. *A phase-in period may not be desired if the overall allocation change is relatively small.* However, larger allocation changes may be less disruptive to fishing communities if they are phased in over several years (Table 4).

Sector Allocation Alternatives

Table 1: Bluefish commercial/recreational allocation alternatives. The current allocations are highlighted in green.

Allocation Percentages	
Alternative	**Basis**
2a-1: 83% recreational, **17%** commercial	No action/status quo (1981-1989 landings data)
2a-2: 89% recreational, **11%** commercial	Multiple approaches: 2014-2018 and 2009-2018 catch data
2a-3: 87% recreational, **13%** commercial	1999-2018 catch data
2a-4: 86% recreational, **14%** commercial	Multiple approaches: 1981-2018 catch data; 2014-2018 and 2009-2018 landings data
2a-5: 84% recreational, **16%** commercial	Multiple approaches: 1981-2018 and 1999-2018 landings data

Table 2: Percent change (in green and red) of commercial and recreational allocations for each alternative relative to status quo. The grey boxes refer to the status quo alternative.

Alternative	**2a-1**	**2a-2**	**2a-3**	**2a-4**	**2a-5**
Proposed Recreational Allocation	**83%**	**89%**	**87%**	**86%**	**84%**
% Change from Status Quo	**0%**	**+7%**	**+5%**	**+4%**	**+1%**
Proposed Commercial Allocation	**17%**	**11%**	**13%**	**14%**	**16%**
% Change from Status Quo	**0%**	**-35%**	**-24%**	**-18%**	**-6%**

5.1.1. Alternative 2a-1 (no action/status quo)

Alternative 2a-1 is the status quo alternative and includes an 83% recreational and 17% commercial allocation, respectively. These allocations are based on landings data from 1981-1989 and were first developed in Amendment 1 to the Bluefish FMP in 2000.

5.1.2. Alternative 2a-2

Alternative 2a-2 includes an 89% recreational and 11% commercial allocation, respectively. These allocations are based on catch data from 2014-2018 and 2009-2018, as both time series resulted in the same allocation. These allocations represent a shift in 6 percentage points to the recreational sector and from the commercial sector.

5.1.3. Alternative 2a-3

Alternative 2a-3 includes an 87% recreational and 13% commercial allocation, respectively. These allocations are based on catch data from 1999-2018. These allocations represent a shift in 4 percentage points to the recreational sector and from the commercial sector.

5.1.4. Alternative 2a-4 (Preferred)

Alternative 2a-4 includes an 86% recreational and 14% commercial allocation, respectively. These allocations are based on catch data from 1981-2018, and landings data from 2014-2018 and 2009-2018, as all three time series resulted in the same allocation. These allocations represent a shift in 3 percentage points to the recreational sector and from the commercial sector.

5.1.5. Alternative 2a-5

Alternative 2a-5 includes an 84% recreational and 16% commercial allocation, respectively. These allocations are based on landings data from 1981-2018 and 1999-2018, as both time series resulted in the same allocation. These allocations represent a shift in 1 percentage points to the recreational sector and from the commercial sector.

Sector Allocation Phase-In Alternatives

Table 3: Bluefish commercial/recreational allocation change phase-in alternatives.

Phase-in Alternatives
2b-1: No phase-in
2b-2: Allocation change spread evenly over the same duration as the selected rebuilding plan

Table 4: Percent shift in bluefish commercial/recreational allocation per year for 4, 5, and 7-year phase-in options for all allocation change alternatives.

Bluefish Commercial/Recreational Allocation Change Phase-In			
Current allocation (2a-1): 83% recreational, 17% commercial			
Allocation Alternatives	4-year phase-in	5-year phase-in	7-year phase-in
2a-2: 89% Rec., 11% Comm.	1.5% change/year	1.2% change/year	0.86% change/year
2a-3: 87% Rec., 13% Comm.	1% change/year	0.8% change/year	0.57% change/year
2a-4: 86% Rec., 14% Comm.	0.75% change/year	0.6% change/year	0.43% change/year
2a-5: 84% Rec., 16% Comm.	0.25% change/year	0.2% change/year	0.14% change/year

5.1.6. Alternative 2b-1 (no action/status quo) (Preferred)

Alternative 2b-1 would not implement a phase-in approach and allocations would be implemented in full during the first year.

5.1.7. Alternative 2b-2

Alternative 2b-2 would implement a phase-in approach, which would divide the percent shift in allocation evenly over the phase-in duration. The preferred rebuilding plan alternative dictates this duration (of 4, 5, or 7 years).

5.2. Commercial Allocations to the States Alternatives

One alternative must be selected from alternative set 3a, 3b, 3c, and 3d. Only one alternative can be selected from each set.

Section 5.2.1-5.2.4 describe alternatives for commercial allocations to the states. The range of allocation alternatives includes options that would maintain the current allocations as well as options to revise them based on updated data using modified base years. Only landings data were used to develop allocation alternatives since commercial discards are considered negligible. The percent allocations represent the share of coastwide quota that is annually allocated to each state. The current allocations are represented by the no action/status quo alternative (alternative 3a-1, highlighted in green in Table 5), which was set through Amendment 1 using General Canvass Data.

Section 5.2.5-5.2.6 describes options to phase in any allocation changes over multiple years. The alternatives listed in Table 6 consider if any changes to the allocation percentages considered through alternative set 3a should occur in a single year (alternative 3b-1, no phase-in) or if the change should be spread out over 4, 5, or 7 years (alternative 3b-2). The Council agreed that if alternative 3b-2 is selected, the duration over which new allocations will be phased in will match the duration of the selected rebuilding plan (section 5.3). Larger allocation changes may be less disruptive to fishing communities if they are phased in over several years as identified by the percent point change (Table 7).

Section 5.2.7-5.2.9 describes options to implement quota-based triggers that would reallocate any commercial quota that exceeds a specified threshold. This alternative set would create state allocations that vary with overall stock abundance and resulting coastwide commercial quotas (Table 8). Options are provided to implement quota-based triggers that would reallocate any commercial quota that exceeds a specified threshold. Ultimately, the commercial quota time series selected will correspond with the time series associated with the alternative selected in section 6.1.1.

No trigger threshold was developed under the status quo state commercial allocations because no formal commercial quotas existed prior to the implementation of Amendment 1 in 2000. As such, the trigger approach is not able to be implemented under status quo commercial allocations to the states (alternative 3a-1).

For all years when the annual commercial quota is at or below a specified annual commercial quota trigger level, the state allocations would be specified by the selected option from alternative set 3a. In years when the annual coastwide quota exceeds the specified trigger level, quota up to the trigger amount would be distributed according to the chosen allocation alternative from alternative

set 3a, and the distribution of quota over the trigger would be set according to the allocations listed in Table 9.

The allocations in Table 9 were developed by using the tiered approach displayed in Table 10 where the baseline quota allocations selected from alternative set 3a determine how the quota greater than the trigger will be allocated to each state. In summary, the trigger threshold level and the associated additional quota allocation are all informed by the time series selected in alternative set 3a.

Figure 1 displays the four potential trigger thresholds and the post-transfer commercial quotas as well as total coastwide commercial landings for the years 2000-2018.

Section 5.2.10-5.2.12 describes the alternative set that would establish minimum default commercial allocations for each state within the bluefish management unit. A minimum default allocation provides each state with a fixed minimum percentage allocation of the coastwide commercial quota, and the remainder would be allocated based on the commercial allocation alternative selected from alternative set 2a. The minimum default allocation alternatives are presented in Table 11, Table 12 and Table 13 present the final state allocations with the incorporated minimum default allocations of 0.10% and 0.25%, respectively.

Commercial Allocations to the States Alternatives

Table 5: State-by-state commercial bluefish allocations along the U.S. Atlantic coast using different proposed time series. Percentages sum to > 100% due to rounding; actual allocations will not exceed 100% of quota.

Landings-Based Allocation Alternatives				
State	**3a-1**	**3a-2**	**3a-3**	**3a-4**
	No action/ Status quo (1981-1989)	**5 year (2014-2018)**	**10 year (2009-2018)**	**1/2 '81-'89 1/2 '09-'18**
ME	0.67%	0.00%	0.01%	0.49%
NH	0.41%	0.03%	0.12%	0.33%
MA	6.72%	10.64%	10.16%	7.66%
RI	6.81%	11.81%	9.64%	7.59%
CT	1.27%	1.18%	1.00%	1.19%
NY	10.39%	20.31%	19.94%	13.01%
NJ	14.82%	11.23%	13.94%	14.57%
DE	1.88%	0.58%	0.40%	1.47%
MD	3.00%	1.50%	1.84%	2.68%
VA	11.88%	4.62%	5.85%	10.26%
NC	32.06%	32.06%	32.38%	32.13%
SC	0.04%	0.00%	0.00%	0.03%
GA	0.01%	0.00%	0.00%	0.01%
FL	10.06%	6.07%	4.75%	8.59%
Total	**100.02%**	**100.01%**	**100.03%**	**100.00%**

5.2.1. Alternative 3a-1 (no action/status quo)

The no/action status quo alternative would keep the current commercial allocations to the states that were sent in Amendment 1 in 2000 using landings data from 1981-1989.

5.2.2. Alternative 3a-2

Alternative 3a-2 updates the commercial allocations to the states using landings data from 2014-2018.

5.2.3. Alternative 3a-3 (Preferred)

Alternative 3a-3 updates the commercial allocations to the states using landings data from 2009-2018.

5.2.4. Alternative 3a-4

Alternative 3a-4 updates the commercial allocations to the states using landings data from 1981-1989 and 2009-2018. Both time series are weighed equally and incorporate the current and historical performance of the fishery.

Commercial Allocations to the States Phase-In Alternatives

Table 6: Bluefish state commercial allocation change phase-in alternatives.

Phase-in Alternatives
3b-1: No phase-in
3b-2: Allocation change spread evenly over the same duration as the selected rebuilding plan

Table 7: Percentage point shifts in bluefish state commercial allocation per year for 4, 5, and 7-year phase-in options for all allocation change alternatives.

		5 year (2014-2018) See 3a-2			**10 year (2009-2018)** See 3a-3			**1/2 '81-'89 1/2 '09-'18** See 3a-4		
State	**Current Allocations**	**4-year**	**5-year**	**7-year**	**4-year**	**5-year**	**7-year**	**4-year**	**5-year**	**7-year**
ME	0.67%	-0.17%	-0.13%	-0.10%	-0.17%	-0.13%	-0.09%	-0.05%	-0.04%	-0.03%
NH	0.41%	-0.10%	-0.08%	-0.05%	-0.07%	-0.06%	-0.04%	-0.02%	-0.02%	-0.01%
MA	6.72%	0.98%	0.78%	0.56%	0.86%	0.69%	0.49%	0.23%	0.19%	0.13%
RI	6.81%	1.25%	1.00%	0.71%	0.71%	0.57%	0.40%	0.19%	0.16%	0.11%
CT	1.27%	-0.02%	-0.02%	-0.01%	-0.07%	-0.05%	-0.04%	-0.02%	-0.02%	-0.01%
NY	10.39%	2.48%	1.98%	1.42%	2.39%	1.91%	1.36%	0.65%	0.52%	0.37%
NJ	14.82%	-0.90%	-0.72%	-0.51%	-0.22%	-0.18%	-0.13%	-0.06%	-0.05%	-0.04%
DE	1.88%	-0.33%	-0.26%	-0.19%	-0.37%	-0.30%	-0.21%	-0.10%	-0.08%	-0.06%
MD	3.00%	-0.38%	-0.30%	-0.21%	-0.29%	-0.23%	-0.17%	-0.08%	-0.06%	-0.05%
VA	11.88%	-1.82%	-1.45%	-1.04%	-1.51%	-1.21%	-0.86%	-0.41%	-0.32%	-0.23%
NC	32.06%	0.00%	0.00%	0.00%	0.08%	0.06%	0.05%	0.02%	0.01%	0.01%
SC	0.04%	-0.01%	-0.01%	-0.01%	-0.01%	-0.01%	-0.01%	<0.01%	<0.01%	<0.01%
GA	0.01%	<0.01%	<0.01%	<0.01%	<0.01%	<0.01%	<0.01%	0.00%	0.00%	0.00%
FL	10.06%	-1.00%	-0.80%	-0.57%	-1.33%	-1.06%	-0.76%	-0.37%	-0.29%	-0.21%

5.2.5. Alternative 3b-1 (no action/status quo)

Alternative 3b-1 would not implement a phase-in approach and allocations would be implemented in full during the first year.

5.2.6. Alternative 3b-2 (Preferred)

Alternative 3b-2 would implement a phase-in approach, which would divide the percent shift in allocation evenly over the phase-in duration. The preferred rebuilding plan alternative dictates this duration (of 4, 5, or 7 years).

Commercial Quota Trigger Alternatives

Table 8: Trigger threshold levels for additional quota allocations.

Commercial Quota Time Series	**No Trigger** Alternative: **3c-1**	**Pre-Transfer** Alternative: **3c-2**	**Post-Transfer** Alternative: **3c-3**
No Action/Status quo [3a-1]	No trigger approach implemented	N/A	N/A
5-year (2014-2018) [3a-2]		3.67 M lbs	6.67 M lbs
10-year (2009-2018) [3a-3]		4.31 M lbs	8.21 M lbs
½ 1981-1989 and ½ 2009-2018 [3a-4]		4.31 M lbs*	8.21 M lbs*

*No formal commercial quota existed before the implementation of Amendment 1 in 2000; the average represents the quota for available years only.

Table 9: Bluefish commercial state allocations applying a trigger threshold for all commercial allocation time series.

Allocation of additional quota greater than the trigger threshold.				
State	**Status quo (1981-1989)**	**5 year (2014-2018)**	**10 year (2009-2018)**	**1/2 '81-'89 1/2 '09-'18**
ME	0.10%	0.10%	0.10%	0.10%
NH	0.10%	0.10%	0.10%	0.10%
MA	7.50%	16.60%	19.60%	7.50%
RI	7.50%	16.60%	7.50%	7.50%
CT	3.00%	3.00%	0.10%	3.00%
NY	15.12%	16.60%	19.60%	17.03%
NJ	15.12%	16.60%	19.60%	17.03%
DE	3.00%	0.10%	0.10%	3.00%
MD	3.00%	3.00%	3.00%	3.00%
VA	15.12%	3.00%	7.50%	17.03%
NC	15.12%	16.60%	19.60%	17.03%
SC	0.10%	0.10%	0.10%	0.10%
GA	0.10%	0.10%	0.10%	0.10%
FL	15.12%	7.50%	3.00%	7.50%
Total	100%	100%	100%	100%

Table 10: Range of baseline quotas and the associated additional quota allocation once a trigger threshold is surpassed.

Range of Baseline Quota Tiers	Associated Additional Quota Allocations
<=1%	0.10%
>1-5%	3.00%
>5-10%	7.50%
>10%	Remainder

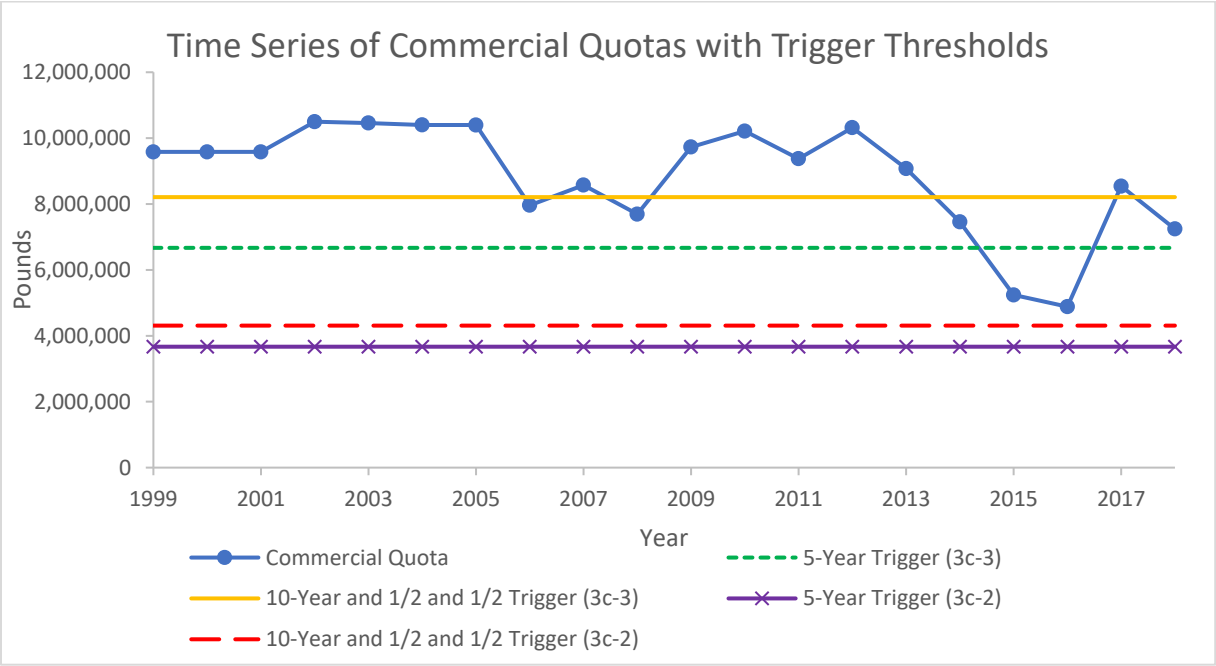

Figure 1: Trigger thresholds for additional quota compared to commercial quotas.

5.2.7. Alternative 3c-1 (no action/status quo) (Preferred)

The selection of alternative 3c-1 would implement no trigger, which is consistent with the current FMP.

5.2.8. Alternative 3c-2

Alternative 3c-2 would implement a trigger level equal to the average of the initial commercial quota for each time series associated with alternative set 3a that do not include transfers from the recreational to commercial fishery.

5.2.9. Alternative 3c-3

Alternative 3c-3 would implement a trigger level equal to the average of the final commercial quota that includes transfers from the recreational to the commercial fishery.

Commercial Minimum Default Allocation Alternatives

Table 11: Minimum default allocation alternatives.

Minimum Default Allocation Alternatives	
3d-1	No Action/Status quo: No Minimum Default Allocation
3d-2	0.10% Minimum Default Allocation
3d-3	0.25% Minimum Default Allocation

Table 12: State-by-state commercial bluefish allocations along the U.S. Atlantic coast using different proposed time series and a minimum default allocation of 0.10%.

3d-2		0.10% Minimum Default Allocation			
State	**No Action 1981-1989**	**Status quo 1981-1989**	**5-year 2014-2018**	**10-year 2009-2018**	**1/2 '81-'89 1/2 '09-'18**
ME	0.67%	0.76%	0.10%	0.11%	0.58%
NH	0.41%	0.50%	0.13%	0.22%	0.42%
MA	6.72%	6.73%	10.59%	10.12%	7.65%
RI	6.81%	6.81%	11.74%	9.61%	7.58%
CT	1.27%	1.35%	1.26%	1.09%	1.28%
NY	10.39%	10.34%	20.12%	19.76%	12.93%
NJ	14.82%	14.71%	11.17%	13.85%	14.46%
DE	1.88%	1.95%	0.67%	0.49%	1.55%
MD	3.00%	3.06%	1.57%	1.92%	2.75%
VA	11.88%	11.81%	4.65%	5.87%	10.22%
NC	32.06%	31.71%	31.71%	32.03%	31.78%
SC	0.04%	0.14%	0.10%	0.10%	0.13%
GA	0.01%	0.11%	0.10%	0.10%	0.11%
FL	10.06%	10.02%	6.08%	4.78%	8.57%

Table 13: State-by-state commercial bluefish allocations along the U.S. Atlantic coast using different proposed time series and a minimum default allocation of 0.25%.

3d-3		0.25% Minimum Default Allocation			
State	No Action 1981-1989	Status quo 1981-1989	5-year 2014-2018	10-year 2009-2018	1/2 '81-'89 1/2 '09-'18
ME	0.67%	0.90%	0.25%	0.26%	0.72%
NH	0.41%	0.65%	0.28%	0.36%	0.56%
MA	6.72%	6.73%	10.52%	10.05%	7.64%
RI	6.81%	6.82%	11.65%	9.56%	7.57%
CT	1.27%	1.48%	1.39%	1.22%	1.40%
NY	10.39%	10.28%	19.85%	19.49%	12.80%
NJ	14.82%	14.55%	11.09%	13.70%	14.31%
DE	1.88%	2.06%	0.81%	0.64%	1.67%
MD	3.00%	3.15%	1.69%	2.03%	2.84%
VA	11.88%	11.71%	4.71%	5.89%	10.16%
NC	32.06%	31.19%	31.19%	31.50%	31.25%
SC	0.04%	0.29%	0.25%	0.25%	0.28%
GA	0.01%	0.26%	0.25%	0.25%	0.26%
FL	10.06%	9.96%	6.10%	4.83%	8.54%

5.2.10. Alternative 3d-1 (no action/status quo)

The selection of alternative 3d-1 would implement no minimum default allocation, which is consistent with the current FMP.

5.2.11. Alternative 3d-2 (Preferred)

Under alternative 3d-2, 0.1% of the commercial quota would be allocated evenly amongst the 14 states within the bluefish management unit resulting in 1.4%. Then, the remaining 98.6% of the commercial quota would be distributed in accordance with the preferred alternative in alternative set 2a. The intent of a 0.1% minimum default allocation is to ensure no state completely loses their allocation through the reallocation process.

5.2.12. Alternative 3d-3

Under alternative 3d-3, 0.25% of the commercial quota would be allocated evenly amongst the 14 states within the bluefish management unit resulting in 3.5%. Then, the remaining 96.5% of the commercial quota would be distributed in accordance with the preferred alternative in alternative set 2a. The intent of a 0.25% minimum default allocation is to ensure no state completely loses their allocation through the reallocation process.

5.3. Rebuilding Plan Alternatives

The 2019 operational stock assessment indicates that the bluefish stock is overfished, but overfishing was not occurring in 2019[3]. Section 304(e)(3) of the MSA states: "Within 2 years after…notification…the appropriate Council…shall prepare and implement a fishery management plan, plan amendment, or proposed regulations…to end overfishing immediately in the fishery and

[3] 2019 Bluefish Operational Stock Assessment Report

to rebuild affected stocks of fish…" Furthermore, the MSA states that FMPs shall "contain the conservation and management measures… necessary and appropriate for the conservation and management of the fishery to prevent overfishing and rebuild overfished stocks, and to protect, restore, and promote the long-term health and stability of the fishery." If adequate progress is not made through the rebuilding plan, the regional office will immediately make revisions necessary to achieve adequate progress. NOAA Fisheries technical guidance on MSA National Standard 1 recommends that in these situations the rebuilding fishing mortality proxy (F) be set at 75% of the target F. This means that if the selected rebuilding plan is demonstrating difficulty in achieving the target on time, F may be further decreased to achieve a rebuilt stock.

Spawning stock biomass (SSB) was estimated to be 91,041 metric tons in 2018, or 46% of the SSB target. The biomass target is the SSB associated with the F that achieves maximum sustainable yield (MSY) or SSB_{MSY} proxy. Under a rebuilding plan, the stock will be considered rebuilt once SSB reaches the SSB_{MSY} proxy equal to 198,717 mt (Figure 2). Once rebuilt, the MSYproxy is estimated to be 26,677 mt. Total fishing mortality is also available for reference (Figure 3). Again, MSA requires the overfished stock to be rebuilt within 10 years once the regional office notifies the Council of the overfished state. Under the current amendment timeline, the rebuilding plan would be implemented at the beginning of 2022.

In mid-2021, a management track assessment will be conducted to re-assess the bluefish stock. As a result of this assessment, the biological reference points may shift. Moreover, rebuilding projections will be rerun to reflect the updated status of the stock. Then, Council and Commission staff will work with the NOAA Fisheries regional office and the Scientific and Statistical Committee (SSC) to identify how these new projections will be translated into future specifications.

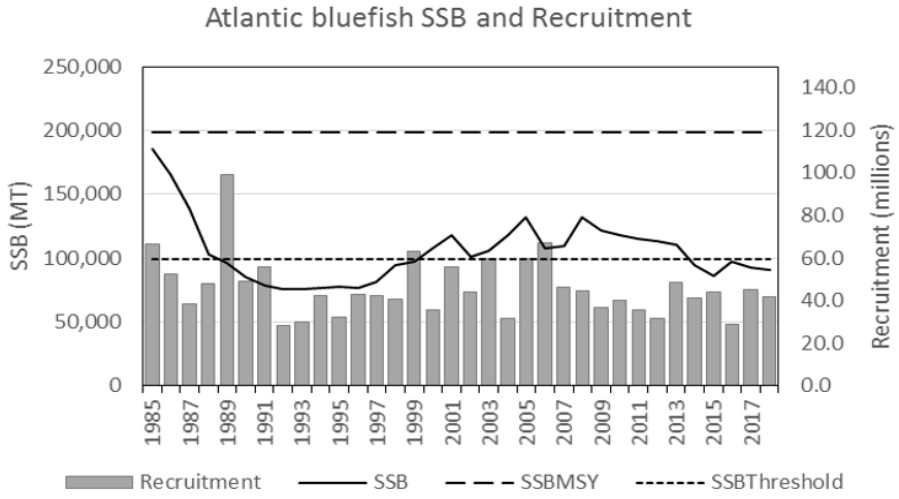

Figure 2: Atlantic bluefish SSB and recruitment at age 0 (R; gray vertical bars) by calendar year. The horizontal dashed line is the updated SSBMSY proxy = SSB35% = 198,717 mt.

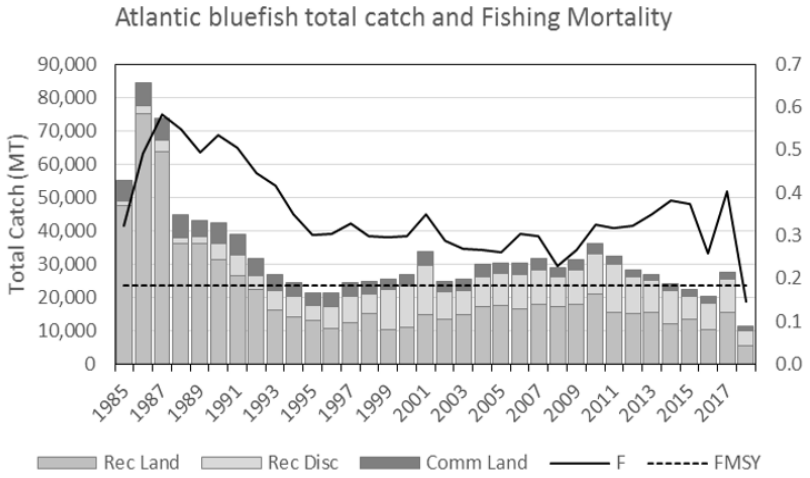

Figure 3: Total fishery catch (metric tons; mt; solid line) and fishing mortality (F, peak at age 3; squares) for Atlantic bluefish. The horizontal dashed line is the updated FMSY proxy = F35% = 0.183.

This section introduces the four rebuilding plan alternatives under consideration, including status quo (Table 14 and Figure 4). SSB values and catch projections are provided for reference for each of the three rebuilding plans. The proposed rebuilding plans assume all the projected catch will be caught. Regardless of which alternative is selected, the stock assessment scientist will perform assessment updates and rerun projections every two years. Each projection is based on current stock status information, meaning the catch values are subject to change depending upon the latest assessment. The SSC will then use the projections to develop recommendations for the specification packages that remain in line with the goals of the rebuilding plan.

Only one alternative can be selected from alternative set 4.

Table 14: Rebuilding projection alternatives and the duration until rebuilt.

Alternative	Rebuilding Plan	Duration	Adjustment to Council Risk Policy
4a	No Action/ Status Quo	N/A	N/A
4b	Constant Harvest	4 years	No
4c	P* (Council Risk Policy)	5 years	N/A
4d	Constant Fishing Mortality	7 years	Yes

Figure 4: Rebuilding plan projections including catch (top) and SSB (bottom) for alternatives 4b, 4c, and 4d.

5.3.1. Alternative 4a *(no action/status quo)*

The no action/status quo alternative would not initiate a rebuilding plan, no changes to the current risk policy would occur, and the current specifications would remain in place, as described in the

proposed rule for the 2021 specifications package[4].The Council is legally bound to develop a rebuilding plan and this alternative is included as a formality.

5.3.2. Alternative 4b

The 4-year constant harvest rebuilding alternative specifies that the stock be rebuilt by the end of 2025. The rebuilding plan projection presented in Table 15 and Figure 4 demonstrates that the projected catch and SSB values remains constant across the four years. However, as previously mentioned, the stock assessment scientist will conduct assessment updates and rerun projections every 2 years, which means the catch values may be adjusted up or down depending upon the assessment results. This alternative does not require an adjustment to the Council's risk policy because the catches are less than those described under the P* approach. In 2022, fishing mortality rates peak at F=0.064, but still remains below the overfishing threshold (MSY Proxy above 0.183). Rebuilding projections indicate that this alternative would be expected to rebuild bluefish to slightly above the SSB_{MSY} proxy, which was defined in the recent bluefish operational assessment (198,717 mt), by 2025.

Table 15: Constant harvest projection to rebuild over 4 years.

Year	SSB (MT)	Recruits (000s)	F	Catch (MT)	SSBMSY (MT)	SSBthreshold (MT)
2019	92,779	43,282	0.279	22,614	198,717	99,359
2020	102,165	43,455	0.087	7,385	198,717	99,359
2021	115,085	43,428	0.075	7,385	198,717	99,359
2022	137,450	43,460	0.064	7,385	198,717	99,359
2023	162,495	43,353	0.052	7,385	198,717	99,359
2024	197,141	43,239	0.045	7,385	198,717	99,359
2025	229,121	43,379	0.039	7,385	198,717	99,359

5.3.3. Alternative 4c

The 5-year P* Council risk policy rebuilding alternative specifies that the stock be rebuilt by the end of 2026. The catch values shown in Table 16 are in accordance with the ABC control, which is guided by the Council's risk policy. Figure 4 provides a visual of catch and SSB rebuilding over the 5-year period. In 2022, the probability of overfishing is 29%. This coincides with a projected fishing mortality rate of F=0.098, which remains below the overfishing threshold (FMSY proxy = F35% = 0.183). Rebuilding projections indicate that this alternative would be expected to rebuild bluefish to slightly above the SSB_{MSY} proxy, which was defined in the recent bluefish operational assessment (198,717 mt), by 2026. As previously stated, the ABC values presented in Table 16 are based on the 2019 operational assessment and are subject to revision following each stock assessment update.

[4] https://www.federalregister.gov/documents/2020/11/05/2020-24364/fisheries-of-the-northeastern-united-states-atlantic-bluefish-fishery-2021-bluefish-specifications.

Table 16: Rebuilding projection based on P* using the Council's risk policy to rebuild over 5-years.

Year	OFL Total Catch (MT)	ABC Total Catch (MT)	ABC F	ABC Pstar	ABC SSB (MT)	SSBMSY (MT)	SSBthreshold (MT)
2019	15,368	22,614	0.280	0.183	92,732	198,717	99,359
2020	16,212	7,385	0.087	0.207	102,174	198,717	99,359
2021	17,205	7,385	0.075	0.239	115,012	198,717	99,359
2022	20,237	11,222	0.098	0.291	135,586	198,717	99,359
2023	23,998	15,181	0.113	0.338	154,257	198,717	99,359
2024	26,408	18,653	0.127	0.394	176,619	198,717	99,359
2025	28,807	23,048	0.144	0.431	191,063	198,717	99,359
2026	30,848	26,677	0.157	0.450	207,619	198,717	99,359

5.3.4. Alternative 4d (Preferred) – Risk Policy Adjustment

The 7-year constant fishing mortality rebuilding plan alternative specifies that the fishing mortality rate be set constant across the duration of the rebuilding period with a rebuilt date set for 2028. Table 17 presents the projected catch and SSB values associated with the rebuilding plan and Figure 4 presents catch and SSB over time. Starting in 2022 and for the duration of the rebuilding plan, the fishing mortality rate is projected to be at F=0.166, which remains below the overfishing threshold. However, because these catches are higher than the P* catches described in 4c, the Council would also adjust its risk policy for this rebuilding plan. The Council's current risk policy states that the SSC should provide ABCs that are the lesser of rebuilding ABCs or standard risk policy (P*) ABCs (4c follows the current P* approach). The P* catches in 4c are lower than 4d. In absence of a risk policy adjustment, ABCs prescribed under alternative 4c would override those in 4d. The adjustment to the Council risk policy would be limited to only bluefish for this specific rebuilding alternative. Approval of this adjustment to the risk policy is necessary for the implementation of any rebuilding plan exceeding five years with the associated higher catches. Rebuilding projections indicate that this alternative would be expected to rebuild bluefish to slightly above the SSB_{MSY} proxy, which was defined in the recent bluefish operational assessment (198,717 mt), by 2028. As previously discussed, the catch values produced by the projection are subject to change following new stock assessment information.

For this alternative, the Council would adjust its risk policy to indicate that in this, and only this, specific case of bluefish rebuilding initiation, the risk policy of the Council is adjusted to use this 7-year constant F rebuilding timeline (thus limiting this adjustment both temporally and by species). This is the only way that the Council can consider a rebuilding plan longer than five years and allow the higher associated catches. Flexibility to adjust the risk policy through specifications or a framework/environmental assessment was explicitly anticipated in the Omnibus ACL/AM Amendment and implementing regulations[5].

[5] https://www.mafmc.org/s/2011-Omnibus-ABC-AM-Amendment.pdf

The projections match this risk policy modification for 2022-2023 and are currently the best scientific information available. Allowing a longer rebuilding timeline allows increased ABCs, and those increases affect many of the other specifications. The specifications are reviewed each year by the SSC, Monitoring Committee, and Council, and the Council can modify future years' specifications.

Table 17: Constant 7-year F rebuilding projection.

Year	SSB (MT)	Recruits (000s)	F	Catch (MT)	SSBMSY (MT)	SSBthreshold (MT)
2019	92,755	43,320	0.279	22,614	198,717	99,359
2020	102,186	43,531	0.087	7,385	198,717	99,359
2021	115,073	43,310	0.075	7,385	198,717	99,359
2022	132,150	43,390	0.166	18,477	198,717	99,359
2023	143,271	43,292	0.166	20,813	198,717	99,359
2024	158,152	43,272	0.166	22,033	198,717	99,359
2025	168,006	43,395	0.166	23,532	198,717	99,359
2026	182,311	43,336	0.166	25,121	198,717	99,359
2027	191,855	43,578	0.166	26,191	198,717	99,359
2028	198,520	43,411	0.166	26,939	198,717	99,359

5.4. Quota Transfer Alternatives

Alternatives must be selected from alternative set 5a and 5b. Only one alternative can be selected from each set.

The following alternatives describe options for allowing annual transfer of quota between the recreational and commercial sectors as part of the specifications setting process (i.e., the annual process of setting or reviewing catch and landings limits for the upcoming fishing year). Section 5.4.1 and 5.4.2 discusses quota transfer process (Table 18 and Table 19) alternatives while 5.4.3 and 5.4.4 addresses options for a cap on the total amount of a transfer (Table 20).

Table 18: Alternatives for annual transfer of quota between the commercial and recreational sectors.

Alternatives	Annual Quota Transfer Alternatives
5a-1	No Action/Status Quo
5a-2	Allow for optional bi-directional transfers through the annual specifications process with pre-defined guidelines and process. The transfer would consist of a portion of the total ABC in the form of a landings limit (i.e., commercial quota and RHL) transfer. Transfers would not occur if the stock is overfished or overfishing is occurring.

Table 19: Quota transfer process during a typical specifications cycle under alternative 5a-1. The quota transfer process would differ slightly under alternative 5a-2 as described in the green shaded rows.

July: **Assess the need for a transfer**	Staff and the Monitoring Committee (MC) assesses the potential need for a transfer and develop recommendations to the Council and Board as part of the specifications setting or review process. The MC considers the expected commercial quota and RHL (pending Council and Board review/approval) in the coming year, and each sector's performance relative to landings limits in recent years. The MC has very limited data for the current year and is not able to develop precise current year projections of landings for each sector. The MC also considers factors including but not limited to: • Projected changes in stock size, availability, or year class strength; • Recent or expected changes in management measures; • Recent or expected changes in fishing effort; The MC considers how these factors might have different impacts on the commercial and recreational sectors. The effects of these considerations are largely difficult to quantify and there is currently no methodology that allows the MC to quantitatively determine the need for a transfer with a high degree of precision. The MC uses their best judgement to recommend whether a transfer furthers the Council and Board's policy objectives, using mostly recent trends by sector.
August: **Council and Board consider whether to recommend a transfer**	The Council and Board considers MC recommendations on transfers while setting or reviewing annual catch and landings limits. Similar to the process for jointly setting catch limits, the Council and Board needs to jointly agree on the transfer amount .
August: **Alternative 5a-2**	In addition to the steps described in the row above, the Council and Board would also need to jointly consider the direction of transfer if alternative 5b-2 were to be adopted.
October: **Council staff submits specifications package to NOAA Fisheries**	Council staff prepares and submits supporting documents if needed to modify catch limits or implement transfers.
Mid-December: **Recreational measures adopted***	The Council and Board would adopt federal waters recreational measures and a general strategy for coastwide recreational management including any reductions or liberalizations needed in state waters. These recommendations are based on the expected post-transfer RHL which are not always implemented via final rule but have usually been recommended by the Council and Board and proposed to the public.
Late December: **Final specifications published**	NOAA Fisheries approves and publishes the final rule for the following year's catch and landings limits (if new or modified limits are needed), including any transfers.

January 1: **Fishing year specifications effective, including any transfers**	Fishing year specifications including any transfers would be effective January 1.
February: **NOAA Fisheries post-implementation review and adjustment**	NOAA Fisheries compares the estimate of recreational landings for the previous year to the RHL to make any necessary adjustments before finalizing the amount of quota transferred. The adjustment notice with final specifications is usually published in March/April.
February: **Alternative 5a-2**	No post-implementation reviews and adjustments to the transfer amount would occur given the final rule would recently have published, and recreational measures would have already been considered based on expected post-transfer RHLs.

*While this step is not directly part of the quota transfer process, the timing of the recreational measures setting process influences the necessary timeline of transfer-related decisions.

Table 20: Proposed transfer caps for sector-based transfers.

Alternatives	Transfer Cap
5b-1	No Action/Status Quo
5b-2	Up to 10% of the ABC

Sector Transfer Provisions

5.4.1. Alternative 5a-1 *(no action/status quo)*

Under alternative 5a-1, transfers from the recreational to the commercial sector could continue but transfers from the commercial to the recreational sector would not be included as an option in the FMP.

5.4.2. Alternative 5a-2 (Preferred)

Under alternative 5a-2, each year during the setting or review of annual catch limits, the Council and Board would have the ability to recommend a transfer of quota between the recreational and commercial sectors, affecting the final commercial quota and RHL. The Council and Board could recommend a transfer from the commercial fishery to the recreational fishery or from the recreational fishery to the commercial fishery. The transfer amount would not exceed the cap adopted via one of the sub-alternatives under alternative set 5b. Table 19 describes how the process of transfers works within the Council and Board's current specifications process under alternative 5a-1 and would work under alternative 5a-2.

Transfer Caps

5.4.3. Alternative 5b-1 *(no action/status quo)*

The no action/status quo transfer cap alternative 5b-1 keeps the existing commercial sector transfer cap in place. If the pre-transfer commercial share of the ACL is less than 10.5 million and the Council and Board determines the need for a transfer from the recreational sector to the commercial sector, the commercial quota may be allocated up to 10.5 million lb as its quota. If the Council and Board selects alternative 5b-1 along with alternative 5a-2, which allows for bi-directional transfers, no transfer cap would be implemented for the recreational sector.

Specifically, if the Council and Board determines the need for a transfer from the commercial sector to the recreational sector, the transfer amount and the RHL would not be subject to any cap.

5.4.4. Alternative 5b-2 (Preferred)

Under alternative 5b-2, any transfer from one sector to the other would be capped at 10% of the ABC (Table 20). This approach allows quota transfers to scale with biomass. The size of the transfer cap will increase and decrease with changes in the acceptable biological catch that are associated with changes in the stock size. Unlike 5b-1, transfers could still occur even when the commercial quota is above 10.5 million pounds.

5.5. Management Uncertainty Alternatives

This alternative set is included to modify how the Monitoring Committee accounts for management uncertainty (Table 21). In the current FMP, the fishery-level ACL may be reduced by a buffer to account for sources of management uncertainty. The ACL minus the management uncertainty buffer equals the ACT as displayed in the bluefish flowchart (Figure 5). The Monitoring Committee annually identifies and reviews the relevant sources of management uncertainty to recommend ACTs for the commercial and recreational fishing sectors as part of the bluefish specification process.

Table 21: Proposed management uncertainty alternatives.

Alternatives	Management Uncertainty Alternatives
6a	No Action/Status Quo
6b	Post-Sector Split

5.5.1. Alternative 6a *(no action/status quo)*

The status quo option (alternative 6a) would maintain the bluefish flowchart as displayed in Figure 5, which demonstrates that any uncertainty buffer applied to the fishery-level ACL applies to both sector specific ACTs equally.

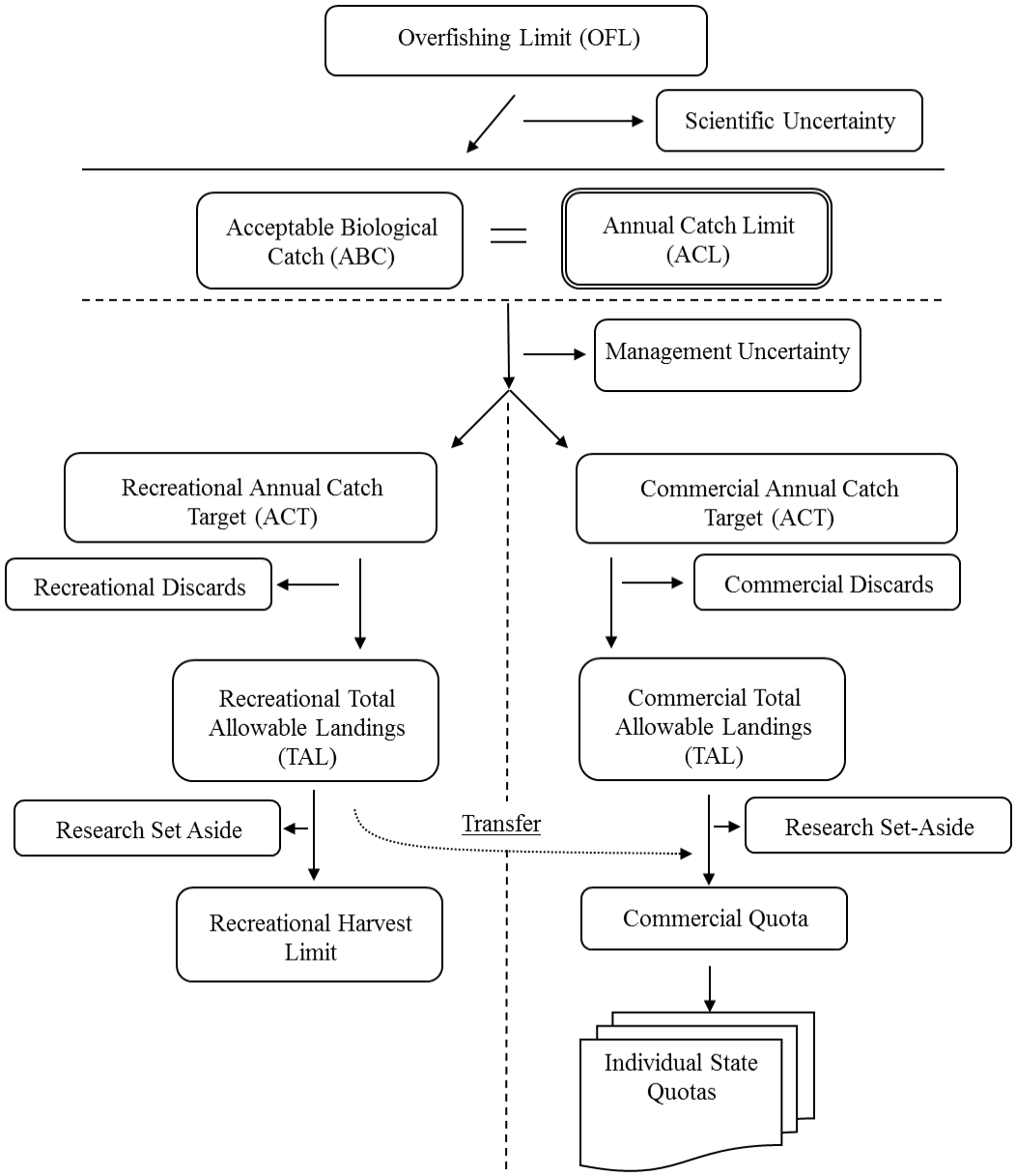

Figure 5: Current bluefish flow chart representing a reduction for management uncertainty prior to the sector split.

5.5.2. Alternative 6b (Preferred)

Alternative 6b would provide greater flexibility by establishing ACLs and ACTs for each sector as displayed in the bluefish flow chart in Figure 6. Specifically, the proposed flowchart allows for management uncertainty to be accounted for within each sector. This targeted approach would allow for the identification of sources of management uncertainty that are specific to one sector and are not present in the other.

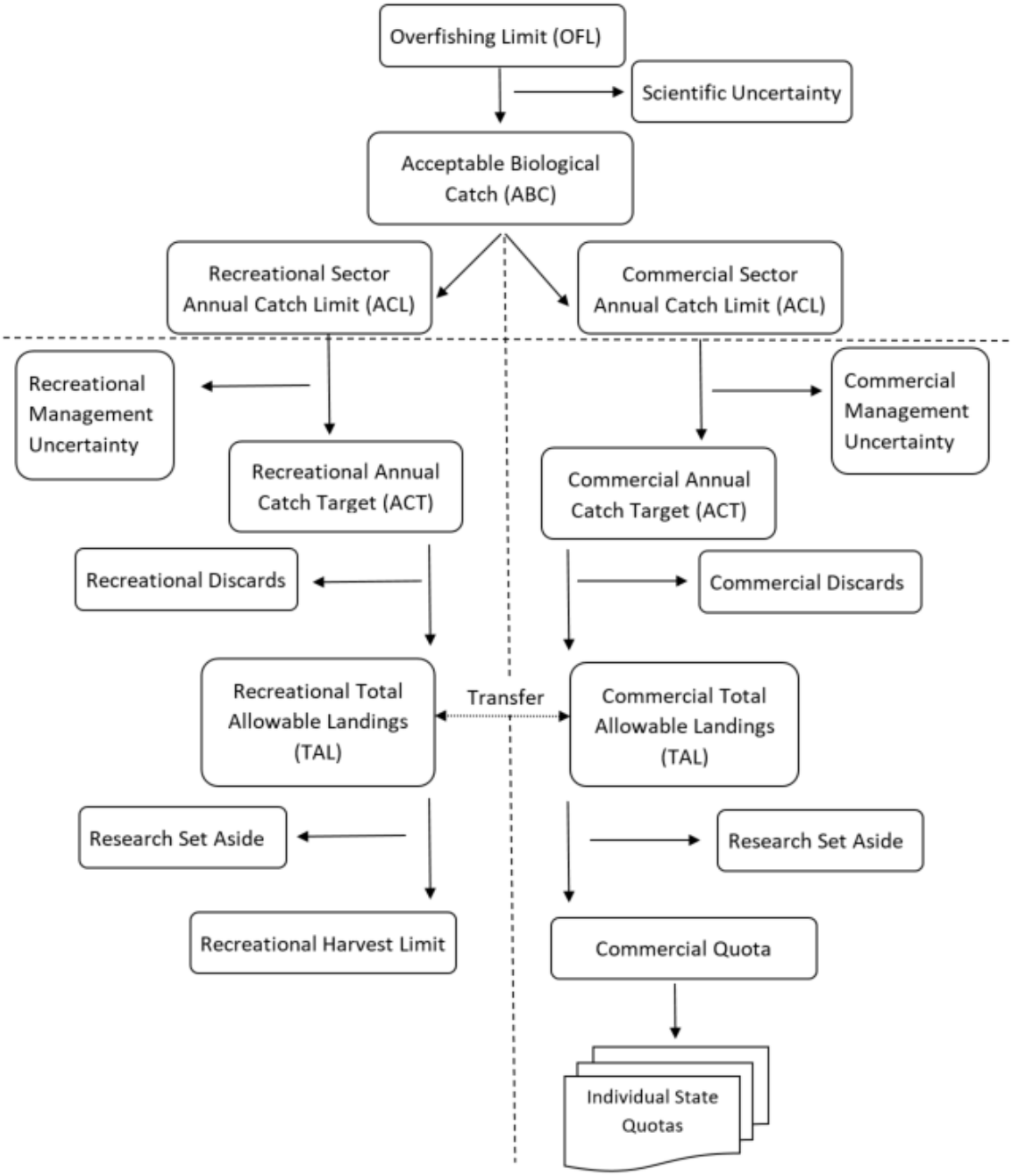

Figure 6: Proposed bluefish flow chart including sector specific management uncertainty.

6. DESCRIPTION OF THE AFFECTED ENVIRONMENT

The affected environment consists of those physical, biological, and human components of the environment expected to experience impacts if any of the actions considered 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; Beanlands and Duinker 1984).

The VECs include:

- Managed species (i.e. bluefish) and non-target species
- Physical 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 bluefish stock (section 6.1.1) and non-target species (section 6.1.2). Non-target species commonly caught in the bluefish commercial fishery are described in section 6.1.2.2, and those often caught in the recreational fishery are described in section 6.1.2.3.

6.1.1. Bluefish

Bluefish (*Pomatomus saltatrix*) are distributed worldwide. In the western North Atlantic, the population ranges from Nova Scotia and Bermuda to Argentina. Bluefish travel in schools of like-sized individuals and undertake seasonal migrations, moving into the Middle Atlantic Bight (MAB) during the spring, and south or farther offshore during the fall. Within the MAB they occur in large bays and estuaries as well as across the entire continental shelf. Juvenile stages have been recorded in all estuaries within the MAB, but eggs and larvae occur in oceanic waters (Able and Fahay 1998). Bluefish live to age 12 or greater (Salerno et al. 2001), and may reach a length of 3.5 ft, and a weight of 27 pounds (Bigelow and Schroeder 2002).

Bluefish eat a wide variety of prey items. The species has been described by Bigelow and Schroeder (2002) as “perhaps the most ferocious and bloodthirsty fish in the sea, leaving in its wake a trail of dead and mangled mackerel, menhaden, herring, alewives, and other species on which it preys." Bluefish born in a given year (young of the year) typically fall into two distinct size classes suggesting that there are two spawning events along the east coast. More recent studies suggest that spawning is a single, continuous event, but that young are lost from the middle portion resulting in the appearance of a split season. As a result of the bimodal size structure of juveniles, young are referred to as the spring-spawned cohort or summer-spawned cohort. In the MAB, the spring cohort appears to be the primary source of fish that recruit into the adult population.

In August 2019, a bluefish operational assessment, which included revised bluefish MRIP estimates through 2018, changed the stock status and biological reference points from SAW 60, which utilized data through 2014.

The biological reference points for bluefish revised through the 2019 operational assessment include a fishing mortality threshold of $F_{MSY} = F_{35\%}$ (as the F_{MSY} proxy) = 0.183, and a biomass reference point of $SSB_{MSY} = SSB_{35\%}$ (as the SSB_{MSY} proxy) = 438.10 million lbs (198,717 mt).

The minimum stock size threshold (1/2 SSB_{MSY}), is estimated to be 219.05 million lbs (99,359 mt). SSB in 2018 was 200.71 million lbs (91,041 mt) (Figure 2).

Operational assessment results indicated that the bluefish stock was overfished and overfishing was not occurring in 2018 relative to the biological reference points. Fishing mortality on the fully selected age 2 fish was 0.146 in 2018, 80% of the updated fishing mortality threshold reference point F_{MSY} proxy = $F_{35\%}$ = 0.183 (Figure 3). There was a 90% probability that the fishing mortality rate in 2018 was between 0.119 and 0.205.

The bluefish stock has experienced a decline in SSB over the past decade, coinciding with an increasing trend in F. Recruitment has remained fairly steady, fluctuating just below the time-series mean of 46 million fish. Both commercial and recreational fisheries had poor catch in 2016 (44.91 million lbs or 20,370 mt), and 2018 (24.89 million lbs or 11,288 mt), resulting in the second lowest and lowest catches on record, respectively. As a result of the very low catch in 2018, fishing mortality was estimated below the reference point for the first time in the time-series. These lower catches are possibly a result of availability. Anecdotal evidence suggests larger bluefish stayed offshore and inaccessible to most of the recreational fishery during these two years (Wood 2019).

The Council is initiating a rebuilding plan within this amendment that must be submitted by November 2021 (two years after receiving notice from the NMFS) with the goal of rebuilding the bluefish stock in less than 10 years.

6.1.2. Non-Target Species

6.1.2.1 Identification of Non-Target Species

The term “non-target species” includes species either landed or discarded (bycatch) as part of fisheries activities used to harvest bluefish. The term "bycatch," as defined by the MSA, means fish that are harvested in a fishery but that are not sold or kept for personal use. Bycatch includes the discard of whole fish at sea or elsewhere, including economic and regulatory discards, and fishing mortality due to an encounter with fishing gear that does not result in capture of fish (i.e., unobserved fishing mortality). Bycatch does not include fish released alive under a recreational catch and release fishery management program.

Recreational fishing, which dominates the catch of bluefish, is almost exclusively rod and reel, and includes shoreside recreational anglers, party/charter boats, and private recreational boats. The primary gear types used in the commercial fisheries that land bluefish include gillnets, handline, and otter trawls. Although there are other small localized fisheries, such as the beach seine fishery that operates along the Outer Banks of North Carolina that also catch bluefish, many of these fisheries do not fish exclusively for bluefish; but target a combination of species including croaker, mullet, Spanish mackerel, spot, striped bass, and weakfish. There is a lot of seasonality to both the commercial and recreational fisheries for bluefish due to the migratory nature of the species.

Management measures for both the commercial and recreational non-target species managed by the Mid-Atlantic and/or New England Fishery Management Councils include AMs to address ACL overages through reductions in landings limits in following years. AMs for these species take discards into account. These measures help to mitigate negative impacts from discards in the commercial and recreational fisheries for bluefish.

6.1.2.2 Commercial Non-Target Species

Given the mixed species nature of the bluefish fishery, incidental catch of non-target species does occur and impacts to those species are considered (Table 22 and Table 23). Bluefish catch was observed or reported by captains on trips 35 times in 2018. Table 22 reports the percentage of total catch on bluefish observed or captain reported hauls on a trip in 2018 using the observer database. All species reported represent 5% or greater of the observed or reported catch on a trip where bluefish was target species 1 or 2. Smooth and spiny dogfish, scup, Atlantic bonito, striped bass, and black sea bass were the most common caught non-target species on commercial bluefish trips.

Table 22: Percent of commercial non-target species caught on an observed or captain reported haul where bluefish was either target species 1 or 2 in 2018.

	% of total catch on bluefish observed or reported trips, 2018
Smooth Dogfish	20%
Spiny Dogfish	20%
Scup	17%
Atlantic Bonito	13%
Striped Bass	11%
Black Sea Bass	6%
Other	13%

Table 23: Most recent stock status information for commercial non-target species identified in this action for the bluefish fishery.

	Stock Biomass Status	Fishing Mortality Rate Status
Smooth Dogfish	Not overfished	Overfishing not occurring
Spiny Dogfish	Not overfished	Overfishing not occurring
Scup	Not overfished	Overfishing not occurring
Atlantic Bonito	Unknown - ICCAT	Unknown - ICCAT
Striped Bass	Overfished; SSB_{2017} estimated at 68,476 mt compared to the $SSB_{Threshold}$ of 91,436 mt	Overfishing occurring; F_{2017} estimated at 0.307 compared to the $F_{Threshold}$ of 0.240
Black Sea Bass	Not overfished	Overfishing not occurring

Of all non-target species caught on hauls where bluefish was target species 1 or 2 on a trip, striped bass was the only species with a negative stock status (overfished and overfishing occurring). Bluefish and striped bass co-exist in similar waters throughout their life histories. However, despite striped bass being caught on the limited number of bluefish trips, these interactions remain low. Typically, bluefish are a fallback species for fishermen that are not catching their primary target and are often bycatch in other fisheries. Overall, the impacts on non-target species are low, but are not expected to improve the stock status for striped bass. In contrast, the negative stock status of striped bass may result in less directed trips for bluefish due to fishermen preferring to target other species.

6.1.2.3 Recreational Non-Target Species

A "species guild" approach was used to examine non-target species interactions in the recreational fishery for bluefish. This analysis identified species that were caught together on 5% or more of recreational trips in 2018. The Atlantic coast was split into two regions (Maine to Virginia and North Carolina to Florida) to more effectively classify species based on region. In the north, black sea bass and scup were highly correlated with bluefish in the recreational fishery. In the south, Spanish mackerel and spotted seatrout were highly correlated with bluefish in the recreational fishery. Other frequently caught non-target species included striped bass, paralichthys flounders, pinfish, and lizard fish (J. Brust, personal communication December 2019).

Summer flounder, scup, and black sea bass are jointly managed by the MAFMC and the ASMFC. The most recent assessments indicate the stocks are not overfished and overfishing was not occurring (2018 – summer flounder and 2019 – scup and black sea bass).

Spanish mackerel is jointly managed by the South Atlantic Fishery Management Council and the ASMFC. The most recent assessment indicates (2012) the stock is not overfished and overfishing is not occurring.

Spotted sea trout have not been assessed coastwide, therefore their overfished and overfishing status is unknown.

The status of recreational non-target species relevant to this action are summarized in Table 24.

Table 24: Stock status information for non-target species in the recreational bluefish fishery.

Species	Biomass Status	Fishing Mortality Rate Status
Summer Flounder	Not overfished	Overfishing not occurring
Scup	Not overfished	Overfishing not occurring
Black Sea Bass	Not overfished	Overfishing not occurring
Spanish Mackerel	Not overfished	Overfishing not occurring
Spotted Sea Trout	Unknown (not assessed)	Unknown (not assessed)
Striped Bass	Overfished	Overfishing occurring

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 drawn from Stevenson et al. (2004), unless otherwise noted.

6.2.1 Physical Environment

A description of the physical and biological characteristics of the environment in the mid-Atlantic subregion is found in sections 2.2 and 2.2.1 of Amendment 1. Bluefish are a migratory pelagic species found in most temperate and tropical marine waters throughout the world. Along the U.S. Atlantic coast, bluefish are commonly found in estuarine and continental shelf waters. Bluefish are a schooling species that migrate in response to seasonal changes, moving north and inshore during spring and south and offshore in the late autumn. The Atlantic bluefish fishery exploits what is considered to be a single stock of fish.

An additional description of the physical and biological characteristics of specific habitats found within the jurisdiction of the Northeast Region can be found in Stevenson et al. (2004). Bluefish inhabit the Northeast U.S. shelf ecosystem, which has been described as including the area from the Gulf of Maine south to Cape Hatteras, extending from the coast seaward to the edge of the continental shelf, including the slope sea offshore to the Gulf Stream. The continental slope includes the area east of the shelf, out to a depth of 2000 m. Four distinct sub-regions comprise the NOAA Fisheries Northeast Region: the Gulf of Maine, Georges Bank, the Mid-Atlantic Bight, and the continental slope.

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

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

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

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 (Stevenson et al. 2004).

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).

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

Like all the world’s oceans, the western North Atlantic is experiencing changes to the physical environment due to global climate change. These changes include warming temperatures; sea level rise; ocean acidification; changes in stream flow, ocean circulation, and sediment deposition; and increased frequency, intensity, and duration of extreme climate events. These changes in physical habitat can impact the metabolic rate and other biological processes of marine species. As such, these changes have implications for the distribution and productivity of many marine species.

Several studies demonstrate that the distribution and productivity of several species in the Mid-Atlantic have changed over time, likely because of changes in physical habitat conditions such as temperature (e.g., Weinberg 2005, Lucey and Nye 2010, Nye et al. 2011, Pinsky et al. 2013, Gaichas et al. 2015).

6.2.2 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 25 summarizes EFH within the affected area of this action for federally-managed species and life stages that are vulnerable to bottom tending fishing gear. EFH maps and text descriptions for these species and life stages can be found at www.fisheries.noaa.gov/resource/map/essential-fish-habitat-mapper.

Information on bluefish habitat requirements, including ecological relationships, can be found in the documents titled, "Essential Fish Habitat Source Document: Bluefish, *Pomatomus saltatrix*, Life History and Habitat Characteristics" (Shepherd and Packer 2006). An electronic version of this source document is available at: http://www.nefsc.noaa.gov/nefsc/habitat/efh/.

Bluefish are a predominantly pelagic species (Shepherd and Packer 2006). Life history data show that there are only loose associations of bluefish with any particular substrate or submerged aquatic vegetation (SAV; Shepherd and Packer 2006). Juveniles are the only life-stage that spatially and temporally co-occur on a regular basis with SAV. Bluefish juveniles and adults commonly occur in estuarine areas during the period of the year when eelgrass is present and prey on species which are associated with SAV. Some degree of linkage with SAV is likely, but given the extent to which the life cycle of bluefish occurs offshore outside the range of SAV, it is probably less than for other species (Laney 1997).

Table 25: Geographic distributions and habitat characteristics of EFH designations for benthic fish and shellfish species within the affected environment of the action.

Species	Life Stage	Geographic Area	Depth (meters)	Habitat Type and Description
American plaice	Juveniles	Gulf of Maine and bays and estuaries from Passamaquoddy Bay to Saco Bay, Maine and from Massachusetts Bay to Cape Cod Bay, Massachusetts Bay	40-180	Sub-tidal benthic habitats on mud and sand, also found on gravel and sandy substrates bordering bedrock
American plaice	Adults	Gulf of Maine, Georges Bank and bays and estuaries from Passamaquoddy Bay to Saco Bay, Maine and from Massachusetts Bay to Cape Cod Bay, Massachusetts Bay	40-300	Sub-tidal benthic habitats on mud and sand, also gravel and sandy substrates bordering bedrock
Atlantic cod	Juveniles	Gulf of Maine, Georges Bank, and Southern New England, including nearshore waters from eastern Maine to Rhode Island and the following estuaries:	Mean high water-120	Structurally-complex intertidal and sub-tidal habitats, including eelgrass, mixed sand and gravel, and rocky habitats (gravel pavements, cobble, and boulder)

Species	Life Stage	Geographic Area	Depth (meters)	Habitat Type and Description
		Passamaquoddy Bay to Saco Bay; Massachusetts Bay, Boston Harbor, Cape Cod Bay, and Buzzards Bay		with and without attached macroalgae and emergent epifauna
Atlantic cod	Adults	Gulf of Maine, Georges Bank, Southern New England, and the Mid-Atlantic to Delaware Bay, including the following estuaries: Passamaquoddy Bay to Saco Bay; Massachusetts Bay, Boston Harbor, Cape Cod Bay, and Buzzards Bay	30-160	Structurally complex sub-tidal hard bottom habitats with gravel, cobble, and boulder substrates with and without emergent epifauna and macroalgae, also sandy substrates and along deeper slopes of ledges
Atlantic halibut	Juveniles & Adults	Gulf of Maine, Georges Bank, and continental slope south of Georges Bank	60-140 and 400-700 on slope	Benthic habitats on sand, gravel, or clay substrates
Atlantic sea scallop	Eggs	Gulf of Maine coastal waters and offshore banks, Georges Bank, and the Mid-Atlantic, including the following estuaries: Passamaquoddy Bay to Sheepscot River; Casco Bay, Massachusetts Bay, and Cape Cod Bay	18-110	Inshore and offshore benthic habitats (see adults)
Atlantic sea scallop	Larvae	Gulf of Maine coastal waters and offshore banks, Georges Bank, and the Mid-Atlantic, including the following estuaries: Passamaquoddy Bay to Sheepscot River; Casco Bay, Massachusetts Bay, and Cape Cod Bay	No information	Inshore and offshore pelagic and benthic habitats: pelagic larvae ("spat"), settle on variety of hard surfaces, including shells, pebbles, and gravel and to macroalgae and other benthic organisms such as hydroids
Atlantic sea scallop	Juveniles	Gulf of Maine coastal waters and offshore banks, Georges Bank, and the Mid-Atlantic, including the following estuaries: Passamaquoddy Bay to Sheepscot River; Casco Bay, Great Bay, Massachusetts Bay, and Cape Cod Bay	18-110	Benthic habitats initially attached to shells, gravel, and small rocks (pebble, cobble), later free-swimming juveniles found in same habitats as adults
Atlantic sea scallop	Adults	Gulf of Maine coastal waters and offshore banks, Georges Bank, and the Mid-Atlantic, including the following estuaries: Passamaquoddy Bay to Sheepscot River; Casco Bay, Great Bay, Massachusetts Bay, and Cape Cod Bay	18-110	Benthic habitats with sand and gravel substrates
Atlantic surfclams	Juveniles and adults	Continental shelf from southwestern Gulf of Maine to Cape Hatteras, North Carolina	Surf zone to about 61, abundance low >38	In substrate to depth of 3 ft
Atlantic wolffish	Eggs	U.S. waters north of 41˚N latitude and east of 71˚W longitude	<100	Sub-tidal benthic habitats under rocks and boulders in nests
Atlantic wolffish	Juveniles	U.S. waters north of 41˚N latitude and east of 71˚W longitude	70-184	Sub-tidal benthic habitats
Atlantic wolffish	Adults	U.S. waters north of 41˚N latitude and east of 71˚W longitude	<173	A wide variety of sub-tidal sand and gravel substrates once they leave rocky spawning habitats, but not on muddy bottom
Barndoor skate	Juveniles and adults	Primarily on Georges Bank and in Southern New England and on the continental slope	40-400 on shelf and to 750 on slope	Sub-tidal benthic habitats on mud, sand, and gravel substrates

Species	Life Stage	Geographic Area	Depth (meters)	Habitat Type and Description
Black sea bass	Juveniles and adults	Continental shelf and estuarine waters from the southwestern Gulf of Maine and Cape Hatteras, North Carolina	Inshore in summer and spring	Benthic habitats with rough bottom, shellfish and eelgrass beds, man-made structures in sandy-shelly areas, also offshore clam beds and shell patches in winter
Clearnose skate	Juveniles	Inner continental shelf from New Jersey to the St. Johns River in Florida and certain bays and certain estuaries including Raritan Bay, inland New Jersey bays, Chesapeake Bay, and Delaware Bays	0-30	Sub-tidal benthic habitats on mud and sand, but also on gravelly and rocky bottom
Clearnose skate	Adults	Inner continental shelf from New Jersey to the St. Johns River in Florida and certain bays and certain estuaries including Raritan Bay, inland New Jersey bays, Chesapeake Bay, and Delaware Bays	0-40	Sub-tidal benthic habitats on mud and sand, but also on gravelly and rocky bottom
Golden tilefish	Juveniles and adults	Outer continental shelf and slope from U.S.-Canada boundary to the Virginia-North Carolina boundary	100-300	Burrows in semi-lithified clay substrate, may also utilize rocks, boulders, scour depressions beneath boulders, and exposed rock ledges as shelter
Haddock	Juveniles	Inshore and offshore waters in the Gulf of Maine, on Georges Bank, and on the continental shelf in the Mid-Atlantic region	40-140 and as shallow as 20 in coastal Gulf of Maine	Sub-tidal benthic habitats on hard sand (particularly smooth patches between rocks), mixed sand and shell, gravelly sand, and gravel
Haddock	Adults	Offshore waters in the Gulf of Maine, on Georges Bank, and on the continental shelf in Southern New England	50-160	Sub-tidal benthic habitats on hard sand (particularly smooth patches between rocks), mixed sand and shell, gravelly sand, and gravel and adjacent to boulders and cobbles along the margins of rocky reefs
Little skate	Juveniles	Coastal waters in the Gulf of Maine, Georges Bank, and the continental shelf in the Mid-Atlantic region as far south as Delaware Bay, including certain bays and estuaries in the Gulf of Maine	Mean high water-80	Intertidal and sub-tidal benthic habitats on sand and gravel, also found on mud
Little skate	Adults	Coastal waters in the Gulf of Maine, Georges Bank, and the continental shelf in the Mid-Atlantic region as far south as Delaware Bay, including certain bays and estuaries in the Gulf of Maine	Mean high water-100	Intertidal and sub-tidal benthic habitats on sand and gravel, also found on mud
Longfin inshore squid	Eggs	Inshore and offshore waters from Georges Bank southward to Cape Hatteras	Generally <50	Bottom habitats attached to variety of hard bottom types, macroalgae, sand, and mud
Monkfish	Juveniles	Gulf of Maine, outer continental shelf in the Mid-Atlantic, and the continental slope	50-400 in the Mid-Atlantic, 20-400 in the Gulf of Maine, and to 1000 on the slope	Sub-tidal benthic habitats on a variety of habitats, including hard sand, pebbles, gravel, broken shells, and soft mud, also seek shelter among rocks with attached algae

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

Species	Life Stage	Geographic Area	Depth (meters)	Habitat Type and Description
Rosette skate	Juveniles and adults	Outer continental shelf from approximately 40˚N to Cape Hatteras, North Carolina	80-400	Benthic habitats with mud and sand substrates
Scup	Juveniles	Continental shelf between southwestern Gulf of Maine and Cape Hatteras, North Carolina and in nearshore and estuarine waters between Massachusetts and Virginia	No information	Benthic habitats, in association with inshore sand and mud substrates, mussel and eelgrass beds
Scup	Adults	Continental shelf and nearshore and estuarine waters between southwestern Gulf of Maine and Cape Hatteras, North Carolina	No information, generally overwinter offshore	Benthic habitats
Silver hake	Juveniles	Gulf of Maine, including certain bays and estuaries, and on the continental shelf as far south as Cape May, New Jersey	40-400 in Gulf of Maine, >10 in Mid-Atlantic	Pelagic and sandy sub-tidal benthic habitats in association with sand-waves, flat sand with amphipod tubes, shells, and in biogenic depressions
Silver hake	Adults	Gulf of Maine, including certain bays and estuaries, the southern portion of Georges Bank, and the outer continental shelf and some shallower coastal locations in the Mid-Atlantic	>35 in Gulf of Maine, 70-400 on Georges Bank and in the Mid-Atlantic	Pelagic and sandy sub-tidal benthic habitats, often in bottom depressions or in association with sand waves and shell fragments, also in mud habitats bordering deep boulder reefs, on over deep boulder reefs in the southwest Gulf of Maine
Smooth skate	Juveniles	Offshore Gulf of Maine, some coastal bays in Maine and New Hampshire, and on the continental slope from Georges Bank to North Carolina	100-400 offshore Gulf of Maine, <100 inshore Gulf of Maine, to 900 on slope	Benthic habitats, mostly on soft mud in deeper areas, but also on sand, broken shells, gravel, and pebbles on offshore banks in the Gulf of Maine
Smooth skate	Adults	Offshore Gulf of Maine and the continental slope from Georges Bank to North Carolina	100-400 offshore Gulf of Maine, to 900 on slope	Benthic habitats, mostly on soft mud in deeper areas, but also on sand, broken shells, gravel, and pebbles on offshore banks in the Gulf of Maine
Summer flounder	Juveniles	Continental shelf and estuaries from Cape Cod, Massachusetts, to Cape Canaveral, Florida	To maximum 152	Benthic habitats, including inshore estuaries, salt marsh creeks, seagrass beds, mudflats, and open bay areas
Summer flounder	Adults	Continental shelf from Cape Cod, Massachusetts, to Cape Canaveral, Florida, including shallow coastal and estuarine waters during warmer months	To maximum 152 in colder months	Benthic habitats
Spiny dogfish	Juveniles	Primarily the outer continental shelf and slope between Cape Hatteras and Georges Bank and in the Gulf of Maine	Deep water	Pelagic and epibenthic habitats
Spiny dogfish	Female sub-adults	Throughout the region	Wide depth range	Pelagic and epibenthic habitats
Spiny dogfish	Male sub-adults	Primarily in the Gulf of Maine and on the outer continental shelf from Georges Bank to Cape Hatteras	Wide depth range	Pelagic and epibenthic habitats
Spiny dogfish	Female adults	Throughout the region	Wide depth range	Pelagic and epibenthic habitats

Species	Life Stage	Geographic Area	Depth (meters)	Habitat Type and Description
Spiny dogfish	Male adults	Throughout the region	Wide depth range	Pelagic and epibenthic habitats
Thorny skate	Juveniles	Offshore Gulf of Maine, some coastal bays in the Gulf of Maine, and on the continental slope from Georges Bank to North Carolina	35-400 offshore Gulf of Maine, <35 inshore Gulf of Maine, to 900 om slope	Benthic habitats on a wide variety of bottom types, including sand, gravel, broken shells, pebbles, and soft mud
Thorny skate	Adults	Offshore Gulf of Maine and on the continental slope from Georges Bank to North Carolina	35-400 offshore Gulf of Maine, <35 inshore Gulf of Maine, to 900 om slope	Benthic habitats on a wide variety of bottom types, including sand, gravel, broken shells, pebbles, and soft mud
White hake	Juveniles	Gulf of Maine, Georges Bank, and Southern New England, including bays and estuaries in the Gulf of Maine	Mean high water - 300	Intertidal and sub-tidal estuarine and marine habitats on fine-grained, sandy substrates in eelgrass, macroalgae, and un-vegetated habitats
White hake	Adults	Gulf of Maine, including coastal bays and estuaries, and the outer continental shelf and slope	100-400 offshore Gulf of Maine, >25 inshore Gulf of Maine, to 900 on slope	Sub-tidal benthic habitats on fine-grained, muddy substrates and in mixed soft and rocky habitats
Windowpane flounder	Juveniles	Estuarine, coastal, and continental shelf waters from the Gulf of Maine to northern Florida, including bays and estuaries from Maine to Maryland	Mean high water - 60	Intertidal and sub-tidal benthic habitats on mud and sand substrates
Windowpane flounder	Adults	Estuarine, coastal, and continental shelf waters from the Gulf of Maine to Cape Hatteras, North Carolina, including bays and estuaries from Maine to Maryland	Mean high water - 70	Intertidal and sub-tidal benthic habitats on mud and sand substrates
Winter flounder	Eggs	Eastern Maine to Absecon Inlet, New Jersey (39° 22´N) and Georges Bank	0-5 south of Cape Cod, 0-70 Gulf of Maine and Georges Bank	Sub-tidal estuarine and coastal benthic habitats on mud, muddy sand, sand, gravel, submerged aquatic vegetation, and macroalgae
Winter flounder	Juveniles	Coastal Gulf of Maine, Georges Bank, and continental shelf in Southern New England and Mid-Atlantic to Absecon Inlet, New Jersey, including bays and estuaries from eastern Maine to northern New Jersey	Mean high water - 60	Intertidal and sub-tidal benthic habitats on a variety of bottom types, such as mud, sand, rocky substrates with attached macro algae, tidal wetlands, and eelgrass; young-of-the-year juveniles on muddy and sandy sediments in and adjacent to eelgrass and macroalgae, in bottom debris, and in marsh creeks
Winter flounder	Adults	Coastal Gulf of Maine, Georges Bank, and continental shelf in Southern New England and Mid-Atlantic to Absecon Inlet, New Jersey, including bays and estuaries from eastern Maine to northern New Jersey	Mean high water - 70	Intertidal and sub-tidal benthic habitats on muddy and sandy substrates, and on hard bottom on offshore banks; for spawning adults, also see eggs
Winter skate	Juveniles	Coastal waters from eastern Maine to Delaware Bay, including certain bays and estuaries from eastern Maine to Chincoteague Bay, Virginia, and on Georges Bank and the continental shelf in	0-90	Sub-tidal benthic habitats on sand and gravel substrates, are also found on mud

Species	Life Stage	Geographic Area	Depth (meters)	Habitat Type and Description
		Southern New England and the Mid-Atlantic		
Winter skate	Adults	Coastal waters from eastern Maine to Delaware Bay, including certain bays and estuaries in Maine and New Hampshire, and on Georges Bank and the continental shelf in Southern New England and the Mid-Atlantic	0-80	Sub-tidal benthic habitats on sand and gravel substrates, are also found on mud
Witch flounder	Juveniles	Gulf of Maine and outer continental shelf and slope	50-400 and to 1500 on slope	Sub-tidal benthic habitats with mud and muddy sand substrates
Witch flounder	Adults	Gulf of Maine and outer continental shelf and slope	35-400 and to 1500 on slope	Sub-tidal benthic habitats with mud and muddy sand substrates
Yellowtail flounder	Juveniles	Gulf of Maine, Georges Bank, and the Mid-Atlantic, including certain bays and estuaries in the Gulf of Maine	20-80	Sub-tidal benthic habitats on sand and muddy sand
Yellowtail flounder	Adults	Gulf of Maine, Georges Bank, and the Mid-Atlantic, including certain bays and estuaries in the Gulf of Maine	25-90	Sub-tidal benthic habitats on sand and sand with mud, shell hash, gravel, and rocks

6.2.3 Fishery Impact Considerations

A baseline fishing effects analysis is provided in the Mid-Atlantic Council's specification of management measures for the 2004 fishing year (MAFMC 2003). This analysis considered 1995-2001 as the baseline time period. Baseline conditions (i.e., the distribution and intensity of bottom otter trawling in the commercial bluefish fishery) have not changed significantly since 2001. The 2004 evaluation of the habitat impacts of bottom otter trawls, gillnets, and handlines used in the commercial bluefish fishery indicated that the baseline impact of the fishery was minimal and temporary in nature. Additionally, only these gear types which contact the bottom impact physical habitat. Consequently, adverse effects of the bluefish fishery on EFH did not need to be minimized. Since commercial landings of bluefish have remained stable since 2001, the adverse impacts of the bluefish fishery have continued to be minimal during the time period 2001-2020. The FMP limits recreational specifications for bluefish to possession limits and recreational harvest limits. The principal gears used in the recreational fishery for bluefish are rod and reel and handline. The potential adverse impacts of these gears on EFH for this federally managed species in the region is minimal (Stevenson et al. 2004). Potential impacts of the amendment alternatives are evaluated in section 7.1 of this EA.

Only those gear types which contact the bottom impact physical habitat. The actions proposed in this document are relevant to both the commercial and recreational bluefish fisheries. The recreational fishery is almost exclusively a hook and line fishery. Recreational hook and line gears generally have minimal impacts on physical habitat and EFH in this region (Stevenson et al. 2004). Weighted hook and line gear can contact the bottom, but the magnitude and footprint of any impacts resulting from this contact is likely minimal. Thus, the recreational fisheries are expected to have very minor or no impacts on habitat.

The limited commercial fishery for bluefish is primarily prosecuted with gill net gear (Table 26) and has limited contact with the bottom. Thus, the magnitude and footprint of any impacts resulting from this contact are likely minimal.

Table 26: Percent of reported commercial landings taken by gear category for bluefish from 2020 federal dealer data.

Gear	Bluefish
Gillnet	52%
Unknown	24%
Otter trawl, bottom fish	15%
Handline	5%
Other	4%

Stevenson et al. (2004) compiled a detailed summary of several studies on the impacts of a variety of gear types on marine habitats. Conclusions relevant for this action are briefly summarized below with a focus on bottom trawl gear since this is the gear type used in commercial harvest that causes the greatest impact, when it occurs.

Otter trawl doors can create furrows in sand, mud, and gravel/rocky substrates. Studies have found furrow depths that range from 2 to 10 cm. Bottom trawl gear can also re-suspend and disperse surface sediments and can smooth topographic features. It can also result in reduced abundance, and in some cases reduced diversity, of benthic species such as nematodes, polychaetes, and bivalves. It can also have short-term positive ecological impacts such as increased food value and increased chlorophyll production in surface sediments. The duration of these impacts varies by sediment type, depth, and frequency of the impact (e.g., a single trawl tow vs. repeated tows). Some studies documented effects that lasted only a few months. Other studies found effects that lasted up to 18 months. Impacts tend to have shorter durations in dynamic environments with less structured bottom composition compared to less dynamic environments with structured bottom. Shallower water, stronger bottom currents, more wave action, finer-grained sediments, and higher frequencies of natural disturbance are characteristics that make environments more dynamic (Stevenson et al. 2004).

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

6.3. ESA-Listed Species and MMPA Protected Species

Numerous protected species inhabit the affected environment of the bluefish FMP (
Table **27**) and have the potential to be impacted by the proposed action (i.e., there have been observed/documented interactions in the fishery or with gear type(s) similar to those used in the fishery (hook and line, bottom trawl or gillnet gear)). These species are under NMFS jurisdiction

and are afforded protection under the Endangered Species Act (ESA) of 1973 and/or the Marine Mammal Protection Act (MMPA) of 1972.

Table 27: Species Protected Under the ESA and/or MMPA that May Occur in the Affected Environment of the Bluefish Fishery. Marine mammal species (cetaceans and pinnipeds) italicized and in bold are considered MMPA strategic stocks. [1]

Species	Status[2]	Potentially impacted by this action?
Cetaceans		
North Atlantic right whale (Eubalaena glacialis)	***Endangered***	***Yes***
Humpback whale, West Indies DPS (Megaptera novaeangliae)[3]	Protected (MMPA)	Yes
Fin whale (Balaenoptera physalus)	***Endangered***	***Yes***
Sei whale (Balaenoptera borealis)	***Endangered***	***Yes***
Blue whale (Balaenoptera musculus)	***Endangered***	***No***
Sperm whale (Physeter microcephalus	***Endangered***	***No***
Minke whale (*Balaenoptera acutorostrata*)	Protected (MMPA)	Yes
Pilot whale (Globicephala spp.)3	Protected (MMPA)	Yes
Risso's dolphin (*Grampus griseus*)	Protected (MMPA)	Yes
Atlantic white-sided dolphin (*Lagenorhynchus acutus*)	Protected (MMPA)	Yes
Short Beaked Common dolphin (*Delphinus delphis*)	Protected (MMPA)	Yes
Spotted dolphin (*Stenella frontalis*)	Protected (MMPA)	No
Bottlenose dolphin (Tursiops truncatus)[4]	***Protected (MMPA)***	***Yes***
Harbor porpoise (*Phocoena phocoena*)	Protected (MMPA)	Yes
Sea Turtles		
Leatherback sea turtle (*Dermochelys coriacea*)	Endangered	Yes
Kemp's ridley sea turtle (*Lepidochelys kempii*)	Endangered	Yes

Green sea turtle, North Atlantic DPS (*Chelonia mydas*)	Threatened	Yes
Loggerhead sea turtle (*Caretta caretta*), Northwest Atlantic Ocean DPS	Threatened	Yes
Hawksbill sea turtle (*Eretmochelys imbricate*)	Endangered	No
Fish		
Shortnose sturgeon (*Acipenser brevirostrum*)	Endangered	No
Atlantic salmon (*Salmo salar*)	Endangered	Yes
Atlantic sturgeon *(Acipenser oxyrinchus)*		
Gulf of Maine DPS	Threatened	Yes
New York Bight DPS, Chesapeake Bay DPS, Carolina DPS & South Atlantic DPS	Endangered	Yes
Cusk (*Brosme brosme)*	Candidate	Yes
Giant manta ray (*Brosme brosme*)	Threatened	Yes
Smalltooth sawfish (U.S. DPS) (*Pristis pectinata*)	Endangered	No
Oceanic Whitetip shark (*Carcharhinus longimanus*)	Threatened	No
Nassau grouper (*Epinephelus striatus*)	Threatened	No
Pinnipeds		
Harbor seal (*Phoca vitulina*)	Protected (MMPA)	Yes
Gray seal (*Halichoerus grypus*)	Protected (MMPA)	Yes
Harp seal (*Phoca groenlandicus*)	Protected (MMPA)	Yes
Hooded seal (*Cystophora cristata*)	Protected (MMPA)	Yes
Corals		
Elkhorn Coral (Acropora palmata)	Threatened	No
Staghorn Coral (Acropora cervicornis)	Threatened	No
Pillar Coral (Dendrogyra cylindrus)	Threatened	No
Rough cactus coral (Mycetophyllia ferox)	Threatened	No
Lobed star coral (Orbicella annularis)	Threatened	No
Mountainous star coral (*Orbicella faveolata)*	Threatened	No
Boulder star coral (*Orbicella franksi)*	Threatened	No
Seagrass		

Johnson's Sea Grass (*Halophila johnsonii)*	Threatened	No
Critical Habitat		
North Atlantic Right Whale	ESA (Protected)	No
Northwest Atlantic Ocean DPS of Loggerhead Sea Turtle	ESA (Protected)	No
Johnson's Sea Grass	ESA (Protected)	No
Elkhorn and staghorn corals	ESA (Protected)	No
Smalltooth sawfish (U.S. DPS)	ESA (Protected)	No

Notes:

[1] 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, 1972).

[2] The status of the species is defined by whether the species is listed under the ESA as endangered (species are at risk of extinction) or threatened (species at risk of endangerment), or protected under the MMPA. Note, marine mammals listed under the ESA are also protected under the MMPA. Candidate species are those species in which ESA listing may be warranted.

[3] There are two species of pilot whales: short finned (*G. melas melas*) and long finned (*G. macrorhynchus*). Due to the difficulties in identifying the species at sea, they are often just referred to as *Globicephala spp*.

[4] This includes all stocks of bottlenose dolphins except for the Florida Bay stock (see marine mammal stock assessment reports: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region).

Cusk (

Table 27), a NMFS "species of concern," as well as a "candidate species" under the ESA, occurs in the affected environment of the bluefish fishery. Candidate species are those petitioned species that NMFS is actively considering for listing as endangered or threatened under the ESA and also include those species for which NMFS has initiated an ESA status review through an announcement in the FR. Once a species is proposed for listing, the conference provisions of the ESA apply (see 50 CFR 402.10); however, candidate species receive no substantive or procedural protection under the ESA. As a result, this species will not be discussed further in this section.

However, for additional information on cusk and proactive conservation efforts being initiated for the species, visit: http://www.greateratlantic.fisheries.noaa.gov/protected/pcp/soc/cusk.html.

6.3.1. Species and Critical Habitat Not Likely to be Impacted by the Proposed Action

Based on available information, it has been determined that this action is not likely to impact multiple ESA listed and/or marine mammal protected species or any designated critical habitat (
Table 27). This determination has been made because either the occurrence of the species is not known to overlap with the area primarily affected by the action and/or based on the most recent 10 years of observer, stranding, and/or marine mammal serious injury and mortality reports, there have been no observed or documented interactions between the species and the primary gear type (i.e., hook and line, gillnet, and bottom trawl) used to prosecute the bluefish fishery (Greater Atlantic Region Marine Animal Incident Database, unpublished data ; Marine Mammal Stock Assessment Reports (SARs) for the Atlantic Region: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region; NEFSC observer/sea sampling database, unpublished data; NMFS NEFSC reference documents (marine mammal serious injury and mortality reports): https://apps-nefsc.fisheries.noaa.gov/rcb/publications/center-reference-documents.html; MMPA List of Fisheries (LOF): https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-protection-act-list-fisheries; Place holder/NMFS 2021)[6]. In the case of critical habitat, this determination has been made because the action will not affect the essential physical and biological features of critical habitat identified in
Table 27 and therefore, will not result in the destruction or adverse modification of any species critical habitat (Place holder/NMFS 2021).

6.3.2. Species Potentially Impacted by the Proposed Action

Table 27 has a list of protected species of sea turtle, marine mammal, and fish species present in the affected environment of the bluefish fishery, and that may also be impacted 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 impacted by the action, the MMPA LOF, and marine mammal SARS and serious injury and mortality reports were referenced (see Marine Mammal SARS for the Atlantic Region: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region; MMPA LOF: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-protection-act-list-fisheries; NEFSC observer/sea sampling database, unpublished data; NMFS NEFSC reference documents (marine mammal serious injury and mortality reports): https://apps-nefsc.fisheries.noaa.gov/rcb/publications/center-reference-documents.html).

[6] For marine mammals protected under the MMPA the most recent 10 years of observer, stranding, and/or marine mammal serious injury and mortality reports are from 2007-2016; however, entanglement data is available through 2019. For ESA listed species, information on observer or documented interactions with fishing gear is from 2010-2019.

To help identify ESA listed species potentially affected by the action, the most recent 10 years of marine animal incidence (e.g., entanglement) and NEFSC observer data (i.e., 2010-2019; NEFSC observer/sea sampling database, unpublished data, Greater Atlantic Region Marine Animal Incident Database, unpublished data), as well as the 2013 Biological Opinion issued by NMFS on the operation of seven commercial fisheries, including the bluefish FMP, 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), 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.

New information indicates that North Atlantic right whale abundance has been in decline since 2010 (Pace et al. 2017). This new information is different from that considered and analyzed in the 2013 Opinion and therefore, reveals effects from this fishery that were not previously considered. As a result, per an October 17, 2017, ESA 7(a)(2)/7(d) memo issued by NMFS, the 2013 Opinion, as well as several other fishery Opinions, has been reinitiated. However, the October 17, 2017, ESA 7(a)(2)/7(d) memorandum issued by NMFS, determined ".....For the consultations being reinitiated..…. Allowing these fisheries to continue during the reinitiation period will not increase the likelihood of interactions with these species above the amount that would otherwise occur if consultation had not been reinitiated, because allowing these fisheries to continue does not entail making any changes to any fishery during the reinitiation period that would cause an increase in interactions with whales, sea turtles, sturgeon, · or Atlantic salmon. Because of this, the continuation of these fisheries during the reinitiation period would not be likely to jeopardize the continued existence of any whale, sea turtle, Atlantic salmon, or sturgeon species." Until replaced, the bluefish FMP is currently covered by the October 17, 2017, memorandum.

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, to understand the potential risk of an interaction. Information on species occurrence in the affected environment of the bluefish fishery is below, while information on protected species interactions with specific fishery gear is in Section 6.3.3.

6.3.2.1 Sea Turtles

Below is a brief summary of the occurrence and distribution of sea turtles in the affected environment of the bluefish 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; Turtle Expert Working Group [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 GOM in June (Shoop & Kenney 1992). The trend is reversed in the fall as water temperatures cool. The large majority leave the Gulf of Maine by September, but some remain in Mid-Atlantic and Northeast areas until late fall (i.e., November). By December, sea turtles have migrated south to waters offshore of North Carolina, particularly south of Cape Hatteras, and further south, although it should be noted that 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 - Leatherbacks, a pelagic species, are known to use coastal waters of the U.S. continental shelf and to have a greater tolerance for colder water than hard-shelled sea turtles (James *et al.* 2005; Eckert *et al.* 2006; Murphy *et al.* 2006; NMFS and USFWS 2013b; Dodge *et al.* 2014). Leatherback sea turtles engage in routine migrations between northern temperate and tropical waters (NMFS and USFWS 1992; James *et al.* 2005; James *et al*. 2006; Dodge *et al*. 2014). They are found in more northern waters (i.e., Gulf of Maine) later in the year (i.e., similar time frame as hard-shelled sea turtles), with most leaving the Northwest Atlantic shelves by mid-November (James *et al*. 2005; James *et al*. 2006; Dodge *et al.* 2014).

6.3.2.2 Large Whales

Humpback, North Atlantic right, fin, sei, and minke whales occur in the Northwest Atlantic. Generally speaking, large whales follow an annual pattern of migration between low latitude (south of 35^{o}N) wintering/calving grounds and high latitude spring/summer/fall foraging grounds (primarily north of 41^{o}N; see marine mammal SARs: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region). 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, some portion of the population remains in higher latitudes throughout the winter (Clapham et al. 1993; Davis et at. 2017; Davis et al. 2020; Hayes et al. 2020; Swingle et al. 1993; Vu et al. 2012). Although further research is needed to provide a clearer understanding of large whale movements and distribution in the winter, the occurrence of large whales in low latitude foraging grounds in the spring/summer/fall is well understood. Large whales consistently return to these foraging areas each year, therefore these areas can be considered important areas for whales (Davis et al. 2017; Davis et al. 2020; Hayes et al. 2020; Payne et al. 1986; Payne et al. 1990; Schilling et al. 1992). For additional information on the biology, status, and range wide distribution of humpback, North Atlantic right, fin, sei, and minke whales, refer to the marine mammal SARs provided at:

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

6.3.2.3 Small Cetaceans and Pinnipeds

Table 9 lists the small cetaceans and pinnipeds that may occur in the affected environment of the bluefish fishery. Small cetaceans can be found throughout the year in the Northwest Atlantic Ocean (Maine to Florida); however, within this range, there are seasonal shifts in species distribution and abundance. Pinnipeds are primarily found throughout the year or seasonally from New Jersey to Maine; however, increasing evidence indicates that some species (e.g., harbor seals) may be extending their range seasonally into waters as far south as Cape Hatteras, North Carolina (35 ^{o}N). For additional information on the biology and range wide distribution of each species of small cetacean and pinniped, refer to the marine mammal SARs provided at: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region.

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

Based on fishery-independent and dependent data, as well as data collected from tracking and tagging studies, in the marine environment, Atlantic sturgeon appear to primarily occur inshore of the 50 meter depth contour (Stein et al. 2004 a,b; Erickson et al. 2011; Dunton et al. 2010); however, Atlantic sturgeon are not restricted to these depths, as excursions into deeper continental shelf waters have been documented (Timoshkin 1968; Collins and Smith 1997; Stein et al. 2004a,b; Dunton et al. 2010; Erickson et al. 2011). Data from fishery-independent surveys and tagging and tracking studies also indicate that Atlantic sturgeon may undertake seasonal movements along the coast (Dunton et al. 2010; Erickson et al. 2011; Wipplehauser 2012); however, there is no evidence to date that all Atlantic sturgeon make these seasonal movements and therefore, may be present throughout the marine environment throughout the year.

For additional information on the biology, status, and range wide distribution of each distinct population segment (DPS) of Atlantic sturgeon please refer to 77 FR 5880 and 77 FR 5914, as well as the Atlantic Sturgeon Status Review Team's (ASSRT) 2007 status review of Atlantic sturgeon (ASSRT 2007) and the Atlantic States Marine Fisheries Commission 2017 Atlantic Sturgeon Benchmark Stock Assessment and Peer Review Report (ASMFC 2017).

6.3.2.5 Atlantic salmon

The wild populations of Atlantic salmon are listed as endangered under the ESA. Their freshwater range occurs in the watersheds from the Androscoggin River northward along the Maine coast to the Dennys River, while the marine range of the GOM DPS extends from the GOM (primarily northern portion of the GOM), to the coast of Greenland (NMFS and USFWS 2005, 2016; Fay et al. 2006). In general, smolts, post-smolts, and adult Atlantic salmon may be present in the GOM and coastal waters of Maine in the spring (beginning in April), and adults may be present

throughout the summer and fall months (Baum 1997; Fay et al. 2006; USASAC 2013; Hyvarinen et al. 2006; Lacroix and McCurdy 1996; Lacroix et al. 2004, 2005; Reddin 1985; Reddin and Short 1991; Reddin and Friedland 1993; Sheehan et al. 2012; NMFS and USFWS 2005, 2016; Fay et al. 2006). For additional information on the on the biology, status, and range wide distribution of the GOM DPS of Atlantic salmon, refer to NMFS and USFWS (2005, 2016); Fay et al. (2006).

6.3.2.6 Giant Manta Ray

Based on the giant manta ray's distribution, the species may occur in coastal, nearshore, and pelagic waters off the U.S. east coast (Miller and Klimovich 2017). Along the U.S. East Coast, giant manta rays are usually found in water temperatures between 19 and 22 degrees Celsius (Miller and Klimovich 2017) and have been observed as far north as New Jersey. Given that the species is rarely identified in the fisheries data in the Atlantic, it may be assumed that populations within the Atlantic are small and sparsely distributed (Miller and Klimovich 2017).

6.3.3. Interactions Between Gear and Protected Species

Protected species are at risk of interacting with various types of fishing gear, with interaction risks associated with gear type, quantity, soak or tow duration, and degree of overlap between gear and protected species. Information on observed or documented interactions between gear and protected species is available from as early as 1989 (Marine Mammal SARs: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region; NEFSC observer/sea sampling database, unpublished data). As the distribution and occurrence of protected species and the operation of fisheries (and, thus, risk to protected species) have changed over the last 30 years, we use the most recent 10 years of available information to best capture the current risk to protected species from fishing gear. For marine mammals protected under the MMPA, this primarily covers the period from 2008-2017[7]; however, the Greater Atlantic Region (GAR) Marine Animal Incident Database (unpublished data) contains large whale entanglement reports through 2019. For ESA listed species, the most recent 10 years of data on observed or documented interactions is available from 2010-2019[8] (data. Available information on gear interactions with a given species (or species group) is provided in the sections below. The sections to follow are not a comprehensive review of all fishing gear types known to interact with a given species; emphasis is only being placed on the primary gear types used to prosecute the multispecies bluefish fishery (i.e., recreational: hook and line; commercial: sink gillnet and bottom trawl gear).

6.3.3.1 Recreational Fisheries Interactions

The recreational bluefish 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

[7] Waring et al. 2015a; Waring et al. 2016; Hayes et al. 2017; Hayes et al. 2018; Hayes et al. 2019; Hayes et al. 2020; MMPA List of Fisheries (LOF): https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-protection-act-list-fisheries; NMFS NEFSC reference documents (marine mammal serious injury and mortality reports): https://nefsc.noaa.gov/publications/crd/.

[8] ASMFC 2017; GAR Marine Animal Incident Database, unpublished data; Kocik et al. 2014; Marine Mammal SARs: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region; Miller and Shepard 2011; Murray 2015; Murray 2018; Murray 2020; NMFS NEFSC reference documents (marine mammal serious injury and mortality reports): https://nefsc.noaa.gov/publications/crd/; NEFSC observer/sea sampling database, unpublished data.

recreational hook and line interactions with protected resources are limited. However, as a dedicated observer program exists for all commercial fisheries, there is a wealth of information on observed protected species interactions with all fishing gear types and years of data assessing resultant population level effects of these interactions. Other sources of information, such as state fishing records, stranding databases, and marine mammal SARs, provide additional information that can assist in better understanding hook and line interaction risks to protected species.

6.3.3.1.1 Large whales

Large whales have been documented entangled with hook and line gear or monofilament line (GAR Marine Animal Incident Database, unpublished data; Marine Mammal SARs: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region;). In the most recent (2008-2017) 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 (84.8 % observed/reported whales had a serious injury value of 0; 15.2 % had a serious injury value of 0.75; none of the cases resulted in mortality; Cole and Henry 2013; Henry et al. 2017; Henry et al. 2020). In fact, 75.8 % 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 (Cole and Henry 2013; Henry et al. 2017; Henry et al. 2020). 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. 2020).

6.3.3.1.2 Small cetaceans and pinnipeds

Table 9 provides a list of small cetaceans and pinnipeds that will occur in the affected environment of the bluefish fishery. Reviewing the most recent 10 years of data provided in the marine mammal SARs (i.e., 2008-2017), of these species, only bottlenose dolphin stocks have been identified (primarily through stranding records/data) as entangled in hook and line gear (https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region). In some cases, these entanglements have resulted in the serious injury or mortality to the animal. Specifically, reviewing stranding data provided in marine mammal SARs from 2008-2017, estimated mean annual mortality for each bottlenose stock due to interactions with hook and line gear was approximately one animal (Palmer 2017; https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region). Based on this, although interactions with hook and line gear are possible, relative to other gear types, such as trawl gear, hook and line gear represents a low source serious injury or mortality to any bottlenose dolphin stock. For other species of small cetaceans or pinnipeds, hook and line gear are not expected to be a source of serious injury or mortality.

6.3.3.1.3 Sea turtles

Interactions between ESA listed species of sea turtles and hook and line gear have been documented, particularly in nearshore waters of the Mid-Atlantic (e.g., GAR Sea Turtle and Disentanglement Network, unpublished data; NMFS Sea Turtle Stranding and Salvage Network, unpublished data; Palmer 2017;). Interactions with hook and line gear have resulted in sea turtle

injury and mortality and therefore, poses an interaction risk to these species. However, the extent to which these interactions are impacting sea turtle populations 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 sea turtle populations.

6.3.3.1.4 Atlantic Sturgeon

Interactions between ESA-listed species of Atlantic sturgeon and hook and line gear have been documented, particularly in nearshore waters (ASMFC 2017). Interactions with hook and line gear have resulted in Atlantic sturgeon injury and mortality and therefore, poses an interaction risk to these species. However, the extent to which these interactions are impacting Atlantic sturgeon DPSs is still under investigation and therefore, no conclusions can currently be made on the impact of hook and line gear on the continued survival of Atlantic sturgeon DPSs (NMFS 2011b; ASMFC 2017).

6.3.3.1.5 Atlantic salmon

Review of the most recent 10 years of data on observed or documented interactions between Atlantic salmon and fishing gear, there have been no observed/documented interactions between Atlantic salmon and hook and line gear (NEFSC observer/sea sampling database, unpublished data). Based on this information, hook and line gear is not expected to pose an interaction risk to any Atlantic salmon and therefore, is not expected to be source of injury or mortality to this species.

6.3.3.1.5 Giant Manta Ray

Review of the most recent 10 years of data on observed or documented interactions between giant manta rays and fishing gear, there have been no observed/documented interactions between giant manta rays and hook and line gear (NEFSC observer/sea sampling database, unpublished data). Based on this information, hook and line gear is not expected to pose an interaction risk to giant manta rays and therefore, is not expected to be source of injury or mortality to this species

6.3.3.2 Commercial Fisheries Interactions

The bluefish commercial fishery uses gillnets, bottom otter trawls, and hook and line gear. Except for what has been provided in section 6.3.3.1, no additional information is available on commercial hook and line interactions with protected species. Gillnet and/or bottom otter trawls are known to interact with ESA-listed and MMPA species of marine mammals, fish, and sea turtles.

6.3.3.2.1 Marine Mammals

Depending on species, marine mammals have been observed seriously injured or killed in bottom trawl and/or sink gillnet gear. Pursuant to the MMPA, NMFS publishes a List of Fisheries (LOF) annually, classifying U.S. commercial fisheries into one of three categories based on the relative frequency of incidental serious injuries and/or mortalities of marine mammals in each fishery (i.e., Category I=frequent; Category II=occasional; Category III=remote likelihood or no known interactions). In the Northwest Atlantic, the 2021 LOF (86 FR 3028 (January 14, 2021)) categorizes commercial gillnet fisheries (Northeast or Mid-Atlantic) as Category I fisheries and commercial bottom trawl fisheries (Northeast or Mid-Atlantic) as Category II fisheries.

6.3.3.2.1.1 Large Whales

Bottom Trawl Gear

With the exception of minke whales, there have been no observed interactions with large whales and bottom trawl gear[9]. In 2008, several minke whales were observed dead in bottom trawl gear attributed to the northeast bottom trawl fishery; estimated annual mortality attributed to this fishery in 2008 was 7.8 minke whales (Waring et al. 2015). Since 2008, serious injury and mortality records for minke whales in U.S. waters have shown zero interactions with bottom trawl (northeast or Mid-Atlantic) gear[10]. Based on this information, large whale interactions with bottom trawl gear are expected to be rare to nonexistent.

Fixed Fishing Gear (e.g., Sink Gillnet Gear)

Large whale interactions (entanglements) with fishing gear have been documented in the waters of the Northwest Atlantic.[11] Information available on interactions with large whales comes from reports documented in the Greater Atlantic Region (GAR) Marine Animal Incident Database (unpublished data). For instance, review of the databases' most recent ten years (i.e., 2010-2019) of validated data indicates that there have been a total of 112 North Atlantic right whale entanglements; these entanglements include those confirmed to country and unknown country of origin (see Table 28).[12] The best available data also shows that fin, minke, humpback, and to a lesser extent, sei and sperm whales, have also been observed and documented entangled in fishing gear.

Table 28: Observed entanglements of North Atlantic right whales from 2010 through 2019 by country of origin. Entanglements resulting in SI/M are presented in the parentheses.

	Number of Entanglements	Confirmed Canada	Confirmed U.S.	Unknown Country of Origin
2010	6 (4)	0	1	5 (4)

[9] Refer to Greater Atlantic Region Marine Animal Incident Database (unpublished data); Marine Mammal SARs: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region; NEFSC observer/sea sampling database, unpublished data ; MMPA LOF: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-protection-act-list-fisheries; NMFS NEFSC reference documents (marine mammal serious injury and mortality reports): https://apps-nefsc.fisheries.noaa.gov/rcb/publications/center-reference-documents.html

[10] Refer to: Greater Atlantic Region Marine Animal Incident Database (unpublished data); Waring et al. 2016; Hayes et al. 2017; Hayes et al. 2018; Hayes et al. 2019; Hayes et al. 2020; Cole and Henry 2013; and, Henry et al. 2014, 2015, 2016, 2017, 2019, 2020; MMPA LOF: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-protection-act-list-fisheries.

[11] **NMFS Atlantic Large Whale Entanglement Reports**: https://www.fisheries.noaa.gov/new-england-mid-atlantic/marine-mammal-protection/atlantic-large-whale-take-reduction-plan (for years prior to 2014, contact David Morin, Large Whale Disentanglement Coordinator, David.Morin@NOAA.gov; GAR Marine Animal Incident Database (unpublished data); **NMFS Marine Mammal** SARs **for the Atlantic Region** :https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region; **NMFS NEFSC Marine Mammal Serious Injury and Morality Reference Documents**: https://apps-nefsc.fisheries.noaa.gov/rcb/publications/center-reference-documents.html; **MMPA List of Fisheries**: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-protection-act-list-fisheries

[12] The data included in Table 53, includes entanglement events categorized as serious injury, mortality, or a non-serious injury. These observed events are considered a minimum estimate and the actual entanglement rate is likely higher.

	Number of Entanglements	Confirmed Canada	Confirmed U.S.	Unknown Country of Origin
2011	14 (5.5)	0	2	12 (5.5)
2012	12 (4)	0	1 (1)	11 (3)
2013	5 (0.75)	0	0	5 (0.75)
2014	17 (8)	1	1 (1)	15 (7)
2015	9 (3.5)	1	0	8 (3.5)
2016	15 (9.5)	3 (3)	1	11 (6.5)
2017	15 (6)	8 (3)	1	6 (3)
2018	12 (5.75)	3 (1)	1	8 (4.75)
2019	7(2)	2(2)	0	5(0)
Total	**112 (49)**	**18 (9)**	**8 (2)**	**86 (38)**

Based on the best available information, the greatest entanglement risk to large whales is posed by fixed gear used in trap/pot or sink gillnet fisheries (Angliss and Demaster 1998; Cassoff et al. 2011; Kenney and Hartley 2001; Knowlton and Kraus 2001; Hartley *et al*. 2003; Johnson *et al*. 2005;Whittingham *et al*. 2005a,b; Knowlton et al. 2012; NMFS 2014; Hamilton and Kraus 2019; Henry et al. 2014; Henry et al. 2015; Henry et al. 2016; Henry et al. 2017; Henry et al. 2019; Henry et al. 2020; Sharp et al. 2019; see Marine Mammal SARs: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region). Specifically, while foraging or transiting, large whales are at risk of becoming entangled in vertical endlines, buoy lines, or groundlines of gillnet and pot/trap gear, as well as the net panels of gillnet gear that rise into the water column (Baumgartner et al. 2017; Cassoff et al. 2011; Hamilton and Kraus 2019; Hartley *et al*. 2003; Henry et al. 2014; Henry et al. 2015; Henry et al. 2016; Henry et al. 2017; Henry et al. 2019; Henry et al. 2020; Johnson *et al*. 2005; Kenney and Hartley 2001; Knowlton and Kraus 2001;Knowlton et al. 2012; NMFS 2014; Whittingham *et al*. 2005a,b; see NMFS Marine Mammal SARs: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region).[13] Large whale interactions (entanglements) with these features of trap/pot and/or sink gillnet gear often result in the serious injury or mortality to the whale (Angliss and Demaster 1998; Cassoff et al. 2011; Henry et al. 2014, Henry et al. 2015, Henry et al. 2016; Henry et al. 2017; Henry et al. 2019; Henry et al. 2020; Knowlton and Kraus 2001, Knowlton et al. 2012; Moore and Van der Hoop 2012; NMFS 2014; Pettis et al. 2019; Sharp et al. 2019; van der Hoop et al. 2016; van der Hoop et al. 2017). As many entanglements, and therefore, serious injury or mortality events, go unobserved, and because the gear type, fishery, and/or country of origin for reported entanglement events are often not traceable, the rate of large whale entanglement, and thus, rate of serious injury and mortality due to entanglement, are likely underestimated (Hamilton et al. 2018; Hamilton et al. 2019; Knowlton *et al.* 2012; Pace et al. 2017; Robbins 2009).

[13] Through the ALWTRP, regulations have been implemented to reduce the risk of entanglement in in vertical endlines, buoy lines, or groundlines of gillnet and pot/trap gear, as well as the net panels of gillnet gear. For ALWTRP regulations currently implemented: see https://www.fisheries.noaa.gov/action/atlantic-large-whale-take-reduction-plan-regulations-1997-2015.

Due to the incidences of interactions with vertical lines associated with gillnet and trap/pot gear, in addition to the endangered status of the species being affected most by these gear types (i.e., North Atlantic right and fin whales), pursuant to the MMPA, these large whale species were designated as strategic stocks. Section 118(f)(1) of the MMPA requires the preparation and implementation of a Take Reduction Plan (TRP) for any strategic marine mammal stock that interacts with Category I or II fisheries. As a result, to address and mitigate the risk of large whale entanglement in fixed fishing gear comprised of vertical lines, including gillnet gear, the Atlantic Large Whale Take Reduction Plan (ALWTRP or Plan) was implemented. The ALWTRP identifies gear modification requirements and restrictions for Category I and II gillnet fisheries in the Northeast, Mid-Atlantic, and Southeast regions of the U.S. (designated management areas); these fisheries must comply with all regulations of the Plan. For further details on the ALWTRP, specifically gear modification requirements, restrictions, and management areas under the ALWTRP, see: https://www.fisheries.noaa.gov/new-england-mid-atlantic/marine-mammal-protection/atlantic-large-whale-take-reduction-plan.

6.3.3.2.1.2 Small Cetaceans

Sink Gillnet and Bottom Trawl Gear

Small cetaceans and pinnipeds are vulnerable to interactions with bottom trawl gear.[14]
Reviewing marine mammal stock assessment and serious injury reports that cover the most recent 10 years data (i.e., 2008-2017), as well as the MMPA LOF's covering this time frame (i.e., issued between 2016 and 2021), Table 29 provides a list of species that have been observed (incidentally) seriously injured and/or killed by MMPA LOF Category I (frequent interactions) gillnet and/or Category II (occasional interactions) bottom trawl fisheries that operate in the affected environment of the bluefish fishery. Of the species provided in
, gray seals, followed by harbor seals, harbor porpoises, short beaked common dolphins, and harps seals are the most frequently bycaught small cetacean and pinnipeds in sink gillnet gear in the Greater Atlantic Region (GAR; Hatch and Orphanides 2014, 2015, 2016, 2019; Orphanides 2020). In terms of bottom trawl gear, short-beaked common dolphins, Risso's dolphins, and Atlantic white-sided dolphins are the most frequently observed bycaught marine mammal species in the GAR, followed by gray seals, long-finned pilot whales, bottlenose dolphin (offshore), harbor porpoise, harbor seals, and harp seals (Lyssikatos 2015; Chavez-Rosales et al. 2017, Lyssikatos et al. 2020).

Table 29: Small cetacean and pinniped species observed seriously injured and/or killed by Category I and II sink gillnet or bottom trawl fisheries in the affected environment of the bluefish fishery.

Fishery	Category	Species Observed or reported Injured/Killed
Northeast Sink Gillnet		Bottlenose dolphin (offshore)

[14] For additional information on small cetacean and pinniped interactions, see: Chavez-Rosales et al. 2017; Hatch and Orphanides 2014, 2015, 2016, 2019; Josephson et al. 2017; Josephson et al. 2019; Lyssikatos 2015; Lyssikatos et al. 2020; Orphanides 2020; Read *et al.* 2006; Waring et al. 2015b; Marine Mammal SARS: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region; MMPA LOF at: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-protection-act-list-fisheries.

	I	Harbor porpoise
		Atlantic white sided dolphin
		Short-beaked common dolphin
		Risso's dolphin
		Pilot whales
		Harbor seal
		Hooded seal
		Gray seal
		Harp seal
Mid-Atlantic Gillnet	I	Bottlenose dolphin (Northern Migratory coastal)
		Bottlenose dolphin (Southern Migratory coastal)
		Bottlenose dolphin (offshore)
		Harbor porpoise
		Short-beaked common dolphin
		Harbor seal
		Harp seal
		Pilot whales
		Atlantic white sided dolphin
		Risso's dolphin
		Gray seal
Northeast Bottom Trawl	II	Harp seal
		Harbor seal
		Gray seal
		Pilot whales
		Short-beaked common dolphin
		Atlantic white-sided dolphin
		Harbor porpoise
		Bottlenose dolphin (offshore)
		Risso's dolphin
Mid-Atlantic Bottom Trawl	II	Atlantic white-sided dolphin
		Short-beaked common dolphin
		Pilot whales
		Risso's dolphin
		Bottlenose dolphin (offshore)
		Gray seal
		Harbor seal
Source: MMPA 2012-2021 LOFs at: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-protection-act-list-fisheries		

MMPA Section 118(f)(1) requires the preparation and implementation of a TRP for any

strategic marine mammal stock that interacts with Category I or II fisheries. Thus, the Harbor Porpoise TRP (HPTRP) and the Bottlenose Dolphin TRP (BDTRP) were developed and implemented for these species.[15] Also, due to the incidental mortality and serious injury of small cetaceans, incidental to bottom and midwater trawl fisheries operating in both the Northeast and Mid- Atlantic regions, the Atlantic Trawl Gear Take Reduction Strategy (ATGTRS) was implemented. Additional information on each TRP or Strategy is at: https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-take-reduction-plans-and-teams.

6.3.3.2.1.3 Sea Turtles

Bottom Trawl Gear

Bottom trawl gear poses an injury and mortality risk to sea turtles (Sasso and Epperly 2006; NMFS Observer Program, unpublished data). Since 1989, the date of our earliest observer records for federally managed fisheries, sea turtle interactions with trawl gear have been observed in the Gulf of Maine, Georges Bank, and/or the Mid-Atlantic; however, most of the observed interactions have been observed south of the Gulf of Maine (Murray 2008; Murray 2015b; Murray 2020; NMFS Observer Program, unpublished data; Warden 2011 a, b). As few sea turtle interactions have been observed in the Gulf of Maine, there is insufficient data available to conduct a robust model-based analysis and bycatch estimate of sea turtle interactions with trawl gear in this region. As a result, the bycatch estimates and discussion below are for trawl gear in the Mid-Atlantic and Georges Bank.

Murray (2020) provided information on sea turtle interaction rates from 2014-2018 (the most recent five-year period that has been statistically analyzed for trawls). Interaction rates were stratified by region, latitude zone, season, and depth. The highest loggerhead interaction rate (0.43 turtles/day fished) was in waters south of 37º N during November to June in waters greater than 50 meters deep. The greatest number of estimated interactions occurred in the Mid-Atlantic region north of 39º N, during July to October in waters less than 50 meters deep. Within each stratum, interaction rates for non-loggerhead species were lower than rates for loggerheads (Murray 2020).

Based on Murray (2020)[16], from 2014-2018, 571 loggerhead (CV=0.29, 95% CI=318-997), 46 Kemp's ridley (CV=0.45, 95% CI=10-88), 20 leatherback (CV=0.72, 95% CI = 0-50), and 16 green (CV=0.73, 95% CI=0-44) sea turtle interactions were estimated to have occurred in bottom trawl gear in the Mid-Atlantic region over the five-year period. On Georges Bank, 12 loggerheads (CV=0.70, 95% CI=0-31) and 6 leatherback (CV=1.0, 95% CI=0-20) interactions were estimated

[15] Although the most recent U.S. Atlantic and Gulf of Mexico Marine Mammal SARs (Hayes et al. 2020) no longer designates harbor porpoise as a strategic stock, HPTRP regulations are still in place per the mandates provided in Section 118(f)(1).

[16] Murray (2020) estimated interaction rates for each sea turtle species with stratified ratio estimators. This method differs from previous approaches (Murray 2008; Murray 2015b; Warden 2011a,b), where rates were estimated using generalized additive models (GAMs). Ratio estimator results may be similar to those using GAM or generalized linear models (GLM) if ratio estimators are stratified based on the same explanatory variables in a GAM or GLM model (Murray 2007, Murray and Orphanides 2013, Orphanides 2010).

to have occurred from 2014-2018. An estimated 272 loggerhead, 23 Kemp's ridley, 13 leatherback, and 8 green sea turtle interactions resulted in mortality over this period (Murray 2020).

Sink Gillnet Gear

Interactions between sink gillnet gear and green, Kemp's ridley, loggerhead, and leatherback sea turtles have been observed in the Greater Atlantic region since 1989 (NEFSC observer/sea sampling database, unpublished data). Specifically, sea turtle interactions with gillnet gear have been observed in the Gulf of Maine, Georges Bank, and/or the Mid-Atlantic; however, most of the observed interactions have been observed south of the Gulf of Maine (Murray 2009a,b; Murray 2013; Murray 2018; NEFSC observer/sea sampling database, unpublished data). As few sea turtle interactions have been observed in the Gulf of Maine, there is insufficient data available to conduct a robust model-based analysis and bycatch estimate of sea turtle interactions with sink gillnet gear in this region. As a result, the bycatch estimates and discussion below are for sink gillnet gear in the Mid-Atlantic and Georges Bank.

From 2012-2016 (the most recent five-year period that has been statistically analyzed for gillnets), Murray (2018) estimated that sink gillnet fisheries in the Mid-Atlantic and Georges Bank bycaught 705 loggerheads (CV=0.29, 95% CI over all years: 335-1116), 145 Kemp's ridleys (CV =0.43, 95% CI over all years: 44-292), 27 leatherbacks (CV =0.71, 95% CI over all years 0-68), and 112 unidentified hard-shelled turtles (CV=0.37, 95% CI over all years (64-321).[17] Of these, mortalities were estimated at 557 loggerheads, 115 Kemp's ridley, 21 leatherbacks, and 88 unidentified hard-shelled sea turtles. Total estimated loggerhead bycatch was equivalent to 19 adults. The highest bycatch rate of loggerheads occurred in the southern Mid-Atlantic stratum in large mesh gear during November to June. Though only one sea turtle was observed in this stratum, observed effort was low, leading to a high bycatch rate. Bycatch rates of all other species were lower relative to loggerheads. Highest estimated loggerhead bycatch occurred in the northern mid-Atlantic from July to October in large mesh gears due to the higher levels of commercial effort in the stratum. Mean loggerhead bycatch rates were ten times those of Kemp's ridley bycatch rates in large mesh gear in the northern Mid-Atlantic from July to October (Murray 2018). Although interactions between sink gillnet gear and green sea turtles have been observed (NEFSC observer/sea sampling database, unpublished data); green sea turtles were excluded from the bycatch rate calculations in Murray (2018) because the observed interaction occurred in waters of North Carolina, and therefore, outside the study region.

6.3.3.2.1.4 Atlantic Sturgeon

Sink Gillnet and Bottom Trawl Gear

Since 1989, Atlantic sturgeon interactions (i.e., bycatch) with sink gillnet and bottom trawl gear have frequently been observed in the Greater Atlantic Region, with most sturgeon observed captured falling within the 100 to 200cm total length range; however, both larger and small individuals have been observed (ASMFC 2007; ASMFC 2017; Miller and Shepard 2011; NEFSC observer/sea sampling database, unpublished data; Stein et al. 2004). For sink gillnets, higher

[17] Murray (2018) estimated interaction rates for each sea turtle species with stratified ratio estimators. This method differs from previous approaches (Murray 2009, 2013), where rates were estimated using generalized additive models (GAMs). Ratio estimator results may be similar to those using GAM or generalized linear models (GLM) if ratio estimators are stratified based on the same explanatory variables in a GAM or GLM model (Murray 2007, Murray and Orphanides 2013, Orphanides 2010).

levels of Atlantic sturgeon bycatch have been associated with depths of less than 40 meters, mesh sizes of greater than 10 inches, and the months of April and May (ASMFC 2007). For otter trawl fisheries, the highest incidence of Atlantic sturgeon bycatch have been associated with depths less than 30 meters (ASMFC 2007). More recently, over all gears and observer programs that have encountered Atlantic sturgeon, the distribution of haul depths on observed hauls that caught Atlantic sturgeon was significantly different from those that did not encounter Atlantic surgeon, with Atlantic sturgeon encountered primarily at depths less than 20 meters (ASMFC 2017).

The ASMFC (2017) Atlantic sturgeon benchmark stock assessment represents the most accurate predictor of annual Atlantic sturgeon interactions in fishing gear (e.g., otter trawl, gillnet). The stock assessment analyzes fishery observer and VTR data to estimate Atlantic sturgeon interactions in fishing gear in the Mid-Atlantic and New England regions from 2000-2015, the timeframe which included the most recent, complete data at the time of the report. The total bycatch of Atlantic sturgeon from bottom otter trawls ranged between 624-1,518 fish over the 2000-2015 time series, while the total bycatch of Atlantic sturgeon from gillnets ranged from 253-2,715 fish. Focusing on the most recent five-year period of data provided in the stock assessment report[18], the estimated average annual bycatch during 2011-2015 of Atlantic sturgeon in bottom otter trawl gear is 777.4 individuals and in gillnet gear is 627.6 individuals.

6.3.3.2.1.5 Atlantic salmon

Sink Gillnet and Bottom Trawl Gear

Atlantic salmon are at risk of interacting with bottom trawl or gillnet gear (NEFSC observer/sea sampling database, unpublished data; Kocik *et al*. 2014). NEFOP data from 1989-2019 show records of incidental bycatch of Atlantic salmon in seven of the 31 years, with a total of 15 individuals caught, nearly half of which (seven) occurred in 1992 (NEFSC observer/sea sampling database, unpublished data).[19] Of the observed incidentally caught Atlantic salmon, ten were listed as "discarded," which is assumed to be a live discard (Kocik, pers comm.; February 11, 2013). Five of the 15 were documented as lethal interactions. The incidental takes of Atlantic salmon occurred in bottom otter trawls (4) and gillnets (11). Observed captures occurred in March (2), April (2), May (1), June (3), August (1), and November (6). Given the very low number of observed Atlantic salmon interactions in gillnet and bottom trawl gear, interactions with these gear types are believed to be rare in the Greater Atlantic Region.

6.3.3.2.1.6 Giant Manta Ray

Giant manta rays are potentially susceptible to capture by bottom trawl and gillnet gear based on records of their capture in fisheries using these gear types (NEFSC observer/sea sampling database, unpublished data). Review of the most recent 10 years of NEFOP data showed that between 2010-2019, two (unidentified) Giant Manta Rays were observed in bottom trawl gear and

[18] The period of 2011-2015 was chosen as it is the period within the stock assessment that most accurately resembles the current trawl fisheries in the region.

[19] There is no information available on the genetics of these bycaught Atlantic salmon, so it is not know how many of them were part of the GOM DPS. It is likely that some of these salmon, particularly those caught south of Cape Cod, may have originated from the stocking program in the Connecticut River. Those Atlantic salmon caught north of Cape Cod and/or in the Gulf of Maine are more likely to be from the GOM DPS.

two were observed in gillnet gear (NEFSC observer/sea sampling database, unpublished data). Additionally, all of the giant manta ray interactions in gillnet or trawl gear recorded in the NEFOP database (13 between 2001 and 2019) indicate the animals were encountered alive and released alive. However, details about specific conditions such as injuries, damage, time out of water, how the animal was moved or released, or behavior on release is not always recorded. While there is currently no information on post-release survival, NMFS Southeast Gillnet Observer Program observed a range of 0 to 16 giant manta rays captured per year between 1998 and 2015 and estimated that approximately 89% survived the interaction and release (see NMFS reports available at: http://www.sefsc.noaa.gov/labs/panama/ob/gillnet.htm).

6.4. Human Communities

The following sections summarize human community impacts on the commercial and recreational fisheries for bluefish, however social and economic impacts are further described in section 7.5.

6.4.1. Commercial Fishery

In 2020, commercial vessels landed about 2.16 million pounds of bluefish valued at approximately $1.84 million (dealer data). Average coastwide ex-vessel price of bluefish was $0.85 per pound in 2020, a ~4.5% decrease from the previous year (2019 price = $0.89 per pound). The relative value of bluefish is very low among commercially landed species, less than 1% of the total value, respectively of all finfish and shellfish landed along the U.S. Atlantic coast in 2020. A time series of bluefish revenue and price is provided in Figure 7.

VTR data were used to identify all NMFS statistical areas that accounted for 5 percent or more of the Atlantic bluefish catch or areas which individually accounted for 5 percent or greater of the trips which caught bluefish in 2020 (Table 30). Eight statistical areas accounted for approximately 74% of the VTR-reported catch in 2020. Statistical area 539 was responsible for the highest percentage of the catch, with statistical area 611 having the majority of trips that caught bluefish (Table 30). A map of the statistical areas that accounted for a percentage of the Atlantic bluefish catch is shown in Figure 8.

The top commercial landings ports for bluefish in 2020 are shown in Table 31. Five ports qualified as "top bluefish ports," i.e., those ports where 100,000 pounds or more of bluefish were landed. Wanchese, NC was the most active commercial bluefish port with almost 400,000 pounds landed. The ports and communities that are dependent on bluefish are described in Amendment 1 to the FMP (available at http://www.mafmc.org/fisheries/fmp/bluefish). Additional information on "Community Profiles for the Northeast US Fisheries" can be found at http://www.nefsc.noaa.gov/read/socialsci/community_profiles/.

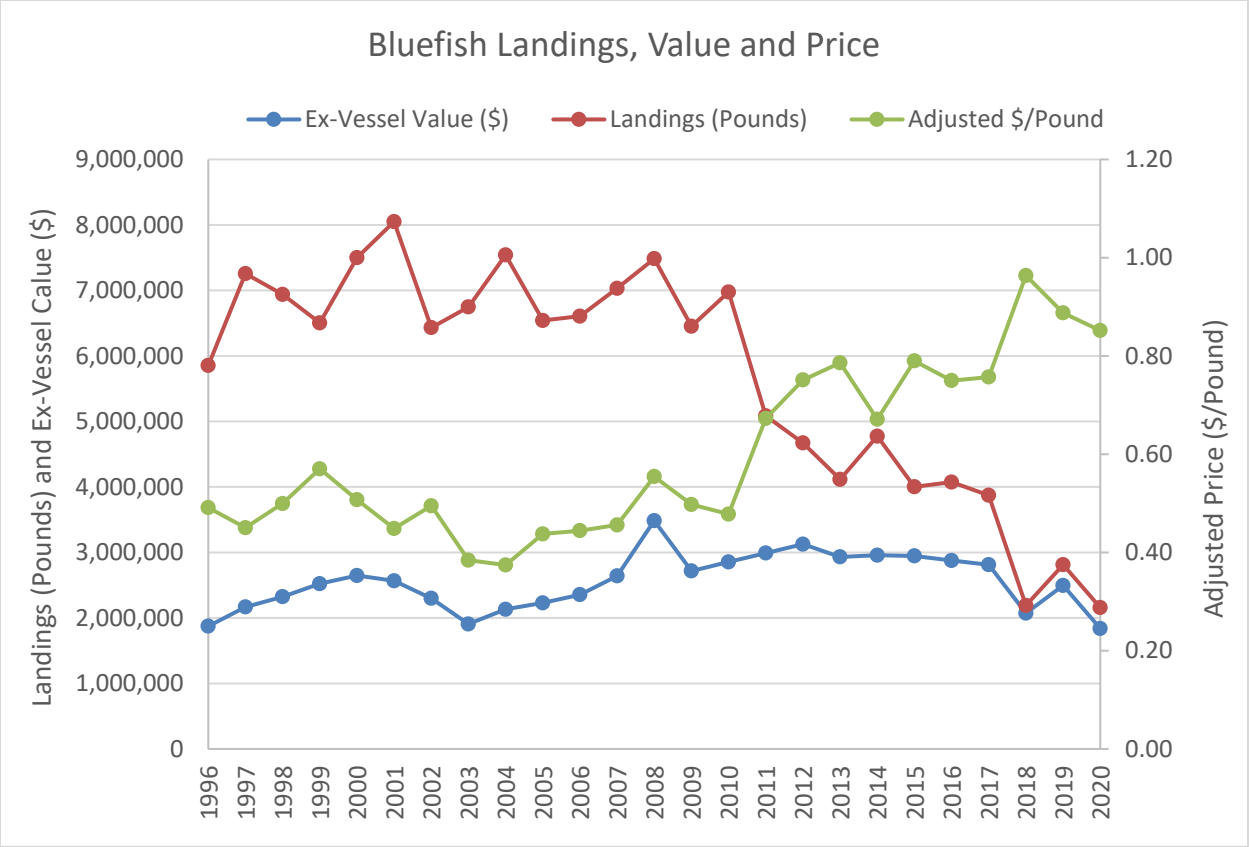

Figure 7: Landings, ex-vessel value, and price (adjusted to 2020 real dollars) for bluefish, 1996-2020.

Table 30: Statistical areas that accounted for at least 5 percent of the total bluefish catch or 5 percent or greater of the trips which caught bluefish in 2020. Source: VTR database.

Statistical area	Pounds of bluefish caught	Percent of 2020 commercial bluefish catch	Number of trips	Percent of 2020 bluefish trips that caught bluefish
539	142,333	21%	838	20%
613	81,676	12%	615	15%
611	63,433	9%	1,100	26%
537	51,818	8%	383	9%
626	50,526	7%	36	1%
636	49,261	7%	25	1%
632	34,409	5%	18	<1%
612	32,366	5%	314	7%

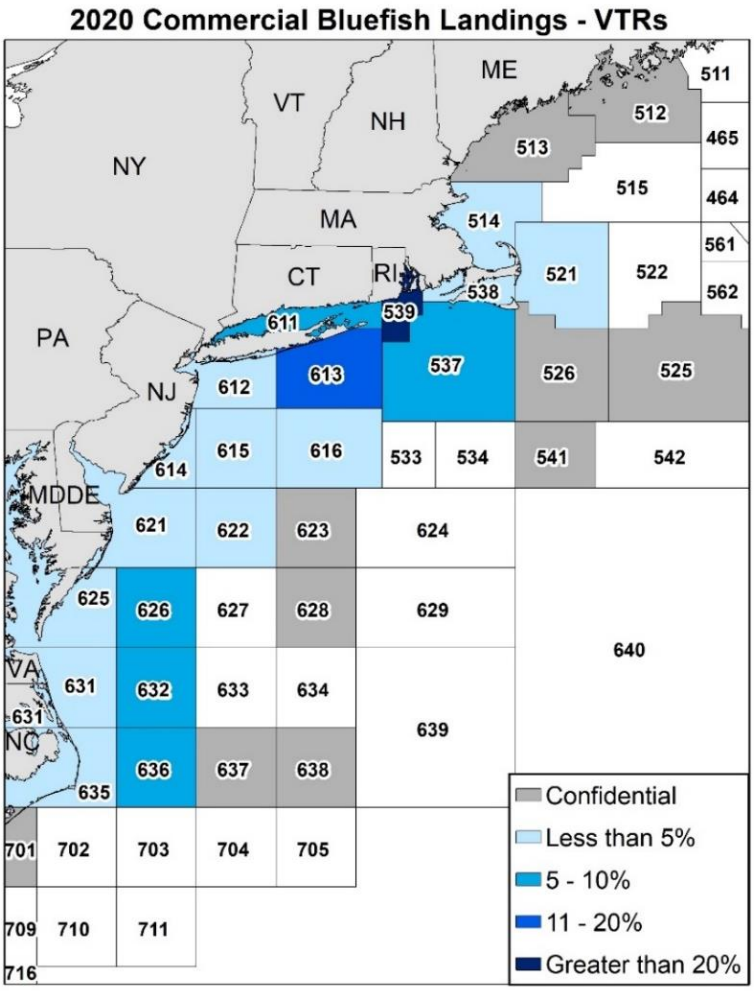

Figure 8: NMFS Statistical Areas that accounted for a percentage of the commercial bluefish landings in 2020. Source: VTR data.

Table 31: Bluefish landings in pounds by port based on NMFS 2020 dealer data.

Port[1]	Pounds	Percent of total commercial bluefish landings	Vessels (Number)
Wanchese, NC	368,942	17%	16
Hatteras, NC	269,655	12%	<10
Point Judith, RI	216,060	10%	99
Montauk, NY	151,200	7%	74
Little Compton, RI	105,941	5%	<10

[1]This table includes only the "top ports" (ports where landings of bluefish were > 100,000 pounds), and thus does not include all 2020 landings.

Federal permit data indicate that 2,351 commercial bluefish permits were issued in 2020[20]. A subset of federally permitted vessels was active in 2020 with dealer reports identifying 423 vessels with commercial bluefish permits that actually landed bluefish. Of the 307 federally permitted bluefish dealers in 2020, there were 107 dealers who actually bought bluefish.

Dealer data for 2020 indicate that the majority of the bluefish landings were taken by gillnet (52%), followed by unknown gear (24%), otter trawl/bottom fish (15%), handline (5%), and other (4%).

6.4.2. Recreational Fishery

In 2018, the MRIP transitioned to a mail survey design that uses the National Saltwater Angler Registry. New survey designs produced very different results than those from older surveys. MRIP re-calibration work showed many effort estimations increased by ~3 times. This increase substantially altered bluefish catch, landings, and effort data for the shore and private angler modes. No change occurred for the party/charter mode as vessel operators either submit VTRs or report through a separate telephone survey.

Prior to this amendment, the recreational bluefish allocation was 83% of the overall ACL. This applies in Council managed federal waters and Commission managed state waters. According to re-calibrated MRIP estimates, since 1981, recreational bluefish catch has fluctuated from a peak of 75.76 million fish in 1981 to a low of 24.87 million fish in 1988. Harvest fluctuated from a high of 169.63 million pounds in 1981 to a low of 13.27 million pounds in 2018. In 2020, recreational harvest was 13.58 million pounds. Thus, 2018 and 2020 were the worst years for recreational harvest across the time series. A coastwide time series of recreational harvest is provided in Figure 9, which also compares the old and new recalibrated MRIP estimates.

The recreational fishery is prosecuted through three fishing modes: for-hire (party/charter), shore, and private angler. In 2020, 73% of the landings of bluefish on a coastwide basis came from shore, followed by 24% private/rental and 3% for-hire. Over the last five years (2016-2020), ~66% of the total bluefish landings came from shore, ~31% from private/rental boats, and ~4% from for-hire boats.

[20]In addition, there were 863 party/charter bluefish permit issued in 2020. A subset of federally permitted party/charter vessels was active in 2020 with VTR reports identifying 258 vessels with party/charter bluefish permits that actually landed bluefish.

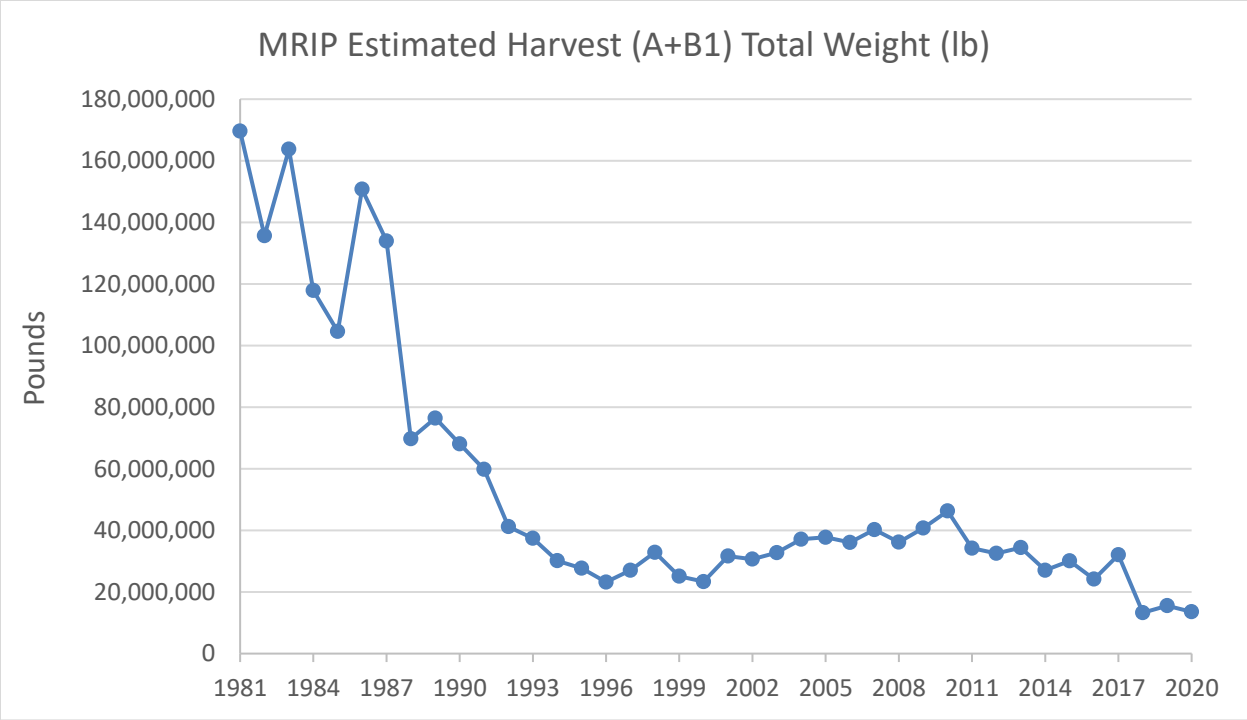

Figure 9: Recreational bluefish harvest from 1981-2020. Source: MRIP.

MRIP recreational landings decreased by approximately 13% from 2019 to 2020 (15.56 million pounds to 13.58 million pounds). The lowest recreational landings for the time series occurred in 2018 and 2020 (Table 32). This coincides with effort, as the number of recreational trips in 2018 (7.17 million) is the lowest reported in the time series.

In 2020, the greatest harvest of bluefish by weight occurred in Florida with 5.73 million pounds (Table 33). Average weights, based on dividing MRIP landings in weight by landings in number for each state, suggest that bluefish size tends to increase toward the north along the Atlantic coast for harvested fish. Furthermore, releases in the recreational fishery remain above 20 million throughout the time series.

Table 32: Number of bluefish recreational fishing trips, landings per trip, harvest, catch and releases/discards from 2000 to 2020, ME-FL. Source: MRIP.

Year	Bluefish trips[1] (N)	Recreational landings per "bluefish" trip	Recreational Harvest (N)	Recreational Harvest (lbs)	Released Alive (N)	Dead Discards[2] (lbs)	Catch (N)	Catch (lbs)
2000	9,414,330	1.37	12,879,485	23,357,120	34,223,385	9,136,762	47,102,869	32,493,882
2001	11,184,219	1.61	18,048,645	31,654,978	42,463,607	11,145,791	60,512,252	42,800,769
2002	11,609,147	1.52	17,607,380	30,654,388	32,202,742	8,172,282	49,810,122	38,826,670
2003	11,270,920	1.46	16,411,932	32,758,670	21,334,305	6,882,295	37,746,238	39,640,965
2004	12,494,269	1.49	18,631,904	37,133,463	30,607,172	10,405,576	49,239,076	47,539,039
2005	12,816,693	1.43	18,341,452	37,742,807	30,141,215	10,584,246	48,482,667	48,327,053
2006	12,166,411	1.59	19,397,272	36,081,958	34,912,777	11,657,418	54,310,049	47,739,376
2007	13,324,958	1.44	19,189,747	40,239,101	37,123,644	10,982,452	56,313,391	51,221,553
2008	11,416,665	1.30	14,845,435	36,166,834	31,199,569	12,326,758	46,045,003	48,493,592
2009	11,805,296	1.53	18,085,386	40,731,438	31,781,201	12,394,411	49,866,587	53,125,849
2010	13,514,815	1.62	21,929,517	46,302,792	40,420,592	12,296,774	62,350,109	58,599,566
2011	11,921,366	1.75	20,814,884	34,218,748	37,475,767	9,850,040	58,290,651	44,068,788
2012	12,817,838	1.45	18,578,838	32,530,917	32,079,529	8,743,161	50,658,367	41,274,078
2013	9,353,805	2.14	19,975,051	34,398,327	33,519,613	7,733,548	53,494,664	42,131,875
2014	12,441,771	1.73	21,510,651	27,044,276	33,583,115	7,317,237	55,093,766	34,361,513
2015	9,406,704	1.46	13,725,106	30,098,649	28,423,854	10,170,472	42,148,960	40,269,121
2016	10,626,957	1.40	14,899,723	24,155,304	27,629,023	7,106,707	42,528,746	31,262,011
2017	9,952,090	1.39	13,845,806	32,071,432	28,317,327	6,767,813	42,163,133	38,839,245
2018	7,169,536	1.43	10,245,710	13,270,862	20,682,992	3,897,500	30,928,703	17,168,362
2019	8,250,853	1.47	12,137,290	15,555,889	26,494,646	4,880,759	38,631,936	20,436,648
2020	8,745,993	1.07	9,336,222	13,581,218	21,345,604	4,191,779	30,681,826	17,772,997

[1] Estimated number of recreational fishing trips where the primary target was bluefish or bluefish were harvested regardless of target. [2] Each dead discard value in weight is calculated by querying MRIP releases by year, state and mode because the weights of fish discarded vary largely from state to state. MRIP B2s by year, state and mode are multiplied by their respective average weight of a landed fish and the assumed 15% discard mortality rate.

Table 33: Estimated 2020 bluefish harvest, total catch, and average weight. Source: MRIP.

State	Harvest			Catch	Released Alive	Dead Discards
	Pounds	Number	Average Weight[1] (pounds)	Number	Number	Number
ME	0	0	0	0	0	-
NH	1,800	376	4.8	376	0	-
MA	553,242	162,128	3.4	906,269	744,141	111,621
RI	508,227	220,556	2.3	1,089,449	868,893	130,334
CT	594,546	298,383	2.0	1,407,730	1,109,347	166,402
NY	1,478,719	885,517	1.7	3,701,474	2,815,957	422,394
NJ	1,808,548	595,103	3.0	3,372,216	2,777,113	416,567
DE	94,901	53,751	1.8	219,288	165,537	24,831
MD	214,991	173,846	1.2	494,214	320,368	48,055
VA	305,092	395,751	0.8	1,172,803	777,052	116,558
NC	2,124,224	2,108,296	1.0	8,666,047	6,557,751	983,663
SC	154,420	289,339	0.5	2,187,307	1,897,968	284,695
GA	9,902	10,795	0.9	187,272	176,477	26,472
FL	5,732,605	4,142,380	1.4	7,277,380	3,135,000	470,250
Total	13,581,217	9,336,221	-	30,681,825	21,345,604	3,201,841

[1] Average weight in Table 3 is simply the pounds harvested divided by the number of fish harvested. These average weights are calculated differently than what is presented in Table 2 due to the state and mode aspect associated with released fish.

7. ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES

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

The current conditions of the VECs are summarized in Table 34 and described in more detail in section 6. Impacts are described both in terms of their direction (negative, positive, or no impact) and their magnitude (slight, moderate, or high) based on the guidelines shown in Table 35.

The recent conditions of the VECs include the biological conditions of bluefish, non-target stocks, and protected species over the most recent five years (sections 6.1 and **Error! Reference source not found.**). They also include the fishing practices and levels of effort and landings in commercial and recreational fisheries for bluefish over the most recent five years, as well as the economic characteristics of the fisheries over the most recent three to five years (depending on the dataset; section 6.3). They also include recent levels of habitat availability and quality (section 6.2).

In general, alternatives which may result in overfishing or an overfished status for target or non-target species are considered to have negative impacts for those species. Conversely, alternatives which may result in decreased fishing mortality, ending overfishing, and/or rebuilding to the biomass target are considered to have positive impacts (Table 35).

As previously stated, gill nets are the predominant gear type in the commercial bluefish fishery. The recreational fishery uses hook and line gear almost exclusively. When considering the impacts of the alternatives on the habitat and protected species VECs, emphasis is placed on the commercial fisheries due to the higher potential for impacts to those VECs from gill net gear than from hook and line gear (sections 6.2.3 and **Error! Reference source not found.**).

Alternatives that improve the quality or quantity of habitat are expected to have positive impacts on habitat. Alternatives that degrade the quality or quantity, or increase disturbance of habitat are expected to have negative impacts (Table 35). A reduction in fishing effort is likely to decrease the time that fishing gear is in the water, thus reducing the potential for interactions between fishing gear and habitat. However, most areas where bluefish are fished have been fished by multiple fishing fleets over many decades and are unlikely to see a measurable improvement in their condition in response to a decrease in effort for an individual fishery.

The impacts of the alternatives on protected species take into account impacts to ESA-listed species, as well as impacts to non-listed MMPA protected species in good condition (i.e., marine mammal stocks whose PBR level have not been exceeded) or poor (i.e., marine mammal stocks that have exceeded or are near exceeding their PBR level) condition. For ESA-listed species, any action that results in interactions or take is expected to have some level of negative impacts, including actions that reduce interactions. Actions expected to result in positive impacts on ESA-listed species include only those that contain specific measures to ensure no interactions (i.e., no take). By definition, all ESA-listed species are in poor condition and any take can negatively impact that species' recovery. The stock conditions for marine mammals not listed under the ESA varies by species; however, all are in need of protection. For marine mammal stocks that have their PBR level reached or exceeded, some level of negative impacts would be expected from alternatives that result in the potential for interactions between fisheries and those stocks. For species that are at more sustainable levels (i.e., PBR levels have not been exceeded), alternatives not expected to change fishing behavior or effort may have some level of positive impacts by maintaining takes below the PBR level and approaching the zero mortality rate goal (Table 35).

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

Table 34: Recent conditions of VECs (described in more detail in section 6).

VEC		Condition	
		Overfishing?	**Overfished?**
Target stock (section 6.1.1)	**Bluefish**	No	Yes
Non-target species (principal species listed in section 6.1.2)	Smooth Dogfish	No	No
	Spiny Dogfish	No	No
	Scup	No	No
	Atlantic Bonito	Unknown	Unknown
	Striped Bass	Yes	Yes
	Black Sea Bass	No	No
	Spanish Mackerel	No	No
	Spotted Sea Trout	Unknown Coastwide	Unknown Coastwide
Habitat (section 6.2)		Commercial fishing impacts are complex, variable, and typically adverse. Recreational fishing has minimal impacts on habitat. Non-fishing activities had historically negative but site-specific effects on habitat quality.	
Protected species (section 6.3)	**Sea turtles**	Leatherback and Kemp's ridley sea turtles are endangered; loggerhead (NW Atlantic DPS) and green (North Atlantic DPS) sea turtles are threatened.	
	Fish	Atlantic salmon, shortnose sturgeon, and the New York Bight, Chesapeake, Carolina, and South Atlantic DPSs of Atlantic sturgeon are endangered. Atlantic sturgeon Gulf of Maine DPS threatened. Cusk are a candidate species	
	Large whales	All large whales in the Northwest Atlantic are protected under the MMPA. North Atlantic right, fin, blue, sei, and sperm whales are also listed as endangered under the ESA.	
	Small cetaceans	Pilot whales, dolphins, and harbor porpoise are protected under the MMPA. The Atlantic Trawl Gear Take Reduction Strategy was developed to identify measures to reduce the mortality and serious injury of small cetaceans in trawl gear.	
	Pinnipeds	Gray, harbor, hooded, and harp seals are protected under the MMPA.	
Human communities (section 6.4)	**Bluefish**	Commercial landings (source: dealer database – cfders) were 2.16 million pounds in 2020, with $1.84 million ex-vessel value for an ex-vessel price of $0.85 per pound (2020 dollars). Recreational landings in 2020 were 13.58 million pounds.	

Table 35: Guidelines for defining the direction and magnitude of the impacts of alternatives on the VECs.

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

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

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

Expected Changes in Fishing Effort Under for all Alternatives

The expected impacts of the alternatives on the VECs are derived from consideration of both the current conditions of the VECs and expected changes in fishing effort under each alternative. It is not possible to quantify with confidence how fishing effort will change under each alternative; therefore, expected changes are described qualitatively. Fishing effort is influenced by a variety of interacting factors, including regulations (catch and landings limits, possession limits, gear restrictions, seasonal closures, etc.), availability of the species in question and other potential target species, market factors (namely, price of potential target species) and other factors.

In this document, expected changes in fishing effort under each alternative are largely based on changes in the commercial and recreational allocations, assuming all other factors (availability, prices, etc.) remain similar to current conditions. It is important to note that actual fishing effort may differ from these expectations based on changes in availability, market factors, and other conditions which are difficult to predict.

Fishing effort for bluefish has declined in recent years (Table 32). The reduction is effort coincides with on the water observations from the bluefish Advisory Panel. Furthermore, the 2019 overfished designation also confirms the observed decrease in landings in recent years. Overall, less fish (as indicated by the operational assessment) leads to lower quotas and less incentive to target bluefish. Especially considering bluefish is often referred to as a fallback species within the recreational fishery. Effort in the commercial fishery has remained low and stable in recent years.

The goal of a rebuilding plan, as detailed in MSA, is to rebuild the stock as quickly as possible within at least 10 years of notification of the overfished status while accounting for the needs of stakeholders in the fishery. The preferred rebuilding plan is set to rebuild the stock within 7 years and allows for increased catch each year (depending on future projections) while maintaining a constant fishing mortality level identified by the stock assessment scientist and ultimately set by the SSC.

7.1. Impacts to the Target and Non-Target Species

The following sections describe the expected impacts of each alternative on the bluefish resource and non-target species. The impacts are based on expected changes in fishing effort (and thus, fishing mortality) under each alternative.

7.1.1. Impacts to Alternative Set 2 (Commercial/Recreational Allocations)

This section details the impacts associated with the sector allocations and the ability to phase-in the allocations over a specified duration. The duration to phase in allocation was set as the number of years required to rebuild the stock (as indicated by the preferred rebuilding plan). All the alternatives are slight - to slight + because they will maintain the current stock status.

Alternative 2a-1 (Status quo)

Alternative 2a-1 is the status quo alternative that would keep the allocations at 83% recreational and 17% commercial. This allocation alternative is based on landings data from 1981-1989 and was set in Amendment 1 in 2000. The expected impacts on bluefish and non-target species under this alternative are slight - to slight + because each sector is still constrained by their respective quotas/management measures and are working towards rebuilding (i.e., increasing SSB). Since bluefish are currently overfished and this alternative would not directly improve stock status, the range of anticipated impacts starts in the negative. For non-target species, this alternative will also

maintain the current stock statuses, most of which are positive with the exception of striped bass. Therefore, the range of impacts to non-target species is also slight - to slight +.

Alternative 2a-2

Alternative 2a-2 sets the allocations at 89% recreational and 11% commercial. This allocation alternative is based on catch data from 2014-2018 and 2009-2018. Compared to the baseline, the expected impacts to bluefish and non-target species under this alternative are slight - to slight + because each sector is still constrained by their respective quotas/management measures and are working towards rebuilding (i.e., increasing SSB). Since bluefish are currently overfished and this alternative would not directly improve stock status, the range of anticipated impacts starts in the negative. For non-target species, this alternative will also maintain the current stock statuses, most of which are positive with the exception of striped bass. Therefore, the range of impacts to non-target species is also slight - to slight +.

Alternative 2a-3

Alternative 2a-3 sets the allocations at 87% recreational and 13% commercial. This allocation alternative is based on catch data from 1999-2018. Compared to the baseline, the expected impacts to bluefish and non-target species under this alternative are slight - to slight + because each sector is still constrained by their respective quotas/management measures and are working towards rebuilding (i.e., increasing SSB). Since bluefish are currently overfished and this alternative would not directly improve stock status, the range of anticipated impacts starts in the negative. For non-target species, this alternative will also maintain the current stock statuses, most of which are positive with the exception of striped bass. Therefore, the range of impacts to non-target species is also slight - to slight +.

Alternative 2a-4 (Preferred)

Alternative 2a-4 is the preferred alternative and sets the allocations at 86% recreational and 14% commercial. This allocation alternative is based on catch data from 1981-2018 and landings data from 2014-2018 and 2009-2018. Compared to the baseline, the expected impacts to bluefish and non-target species under this alternative are slight - to slight + because each sector is still constrained by their respective quotas/management measures and are working towards rebuilding (i.e., increasing SSB). Since bluefish are currently overfished and this alternative would not directly improve stock status, the range of anticipated impacts starts in the negative. For non-target species, this alternative will also maintain the current stock statuses, most of which are positive with the exception of striped bass. Therefore, the range of impacts to non-target species is also slight - to slight +.

Alternative 2a-5

Alternative 2a-5 sets the allocations at 84% recreational and 16% commercial. This allocation alternative is based on landings data from 1981-2018 and 1999-2018. Compared to the baseline, the expected impacts to bluefish and non-target species under this alternative are slight - to slight + because each sector is still constrained by their respective quotas/management measures and are working towards rebuilding (i.e., increasing SSB). Since bluefish are currently overfished and this alternative would not directly improve stock status, the range of anticipated impacts starts in the negative. For non-target species, this alternative will also maintain the current stock statuses, most

of which are positive with the exception of striped bass. Therefore, the range of impacts to non-target species is also slight - to slight +.

Comparisons within 2a alternatives

The impacts of all 2a alternatives are expected to be slight - to slight + on bluefish and non-target species. However, given the recreational sector harvests and discards much more bluefish than the commercial sector, the allocations associated with alternative 2a-2 has the potential to be negative to a greater degree than the other alternatives. The remaining alternatives are listed in order of slightly more negative to least negative given the recreational allocations: 2a-3, 2a-4, 2a-5, and 2a-1.

Alternative 2b-1 (Preferred) (Status quo)

Alternative 2b-1 is the preferred and status quo alternative that states no phase-in of the allocations can occur. The expected impacts on bluefish and non-target species under this alternative are slight - to slight + because each sector is still constrained by their respective quotas/management measures and are working towards rebuilding (i.e., increasing SSB). Since bluefish are currently overfished and this alternative would not directly improve stock status, the range of anticipated impacts starts in the negative. For non-target species, this alternative will also maintain the current stock statuses, most of which are positive with the exception of striped bass. Therefore, the range of impacts to non-target species is also slight - to slight +.

Alternative 2b-2

Alternative 2b-2 allows for the phase-in of allocations. The duration at which the allocations would be phased-in would match the duration of the preferred rebuilding alternative. Compared to the baseline, the expected impacts on bluefish and non-target species under this alternative are slight - to slight + because each sector is still constrained by their respective quotas/management measures and are working towards rebuilding (i.e., increasing SSB). Since bluefish are currently overfished and this alternative would not directly improve stock status, the range of anticipated impacts starts in the negative. For non-target species, this alternative will also maintain the current stock statuses, most of which are positive with the exception of striped bass. Therefore, the range of impacts to non-target species is also slight - to slight +.

Comparisons within 2b alternatives

The impacts of the 2b alternatives are expected to be slight - to slight + on bluefish and non-target species because the amount of allocation to be phased-in over time will be very small (less than 2% per year in all scenarios) and each sector is still constrained by their respective quotas/management measures. However, when compared to each other, 2b-1 is slightly more negative than 2b-2 since it would increase the recreational allocation more quickly and lead to more interactions with bluefish and non-target species.

7.1.2. Impacts to Alternative Set 3 (Commercial Allocations to the States)

This section details the impacts associated with the commercial allocations to the states, the ability to phase-in the allocations over a specified duration, a trigger approach, and implementing a minimum default allocation.

One alternative must be selected from alternative set 3a, 3b, 3c, and 3d and only one alternative can be selected from each set.

Alternative 3a-1 (Status quo)

Alternative 3a-1 is the status quo alternative, which was set in Amendment 1 in 2000, that would keep the commercial allocations to the states based on landings data from 1981-1989. The expected impacts to bluefish and non-target species under this alternative are slight - to slight + because each state is still constrained by their respective quotas/management measures and are working towards rebuilding (i.e., increasing SSB). Since bluefish is currently overfished and this alternative would not directly improve stock status, the range of anticipated impacts starts in the negative. The status quo alternative will maintain the negative stock status in the short term but will allow for improved stock status in the long term due to the ongoing rebuilding plan. For non-target species, this alternative will also maintain the current stock statuses, most of which are positive with the exception of striped bass. Therefore, the range of impacts to non-target species is also slight - to slight +.

Alternative 3a-2

Alternative 3a-2 would update the commercial allocations to the states based on landings data from 2014-2018. Compared to the baseline, the expected impacts to bluefish and non-target species under this alternative are slight - to slight + because each state is still constrained by their respective quotas/management measures and are working towards rebuilding (i.e., increasing SSB). Since bluefish are currently overfished and this alternative would not directly improve stock status, the range of anticipated impacts starts in the negative. This alternative will maintain the negative stock status in the short term but will allow for improved stock status in the long term due to the ongoing rebuilding plan. For non-target species, this alternative will also maintain the current stock statuses, most of which are positive with the exception of striped bass. Therefore, the range of impacts to non-target species is also slight - to slight +.

Since this alternative is based on a more recent time series (2014-2018), the allocations more accurately reflect the current needs of the fishery and stakeholders. This alternative provides greater allocations to the states that currently can utilize larger allocations (e.g., MA, RI and NY). Ultimately, this may lead to higher landings than under the status quo alternative, however each state is still constrained by their own quotas and management measures.

Alternative 3a-3 (Preferred)

Alternative 3a-3 is the preferred alternative and would update the commercial allocations to the states based on landings data from 2009-2018. Compared to the baseline, the expected impacts to bluefish and non-target species under this alternative are slight - to slight + because each state is still constrained by their respective quotas/management measures and are working towards rebuilding (i.e., increasing SSB). Since bluefish are currently overfished and this alternative would not directly improve stock status, the range of anticipated impacts starts in the negative. This alternative will maintain the negative stock status in the short term but will allow for improved stock status in the long term due to the ongoing rebuilding plan. For non-target species, this alternative will also maintain the current stock statuses, most of which are positive with the exception of striped bass. Therefore, the range of impacts to non-target species is also slight - to slight +.

Since this alternative is based on a more recent time series (2009-2018), the allocations more accurately reflect the current needs of the fishery and stakeholders. This alternative provides

greater allocations to the states that currently can utilize larger allocations (e.g., MA, RI and NY). Ultimately, this may lead to higher landings than under the status quo alternative, however each state is still constrained by their own quotas and management measures.

Alternative 3a-4

Alternative 3a-4 would update the commercial allocations to the states based on a combination of landings data from 1981-1989 and 2009-2018. Compared to the baseline, the expected impacts to bluefish and non-target species under this alternative are slight - to slight + because each state is still constrained by their respective quotas/management measures and are working towards rebuilding (i.e., increasing SSB). Since bluefish are currently overfished and this alternative would not directly improve stock status, the range of anticipated impacts starts in the negative. This alternative will maintain the negative stock status in the short term but will allow for improved stock status in the long term due to the ongoing rebuilding plan. For non-target species, this alternative will also maintain the current stock statuses, most of which are positive with the exception of striped bass. Therefore, the range of impacts to non-target species is also slight - to slight +.

Since this alternative is based in part on a more recent time series (2009-2018), the allocations more accurately reflect the current needs of the fishery and stakeholders. Moreover, the historical aspect of the time series (1981-1989) more accurately capture the cyclical nature of the fishery present in longer time series. This alternative provides greater allocations to the states that currently can utilize larger allocations (e.g., MA, RI and NY). Ultimately, this may lead to higher landings than under the status quo alternative, however each state is still constrained by their own quotas and management measures.

Comparisons within 3a alternatives

Under alternatives 3a-2 and 3a-3, MA, RI and NY will experience similar increases in their commercial allocations while DE, MD, VA and FL will experience decreases in allocations compared to the status quo alternative[21]. These allocations are based on more recent time series (5 or 10 years) and more accurately reflect the current needs of the fishery and stakeholders. By allowing these states to harvest more bluefish (while also further reducing harvest in other states that were not landing their entire quota) and inherently increase interactions with non-target species, the overall stocks may experience negative impacts to a greater degree than under alternative 3a-4 or 3a-1. The impacts experienced under 3a-4 may also be negative to a slightly greater degree than under 3a-1 because allocations are again being increased for states in the north that are anticipated to utilize their full allocation.

Alternative 3b-1 (Status quo)

Alternative 2b-1 is the status quo alternative that states no phase-in of the allocations can occur. The expected impacts on bluefish and non-target species under this alternative are slight - to slight + because each sector is still constrained by their respective quotas/management measures and are working towards rebuilding (i.e., increasing SSB). Since bluefish are currently overfished and this alternative would not directly improve stock status, the range of anticipated impacts starts in the

[21] Maine, New Hampshire, South Carolina and Georgia will lose the largest allocation percentages through the reallocation process, however it is relative to their already small allocation that those states are not utilizing.

negative. For non-target species, this alternative will also maintain the current stock statuses, most of which are positive with the exception of striped bass. Therefore, the range of impacts to non-target species is also slight - to slight +.

Alternative 3b-2 (Preferred)

Alternative 2b-2 is the preferred alternative that allows for the phase-in of allocations. The duration at which the allocations would be phased-in would match the duration of the preferred rebuilding alternative (7-years). Compared to the baseline, the expected impacts on bluefish and non-target species under this alternative are slight - to slight + because each sector is still constrained by their respective quotas/management measures and are working towards rebuilding (i.e., increasing SSB). Since bluefish are currently overfished and this alternative would not directly improve stock status, the range of anticipated impacts starts in the negative. For non-target species, this alternative will also maintain the current stock statuses, most of which are positive with the exception of striped bass. Therefore, the range of impacts to non-target species is also slight - to slight +.

The Council and Board ultimately recommended 3b-2 as the preferred alternative despite the small phase-in amounts to offset the larger allocation shifts for the southern states in the next fishing year. This approach will allow for any negative impacts to be spread evenly over 7 years, ultimately reducing any larger initial burdens.

Comparisons within 3b alternatives

The impacts of the 3b alternatives are expected to be slight - to slight + on bluefish and non-target species because the amount of allocation to be phased-in over time will be very small (ranging from <0.01% to 2.48%) and each state is still constrained by their respective quotas/management measures. However, when compared to each other, 3b-1 is slightly more negative than 3b-2 since it would increase the commercial allocations for states that fully utilize their allocation more quickly, thus leading to more interactions with bluefish and non-target species.

Alternative 3c-1 (Preferred) (Status quo)

Alternative 3c-1 is the preferred and status quo alternative that states no commercial quota trigger would be implemented. The expected impacts on bluefish and non-target species under this alternative are slight - to slight + because each sector is still constrained by their respective quotas/management measures and are working towards rebuilding (i.e., increasing SSB). Since bluefish are currently overfished and this alternative would not directly improve stock status, the range of anticipated impacts starts in the negative. For non-target species, this alternative will also maintain the current stock statuses, most of which are positive with the exception of striped bass. Therefore, the range of impacts to non-target species is also slight - to slight +.

Alternative 3c-2

Alternative 3c-2 would implement a trigger level equal to the average of the initial commercial quota for each time series associated with alternative set 3a that do not include transfers from the recreational to commercial fishery (see Table 8, Table 9, and Table 10). Ultimately, the commercial quota time series selected would correspond with the time series associated with the preferred commercial allocations to the state alternative. Compared to the baseline, the expected impacts on bluefish and non-target species under this alternative are slight - to slight + because each sector is still constrained by their respective quotas/management measures and are working

towards rebuilding (i.e., increasing SSB). Since bluefish are currently overfished and this alternative would not directly improve stock status, the range of anticipated impacts starts in the negative. For non-target species, this alternative will also maintain the current stock statuses, most of which are positive with the exception of striped bass. Therefore, the range of impacts to non-target species is also slight - to slight +.

Alternative 3c-3

Alternative 3c-3 would implement a trigger level equal to the average of the final commercial quota that includes transfers from the recreational to the commercial fishery (see Table 8, Table 9, and Table 10). Ultimately, the commercial quota time series selected would correspond with the time series associated with the preferred commercial allocations to the state alternative. Compared to the baseline, the expected impacts on bluefish and non-target species under this alternative are slight - to slight + because each sector is still constrained by their respective quotas/management measures and are working towards rebuilding (i.e., increasing SSB). Since bluefish are currently overfished and this alternative would not directly improve stock status, the range of anticipated impacts starts in the negative. For non-target species, this alternative will also maintain the current stock statuses, most of which are positive with the exception of striped bass. Therefore, the range of impacts to non-target species is also slight - to slight +.

Comparisons within 3c alternatives

The impacts of the 3c alternatives are expected to be slight - to slight + on bluefish and non-target species because each state is still constrained by their respective quotas/management measures. However, when compared to each other, 3c-2 is slightly more negative than 3c-3 since it would implement a lower trigger that allows states in need of more allocation to receive more quota, thus leading to more interactions with bluefish and non-target species. Compared to the preferred status quo alternative, the impacts of 3c-2 and 3c-3 are negligible given the trigger is reallocating any surplus quota above a certain threshold.

Alternative 3d-1 (Status quo)

Alternative 3d-1 is the status quo alternative that would not implement a minimum default allocation. The expected impacts on bluefish and non-target species under this alternative are slight - to slight + because each sector is still constrained by their respective quotas/management measures and are working towards rebuilding (i.e., increasing SSB). Since bluefish are currently overfished and this alternative would not directly improve stock status, the range of anticipated impacts starts in the negative. For non-target species, this alternative will also maintain the current stock statuses, most of which are positive with the exception of striped bass. Therefore, the range of impacts to non-target species is also slight - to slight +.

Alternative 3d-2 (Preferred)

Alternative 3d-2 is the preferred alternative that would implement a 0.10% minimum default allocation in order to prevent states that would otherwise lose their allocation through the reallocation process to retain a minimum default allocation. The expected impacts on bluefish and non-target species under this alternative are slight - to slight + because each sector is still constrained by their respective quotas/management measures and are working towards rebuilding (i.e., increasing SSB). Since bluefish are currently overfished and this alternative would not directly improve stock status, the range of anticipated impacts starts in the negative. For non-target

species, this alternative will also maintain the current stock statuses, most of which are positive with the exception of striped bass. Therefore, the range of impacts to non-target species is also slight - to slight +.

Alternative 3d-3

Alternative 3d-3 is the preferred alternative that would implement a 0.10% minimum default allocation in order to prevent states that would otherwise lose their allocation through the reallocation process to retain a minimum default allocation. The expected impacts on bluefish and non-target species under this alternative are slight - to slight + because each sector is still constrained by their respective quotas/management measures and are working towards rebuilding (i.e., increasing SSB). Since bluefish are currently overfished and this alternative would not directly improve stock status, the range of anticipated impacts starts in the negative. For non-target species, this alternative will also maintain the current stock statuses, most of which are positive with the exception of striped bass. Therefore, the range of impacts to non-target species is also slight - to slight +.

Comparisons within 3d alternatives

The impacts of the 3d alternatives are expected to be slight - to slight + on bluefish and non-target species because each state is still constrained by their respective quotas/management measures. However, when compared to each other and status quo, 3d-2 and 3d-3 have negligible differences in terms of directionality. The differences between each alternative are minimal and any impacts to bluefish and non-target species would go largely unnoticed.

7.1.3. Impacts to Alternative Set 4 (Rebuilding Plan)

This section details the impacts associated with each rebuilding plan on bluefish and non-target species.

Alternative 4a (Status quo)

The no action/status quo alternative would not implement a rebuilding plan, no changes to the current risk policy would occur, and the current specifications would remain in place. The expected impacts of not implementing a rebuilding plan on bluefish are moderate - given there are no anticipated improvements to stock status through development of a rebuilding plan. For non-target species, this alternative will maintain the current stock statuses, most of which are positive with the exception of striped bass. Therefore, the range of impacts to non-target species is also slight - to slight +.

Alternative 4b

The projection methodology prepared by the NEFSC stock assessment scientist indicates 4b should rebuild the stock to the SSB target of 198,717 mt in 4 years, as presented in Figure 4. Alternative 4b would have slight + impacts to bluefish given harvest would remain constant and increase biomass yearly until rebuilt in 2025. For non-target species, this alternative will maintain the current stock statuses, most of which are positive with the exception of striped bass. Therefore, the range of impacts to non-target species is also slight - to slight +.

Alternative 4c

The projection methodology prepared by the NEFSC stock assessment scientist indicates 4c should rebuild the stock to the SSB target of 198,717 mt in 5 years, as presented in Figure 4. Alternative 4c would have slight + impacts to bluefish given biomass would increase yearly in relation to the Council's risk policy until rebuilt in 2026. For non-target species, this alternative will maintain the current stock statuses, most of which are positive with the exception of striped bass. Therefore, the range of impacts to non-target species is also slight - to slight +.

Alternative 4d (Preferred)

The projection methodology prepared by the NEFSC stock assessment scientist indicates 4d should rebuild the stock to the SSB target of 198,717 mt in 7 years, as presented in Figure 4. Alternative 4d would have slight + impacts to bluefish given harvest would be set in relation to a constant fishing mortality rate (constant F) that allows for the highest harvest, while achieving a rebuilt status in 2028. For non-target species, this alternative will maintain the current stock statuses, most of which are positive with the exception of striped bass. Therefore, the range of impacts to non-target species is also slight - to slight +.

Comparisons within alternatives

The impacts to bluefish under alternatives 4b, 4c or 4d are all slight + given each alternative will improve overall stock status. However, the positive impacts of 4d are slightly less positive compared to 4b and 4c because the stock would take longer to rebuild (i.e., 4 years compared to 5 and 7 years). The differences in impacts to non-target species for each alternative are minor given stock statuses will be maintained.

7.1.4. Impacts to Alternative Set 5 (Sector Transfers)

This section details the impacts associated with the sector transfers and transfer cap. All impacts are expected to be slight - to slight +.

Alternative 5a-1 (Status quo)

Under alternative 5a-1, transfers from the recreational to the commercial sector could continue but transfers from the commercial to the recreational sector would not be included as an option in the FMP. Alternative 5a-1 is anticipated to have slight - to slight + impacts on bluefish and non-target species since it will maintain current stock statuses. Moreover, sector transfers will not occur while the stock is overfished and/or overfishing is occurring and thus, will not negatively affect stock status because each sector is still constrained by their respective quotas/management measures.

Alternative 5a-2 (Preferred)

Under alternative 5a-2, each year during the setting or review of annual catch limits, the Council and Board would have the ability to recommend a transfer of quota between the recreational and commercial sectors, affecting the final commercial quota and RHL. The Council and Board could recommend a transfer from the commercial fishery to the recreational fishery or from the recreational fishery to the commercial fishery. Similar to 5a-1, alternative 5a-2 is anticipated to have slight - to slight + impacts on bluefish and non-target species since it will maintain current stock statuses. Moreover, sector transfers will not occur while the stock is overfished and/or overfishing is occurring and thus, will not negatively affect stock status because each sector is still constrained by their respective quotas/management measures.

Comparisons within 5a alternatives

Given transfers will not occur while the stock is overfished and/or overfishing is occurring, both 5a-1 and 5a-2 are anticipated to have similar, yet negligible impacts on the bluefish resource and non-target species in the short term. In the long term, 5a-2 is anticipated to have impacts that are negative to a greater degree than 5a-1 since the alternative allows for transfers to go in either direction and creates more opportunity harvest bluefish (and interact with non-target species) and decrease overall biomass.

Alternative 5b-1 (Status quo)

The status quo transfer cap alternative 5b-1 keeps the existing commercial sector transfer cap in place. If the pre-transfer commercial share of the ACL is less than 10.5 million pounds and the Council and Board determines the need for a transfer from the recreational sector to the commercial sector, the commercial quota may be allocated up to 10.5 million lb as its quota. Alternative 5b-1 is anticipated to have slight - to slight + impacts on bluefish and non-target species since it will maintain current stock statuses. Moreover, the status quo transfer cap alternative should not negatively affect stock status because each sector is still constrained by their respective quotas/management measures and are working towards rebuilding.

Alternative 5b-2 (Preferred)

Alternative 5b-2 would implement a maximum transfer cap of up to 10% of the ABC. Considering a recent time series of ABCs, 10% of the average of ABCs from 2000-2019 would result in a sector transfer of 2.97 M lbs. This estimate is smaller than the average transfer over the same time period (4.30 M lbs). However, since alternative 5b-2 is a percentage of the total ABC, future transfer amounts would scale with biomass as bluefish continues through the rebuilding plan.

Alternative 5b-2 is anticipated to have slight - to slight + impacts on bluefish and non-target species since it will maintain current stock statuses. Moreover, a transfer cap alternative that scales with biomass should not negatively affect stock status because each sector is still constrained by their respective quotas/management measures and are working towards rebuilding.

Comparisons within 5b alternatives

Given transfers will not occur while the stock is overfished and/or overfishing is occurring, both 5b-1 and 5b-2 are anticipated to have similar, yet negligible impacts on the bluefish resource and non-target species in the short term. In the long term, 5b-2 is anticipated to have impacts that are negative to a greater degree than 5b-1 since the alternative allows for transfers to scale with biomass (i.e., may lead to more targeted effort on bluefish when biomass is high).

7.1.5. Impacts to Alternative Set 6 (Management Uncertainty)

This section details the impacts associated with modifying how the Council accounts for management uncertainty.

Alternative 6a (Status quo)

The status quo alternative would maintain the bluefish flowchart as displayed in Figure 5, which demonstrates that any uncertainty buffer applied to the fishery-level ACL applies to both sector specific ACTs equally. This alternative is expected to have negligible impacts on the bluefish

resource and non-target species because it applies to the management process and keeps the management uncertainty provisions in the FMP status quo.

Alternative 6b (Preferred)

Alternative 6b would provide greater flexibility by establishing ACLs and ACTs for each sector as displayed in the bluefish flow chart in Figure 6. Specifically, the proposed flowchart allows for management uncertainty to be accounted for within each sector. This targeted approach would allow for the identification of sources of management uncertainty that are specific to one sector and are not present in the other. This alternative is expected to have negligible to slight + impacts on the bluefish resource and negligible impacts to non-target species because it applies to the management process, yet offers more flexibility to effectively account for uncertainty.

Comparisons within alternatives

Alternative 6b includes impacts that are slight + compared to the solely negligible impacts associated with 6a because the flexibility tied to alternative 6b allows for a more streamlined and accurate management process when accounting for uncertainty for bluefish and the interactions with non-target species.

7.2. Impacts to Physical Habitat and EFH

As indicated in Section 6.2.2, bluefish are a predominantly pelagic species (Shepherd and Packer 2006) and life history data show that there are only loose associations of bluefish with any particular substrate or submerged aquatic vegetation (SAV; Shepherd and Packer 2006).

Only those gear types which contact the bottom impact physical habitat. The actions proposed in this document are relevant to both the commercial and recreational bluefish fisheries. The recreational fishery is almost exclusively a hook and line fishery. Recreational hook and line gears generally have minimal impacts on physical habitat and EFH in this region (Stevenson et al. 2004). Weighted hook and line gear can contact the bottom, but the magnitude and footprint of any impacts resulting from this contact is likely minimal. Thus, the recreational fisheries are expected to have very minor or no impacts on habitat.

The limited commercial fishery for bluefish is primarily prosecuted with gill net gear (Table 26) and has limited contact with the bottom. Thus, the magnitude and footprint of any impacts resulting from this contact are also likely minimal.

The following sections describe the expected impacts of each alternative on physical habitat. The impacts are based on expected changes in fishing effort and associated changes in interactions

7.2.1. Impacts to Alternative Set 2 (Commercial/Recreational Allocations)

This section details the impacts associated with the sector allocations and the ability to phase-in the allocations over a specified duration. The duration to phase in allocation was set as the number of years required to rebuild the stock (as indicated by the preferred rebuilding plan). All the alternatives are slight - to negligible because interactions with habitat are rare occurrences in the bluefish fishery.

Alternative 2a-1 (Status quo)

Under the status quo alternative, fishing effort is expected to stay the same as it has in recent years. The recreational sector utilizes gear (rod and reel, handline) that rarely interacts with the ocean

bottom and will not exacerbate the current conditions. The commercial sector, which has a smaller allocation under this alternative, utilizes gear (gill net) that rarely contacts the bottom or is contacting bottom in regions that are already heavily fished, thus the expected impacts on the physical habitat and EFH are slight – to negligible.

Alternative 2a-2

Under alternative 2a-2, recreational fishing effort is expected to increase compared to the baseline conditions because the recreational allocation will increase to 89% from 83%. However, the recreational sector utilizes gear (rod and reel, handline) that rarely interacts with the ocean bottom and will not exacerbate the current conditions. The reduction in commercial allocation from 17% to 11% will likely lead to lower commercial fishing effort, which will further minimize gear contact with ocean bottom in regions that are already heavily fished. Thus, the expected impacts are slight - to negligible given the changes in allocation will not improve the current state of the physical habitat and EFH.

Alternative 2a-3

Under alternative 2a-3, recreational fishing effort is expected to increase compared to the baseline conditions because the recreational allocation will increase to 87% from 83%. However, the recreational sector utilizes gear (rod and reel, handline) that rarely interacts with the ocean bottom and will not exacerbate the current conditions. The reduction in commercial allocation from 17% to 13% will likely lead to lower commercial fishing effort, which will further minimize gear contact with ocean bottom in regions that are already heavily fished. Thus, the expected impacts are slight - to negligible given the changes in allocation will not improve the current state of the physical habitat and EFH.

Alternative 2a-4 (Preferred)

Under alternative 2a-4, recreational fishing effort is expected to increase compared to the baseline conditions because the recreational allocation will increase to 86% from 83%. However, the recreational sector utilizes gear (rod and reel, handline) that rarely interacts with the ocean bottom and will not exacerbate the current conditions. The reduction in commercial allocation from 17% to 14% will likely lead to lower commercial fishing effort, which will further minimize gear contact with ocean bottom in regions that are already heavily fished. Thus, the expected impacts are slight - to negligible given the changes in allocation will not improve the current state of the physical habitat and EFH.

Alternative 2a-5

Under alternative 2a-5, recreational fishing effort is expected to increase compared to the baseline conditions because the recreational allocation will increase to 84% from 83%. However, the recreational sector utilizes gear (rod and reel, handline) that rarely interacts with the ocean bottom and will not exacerbate the current conditions. The reduction in commercial allocation from 17% to 16% will likely lead to lower commercial fishing effort, which will further minimize gear contact with ocean bottom in regions that are already heavily fished. Thus, the expected impacts are slight - to negligible given the changes in allocation will not improve the current state of the physical habitat and EFH.

Comparisons within 2a alternatives

The impacts of all 2a alternatives are expected to be slight - to negligible on the physical habitat and EFH. However, given the commercial sector is more likely to interact with the physical habitat and EFH, the allocations associated with alternative 2a-1 have the potential to be negative to a greater degree than the other alternatives. The remaining alternatives are listed in order of slightly more negative to least negative given the commercial allocations: 2a-5, 2a-4, 2a-3, and 2a-2.

Alternative 2b-1 (Preferred) (Status quo)

Alternative 2b-1 is the preferred and status quo alternative that states no phase-in of the allocations can occur. The expected impacts on the physical habitat and EFH under this alternative are slight - to negligible. The recreational sector utilizes gear (rod and reel, handline) that rarely interacts with the ocean bottom and will not exacerbate the current conditions. Additionally, commercial effort will either remain the same or decrease under the allocation alternatives, which will further minimize gear contact with ocean bottom in regions that are already heavily fished, however there will be no improvements to habitat that has already been negatively impacted.

Alternative 2b-2

Alternative 2b-2 states that a phase-in of the allocations can occur. The expected impacts on the physical habitat and EFH under this alternative are slight - to negligible because the small adjustments in quota through phasing-in allocations will be indistinguishable on habitat. Moreover, the recreational sector utilizes gear (rod and reel, handline) that rarely interacts with the ocean bottom and will not exacerbate the current conditions. Additionally, commercial effort will either remain the same or decrease under the allocation alternatives, which will further minimize gear contact with ocean bottom in regions that are already heavily fished, however there will be no improvements to habitat that has already been negatively impacted.

Comparisons within 2b alternatives

The differences in impacts between alternatives 2b-1 and 2b-2 will be indistinguishable because the adjustments in quota through phasing-in allocations are so small and the fishery rarely interacts with the physical habitat and EFH.

7.2.2. Impacts to Alternative Set 3 (Commercial Allocations to the States)

This section details the impacts associated with the commercial allocations to the states, the ability to phase-in the allocations over a specified duration, a trigger approach, and implementing a minimum default allocation. All impacts are expected to be slight - to slight +.

One alternative must be selected from alternative set 3a, 3b, 3c, and 3d and only one alternative can be selected from each set.

Alternative 3a-1 (Status quo)

Alternative 3a-1 is the status quo alternative, which was set in Amendment 1 in 2000, that would keep the commercial allocations to the states based on landings data from 1981-1989. The expected impacts on the physical habitat and EFH under this alternative are slight - to negligible. Commercial effort will remain the same under this alternative, which will maintain the current amount of limited gear contact with ocean bottom in regions that are already heavily fished, however there will be no improvements to habitat that has already been negatively impacted.

Alternative 3a-2

Alternative 3a-2 would update the commercial allocations to the states based on landings data from 2014-2018. Compared to the baseline, the expected impacts on the physical habitat and EFH under this alternative are slight - to negligible. Commercial effort is still restricted by quotas and management measures, yet effort may increase slightly given this alternative provides larger allocations to the northern states that need more quota. These allocations are more reflective of how the fishery has been operating in recent years, as compared to 1981-1989 (the status quo time series used to set allocations). Ultimately, the commercial sector still has limited gear contact with ocean bottom in when targeting bluefish in areas that are already heavily fished, however there will be no improvements to habitat that has already been negatively impacted.

Alternative 3a-3 (Preferred)

Alternative 3a-3 would update the commercial allocations to the states based on landings data from 2009-2018. Compared to the baseline, the expected impacts on the physical habitat and EFH under this alternative are slight - to negligible. Commercial effort is still restricted by quotas and management measures, yet effort may increase slightly given this alternative provides larger allocations to the northern states that need more quota. These allocations are more reflective of how the fishery has been operating in recent years, as compared to 1981-1989 (the status quo time series used to set allocations). Ultimately, the commercial sector still has limited gear contact with ocean bottom in when targeting bluefish in areas that are already heavily fished, however there will be no improvements to habitat that has already been negatively impacted.

Alternative 3a-4

Alternative 3a-4 would update the commercial allocations to the states based on a combination of landings data from 1981-1989 and 2009-2018. Compared to the baseline, the expected impacts on the physical habitat and EFH under this alternative are slight - to negligible. Commercial effort is still restricted by quotas and management measures, yet effort may increase slightly given this alternative provides larger allocations to the northern states that need more quota. These allocations are more reflective of how the fishery has been operating in recent years, as compared to solely 1981-1989 (the status quo time series used to set allocations). Ultimately, the commercial sector still has limited gear contact with ocean bottom in when targeting bluefish in areas that are already heavily fished, however there will be no improvements to habitat that has already been negatively impacted.

Comparisons within 3a alternatives

Under alternatives 3a-2 and 3a-3, MA, RI and NY will experience similar increases in their commercial allocations while DE, MD, VA and FL will experience decreases in allocations compared to the status quo alternative[22]. These allocations are based on more recent time series (5 or 10 years) and more accurately reflect the current needs of the fishery and stakeholders. By allowing these states to harvest more bluefish (while also further reducing harvest in other states that were not landing their entire quota), the potential for interactions with the physical habitat and EFH increase. However, the overall commercial allocation will either stay the same or decrease

[22] Maine, New Hampshire, South Carolina and Georgia will lose the largest allocation percentages through the reallocation process, however it is relative to their already small allocation that those states are not utilizing.

(see section 7.2.1), ultimately reducing the commercial sectors overall impact on habitat. The negative impacts associated with 3a-2 and 3a-3 may be to a greater degree than under alternative 3a-4 or 3a-1 because these allocations are being increased for states in the north that are anticipated to utilize their full allocation.

Alternative 3b-1 (Status quo)

Alternative 3b-1 is the status quo alternative that states no phase-in of the allocations can occur. The expected impacts on the physical habitat and EFH under this alternative are slight - to negligible because the commercial sector is still constrained by their quotas/management measures. Moreover, the commercial sector continues to have limited gear contact with ocean bottom when targeting bluefish in areas that are already heavily fished, however there will be no improvements to habitat that has already been negatively impacted.

Alternative 3b-2 (Preferred)

Alternative 3b-2 is the status quo alternative that allows for the phase-in of allocations. The expected impacts on the physical habitat and EFH under this alternative are slight - to negligible because the commercial sector is still constrained by their quotas/management measures. Moreover, the commercial sector continues to have limited gear contact with ocean bottom when targeting bluefish in areas that are already heavily fished, however there will be no improvements to habitat that has already been negatively impacted.

Comparisons within 3b alternatives

The differences in impacts between alternatives 3b-1 and 3b-2 will be indistinguishable because the adjustments in quota through phasing-in allocations are so small and the fishery rarely interacts with the physical habitat and EFH.

Alternative 3c-1 (Preferred) (Status quo)

The expected impacts on the physical habitat and EFH under this alternative are slight - to negligible because the commercial sector is still constrained by their quotas/management measures. Moreover, the commercial sector continues to have limited gear contact with ocean bottom when targeting bluefish in areas that are already heavily fished, however there will be no improvements to habitat that has already been negatively impacted.

Alternative 3c-2

Alternative 3c-2 would implement a trigger level equal to the average of the initial commercial quota for each time series associated with alternative set 3a that do not include transfers from the recreational to commercial fishery (see Table 8, Table 9, and Table 10). Ultimately, the commercial quota time series selected would correspond with the time series associated with the preferred commercial allocations to the state alternative. Compared to the baseline, the expected impacts on the physical habitat and EFH under this alternative are slight - to negligible because the commercial sector is still constrained by their quotas/management measures. Moreover, the commercial sector continues to have limited gear contact with ocean bottom when targeting bluefish in areas that are already heavily fished, however there will be no improvements to habitat that has already been negatively impacted.

Alternative 3c-3

Alternative 3c-3 would implement a trigger level equal to the average of the final commercial quota that includes transfers from the recreational to the commercial fishery (see Table 8, Table 9, and Table 10). Ultimately, the commercial quota time series selected would correspond with the time series associated with the preferred commercial allocations to the state alternative. Compared to the baseline, the expected impacts on the physical habitat and EFH under this alternative are slight - to negligible because the commercial sector is still constrained by their quotas/management measures. Moreover, the commercial sector continues to have limited gear contact with ocean bottom when targeting bluefish in areas that are already heavily fished, however there will be no improvements to habitat that has already been negatively impacted.

Comparisons within 3c alternatives

The impacts of the 3c alternatives are expected to be slight - to negligible on the physical habitat and EFH because each state is still constrained by their respective quotas/management measures. However, when compared to each other, 3c-2 is slightly more negative than 3c-3 because it would implement a lower trigger that allows states in need of more allocation to receive more quota, thus leading to more interactions with bluefish and thus, habitat. Compared to the preferred status quo alternative, the impacts of 3c-2 and 3c-3 are negligible given the trigger is reallocating any surplus quota above a certain threshold.

Alternative 3d-1 (Status quo)

Alternative 3d-1 is the status quo alternative that would not implement a minimum default allocation. The expected impacts on the physical habitat and EFH under this alternative are slight - to negligible because the commercial sector is still constrained by their respective quotas/management measures and are working towards rebuilding (i.e., increasing SSB). Moreover, the commercial sector continues to have limited gear contact with ocean bottom when targeting bluefish in areas that are already heavily fished, however there will be no improvements to habitat that has already been negatively impacted.

Alternative 3d-2 (Preferred)

Alternative 3d-2 is the preferred alternative that would implement a 0.10% minimum default allocation in order to prevent states that would otherwise lose their allocation through the reallocation process to retain a minimum default allocation. The expected impacts on the physical habitat and EFH under this alternative are slight - to negligible because the commercial sector is still constrained by their respective quotas/management measures and are working towards rebuilding (i.e., increasing SSB). Moreover, the commercial sector continues to have limited gear contact with ocean bottom when targeting bluefish in areas that are already heavily fished, however there will be no improvements to habitat that has already been negatively impacted.

Alternative 3d-3

Alternative 3d-3 is the preferred alternative that would implement a 0.25% minimum default allocation in order to prevent states that would otherwise lose their allocation through the reallocation process to retain a minimum default allocation. The expected impacts on the physical habitat and EFH under this alternative are slight - to negligible because the commercial sector is still constrained by their respective quotas/management measures and are working towards

rebuilding (i.e., increasing SSB). Moreover, the commercial sector continues to have limited gear contact with ocean bottom when targeting bluefish in areas that are already heavily fished, however there will be no improvements to habitat that has already been negatively impacted.

Comparisons within 3d alternatives

The impacts of the 3d alternatives are expected to be slight - to negligible on the physical habitat and EFH because each state is still constrained by their respective quotas/management measures. However, when compared to each other and status quo, 3d-2 and 3d-3 have negligible differences in terms of directionality. The differences between each alternative are minimal and any impacts to the physical habitat and EFH would go largely unnoticed.

7.2.3. Impacts to Alternative Set 4 (Rebuilding Plan)

This section details the impacts associated with each rebuilding plan on the physical habitat and EFH. Impacts for all alternatives are expected to be slight - to negligible.

Alternative 4a (Status quo)

The no action/status quo alternative would not implement a rebuilding plan, no changes to the current risk policy would occur, and the current specifications would remain in place. The expected impacts of not implementing a rebuilding plan on the physical habitat and EFH are slight - to negligible. The recreational sector utilizes gear (rod and reel, handline) that rarely interacts with the ocean bottom and will not exacerbate the current conditions. Additionally, commercial effort will remain the same or decrease under the allocation alternatives, which will further minimize gear contact with ocean bottom in regions that are already heavily fished. Moreover, the continued limited interaction with the habitat limits the recovery potential of impacted areas.

Alternative 4b

The projection methodology prepared by the NEFSC stock assessment scientist indicates 4b should rebuild the stock to the SSB target of 198,717 mt in 4 years, as presented in Figure 4. The expected impacts of alternative 4b on the physical habitat and EFH are slight - to negligible. The recreational sector utilizes gear (rod and reel, handline) that rarely interacts with the ocean bottom and will not exacerbate the current conditions. Additionally, the commercial sector has minimal impact on habitat because they primarily prosecute the fishery with gill nets. Moreover, the continued limited interaction with the habitat limits the recovery potential of impacted areas.

Alternative 4c

The projection methodology prepared by the NEFSC stock assessment scientist indicates 4c should rebuild the stock to the SSB target of 198,717 mt in 5 years, as presented in Figure 4. The expected impacts of alternative 4c on the physical habitat and EFH are slight - to negligible given biomass would increase yearly in relation to the Council's risk policy until rebuilt in 2026. The recreational sector utilizes gear (rod and reel, handline) that rarely interacts with the ocean bottom and will not exacerbate the current conditions. Additionally, the commercial sector has minimal impact on habitat because they primarily prosecute the fishery with gill nets. Moreover, the continued limited interaction with the habitat limits the recovery potential of impacted areas.

Alternative 4d (Preferred)

The projection methodology prepared by the NEFSC stock assessment scientist indicates 4d should rebuild the stock to the SSB target of 198,717 mt in 7 years, as presented in Figure 4. The expected impacts of alternative 4d on the physical habitat and EFH are slight - to negligible given harvest would be set in relation to a constant fishing mortality rate (constant F) that allows for the highest harvest, while achieving a rebuilt status in 2028. The recreational sector utilizes gear (rod and reel, handline) that rarely interacts with the ocean bottom and will not exacerbate the current conditions. Additionally, the commercial sector has minimal impact on habitat because they primarily prosecute the fishery with gill nets. Moreover, the continued limited interaction with the habitat limits the recovery potential of impacted areas.

Comparisons within alternatives

The impacts to the physical habitat and EFH under alternatives 4b, 4c or 4d are all slight - to negligible. In the long term, the impacts tied to 4d are negative to a greater degree than 4c, and then 4b, because 4d allows for higher catch limits over the course of the rebuilding plan. This will increase potential interactions with the physical habitat and EFH, despite the commercial sector primarily prosecuting the fishery with gill nets.

7.2.4. Impacts to Alternative Set 5 (Sector Transfers)

This section details the impacts associated with the sector transfers and transfer cap. All impacts are expected to be slight - to negligible.

Alternative 5a-1 (Status quo)

Under alternative 5a-1, transfers from the recreational to the commercial sector could continue but transfers from the commercial to the recreational sector would not be included as an option in the FMP. Compared to the baseline, alternative 5a-1 is anticipated to have slight - to negligible impacts on the physical habitat and EFH because the recreational sector utilizes gear (rod and reel, handline) that rarely interacts with the ocean bottom and will not exacerbate the current conditions. Additionally, the commercial sector has minimal impact on habitat because they primarily prosecute the fishery with gill nets. Moreover, the continued limited interaction with the habitat limits the recovery potential of impacted areas.

Alternative 5a-2 (Preferred)

Under alternative 5a-2, each year during the setting or review of annual catch limits, the Council and Board would have the ability to recommend a transfer of quota between the recreational and commercial sectors, affecting the final commercial quota and RHL. The Council and Board could recommend a transfer from the commercial fishery to the recreational fishery or from the recreational fishery to the commercial fishery. Similar to 5a-1 and compared to the baseline, alternative 5a-2 is anticipated to have slight - to negligible impacts on the physical habitat and EFH because the recreational sector utilizes gear (rod and reel, handline) that rarely interacts with the ocean bottom and will not exacerbate the current conditions. Additionally, the commercial sector has minimal impact on habitat because they primarily prosecute the fishery with gill nets. Moreover, the continued limited interaction with the habitat limits the recovery potential of impacted areas.

Comparisons within 5a alternatives

In the short term, transfers will not occur because they are not allowed while the stock is overfished and/or overfishing is occurring leading to negligible impacts to the physical habitat and EFH. In the long term, impacts may be negative to a greater degree under alternative 5a-1 because increases to the commercial quota may lead to additional interactions with EFH, despite the commercial sector primarily prosecuting the fishery with gill nets. Under 5a-2, impacts are to a lesser degree because transfers to the commercial sector are less likely to occur since the recreational sector has been fully utilizing the RHL in recent years.

Alternative 5b-1 (Status quo)

Alternative 5b-1 is anticipated to have slight - to negligible impacts on the physical habitat and EFH because the recreational sector utilizes gear (rod and reel, handline) that rarely interacts with the ocean bottom and will not exacerbate the current conditions. Additionally, the commercial sector has minimal impact on habitat because they primarily prosecute the fishery with gill nets that also rarely interact with the ocean bottom. Moreover, continued interaction with the habitat limits the recovery potential of impacted areas.

Alternative 5b-2 (Preferred)

Alternative 5b-2 is anticipated to have slight - to negligible impacts on the physical habitat and EFH because the recreational sector utilizes gear (rod and reel, handline) that rarely interacts with the ocean bottom and will not exacerbate the current conditions. Additionally, the commercial sector has minimal impact on habitat because they primarily prosecute the fishery with gill nets that also rarely interact with the ocean bottom. Moreover, continued interaction with the habitat limits the recovery potential of impacted areas.

Comparisons within 5b alternatives

Given transfers will not occur while the stock is overfished and/or overfishing is occurring, both 5b-1 and 5b-2 are anticipated to have slight - to negligible impacts on the physical habitat and EFH in the short term. In the long term, 5b-2 is anticipated to have impacts that are negative to a greater degree than 5b-1 since the alternative allows for transfers to scale with biomass (i.e., may lead to more targeted effort on bluefish when biomass is high).

7.2.5. Impacts to Alternative Set 6 (Management Uncertainty)

This section details the impacts associated with modifying how the Council accounts for management uncertainty. All impacts are expected to be negligible

Alternative 6a (Status quo)

This alternative is expected to have negligible impacts on the physical habitat and EFH because it applies to the management process and keeps the management uncertainty provisions in the FMP status quo.

Alternative 6b (Preferred)

This alternative is expected to have negligible impacts on the physical habitat and EFH because it applies to the management process yet offers more flexibility to effectively account for management uncertainty.

Comparisons within alternatives

Alternatives 6a and 6b both include impacts that are negligible on the physical habitat and EFH because they apply solely to the management process.

7.3. Impacts to Protected Resources

The following sections describe the expected impacts of each alternative on protected species. The impacts are based on expected changes in fishing effort and associated changes in the potential for interactions with protected species under each alternative.

As described in section 6.3, the commercial bluefish fishery is primarily prosecuted with gillnet gear, and to a lesser degree, bottom trawl gear. ESA listed and MMPA protected species are at risk of interacting with gillnet and/or bottom trawl gear (see section 6.3.3.2). Specifically, gillnet gear poses an interaction risk to protected species (both ESA listed and MMPA protected) of whales, pinnipeds, small cetaceans, sea turtles, and fish. Bottom trawl gear poses an interaction risk to non-ESA listed species of marine mammals (*i.e.*, minke whales, pinnipeds, and small cetaceans), and ESA listed species of sea turtles and fish; however, this gear type does not pose an interaction risk to ESA listed species of large whales, as well as non-ESA listed species of humpback whales. The risk of an interaction is strongly associated with the amount of gear in the water, the duration of time the gear is in the water (e.g., tow time, soak time), and the presence of listed species in the same area and time as the gear, with risk of an interaction increasing with increases in of any of these factors.

Hook and line gear is the dominant gear type used in the recreational bluefish fishery (see section 6.2.3). ESA listed species of large whales, sea turtles, and Atlantic sturgeon, as well as MMPA protected (non-ESA listed) species of large whales and bottlenose dolphin stocks are vulnerable to interactions with hook and line gear, (section 6.3.3.1). Hook and line interactions with other protected species identified in section 6.3.3.1 (e.g., species of small cetaceans (non-bottlenose dolphin stocks), pinnipeds, Atlantic salmon) have never been observed or documented and therefore, this gear type is not expected to be source of injury or mortality to these species.

7.3.1. Impacts to Alternative Set 2 (Commercial/Recreational Allocations)

This section details the impacts associated with the sector allocations and the ability to phase-in the allocations over a specified duration. The duration to phase in allocation was set as the number of years required to rebuild the stock (as indicated by the preferred rebuilding plan). All the alternatives are slight - to slight + for MMPA species and slight – to negligible for ESA listed species.

Alternative 2a-1 (Status quo)

Interactions with MMPA protected species are already very rare, however when interactions do occur, they are most common in the commercial fishery. Under the status quo alternative, fishing effort in the short term is expected to stay the same as it has in recent years. In the long term, as rebuilding progresses and biomass increases, fishing effort is expected to increase.

There are many non-ESA listed marine mammals that, even with continued fishery interactions, are maintaining an optimum sustainable level (i.e., PBR levels have not been exceeded) over the last several years. For these stocks/species, it appears that the fishery management measures that have been in place over this timeframe have resulted in levels of effort that result in 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. However, given these interaction do still occur, the expected impacts on MMPA protected species range from slight - to slight +.

Similar to MMPA protected species, interactions with ESA listed species are already very rare, but when interactions do occur, they are most common in the commercial fishery due to the use of bottom trawl and gillnet gear. By definition, all ESA-listed species are in poor condition and any take can negatively impact that species' recovery. The risk of an interaction is strongly associated with the amount of gear in the water, the duration of time the gear is in the water (e.g., tow time, soak time), and the presence of listed species in the same area and time as the gear, with risk of an interaction increasing with increases in of any of these factors. For these reasons, the expected impacts on ESA listed species is slight - to negligible.

Alternative 2a-2

Interactions with MMPA protected species are already very rare, however when interactions do occur, they are most common in the commercial fishery. Under alternative 2a-2, fishing effort in the short term is expected to decrease given the reduction in commercial allocation from 17% to 11%. In the long term, as rebuilding progresses and biomass increases, fishing effort is expected to increase.

There are many non-ESA listed marine mammals that, even with continued fishery interactions, are maintaining an optimum sustainable level (i.e., PBR levels have not been exceeded) over the last several years. For these stocks/species, it appears that the fishery management measures that have been in place over this timeframe have resulted in levels of effort that result in 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. However, given these interaction do still occur, the expected impacts on MMPA protected species range from slight - to slight +.

Similar to MMPA protected species, interactions with ESA listed species are already very rare, but when interactions do occur, they are most common in the commercial fishery due to the use of bottom trawl and gillnet gear. By definition, all ESA-listed species are in poor condition and any take can negatively impact that species' recovery. The risk of an interaction is strongly associated with the amount of gear in the water, the duration of time the gear is in the water (e.g., tow time, soak time), and the presence of listed species in the same area and time as the gear, with risk of an interaction increasing with increases in of any of these factors. For these reasons, the expected impacts on ESA listed species is slight - to negligible.

Alternative 2a-3

Interactions with MMPA protected species are already very rare, however when interactions do occur, they are most common in the commercial fishery. Under alternative 2a-3, fishing effort in the short term is expected to decrease given the reduction in commercial allocation from 17% to 13%. In the long term, as rebuilding progresses and biomass increases, fishing effort is expected to increase.

There are many non-ESA listed marine mammals that, even with continued fishery interactions, are maintaining an optimum sustainable level (i.e., PBR levels have not been exceeded) over the last several years. For these stocks/species, it appears that the fishery management measures that

have been in place over this timeframe have resulted in levels of effort that result in 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. However, given these interaction do still occur, the expected impacts on MMPA protected species range from slight - to slight +.

Similar to MMPA protected species, interactions with ESA listed species are already very rare, but when interactions do occur, they are most common in the commercial fishery due to the use of bottom trawl and gillnet gear. By definition, all ESA-listed species are in poor condition and any take can negatively impact that species' recovery. The risk of an interaction is strongly associated with the amount of gear in the water, the duration of time the gear is in the water (e.g., tow time, soak time), and the presence of listed species in the same area and time as the gear, with risk of an interaction increasing with increases in of any of these factors. For these reasons, the expected impacts on ESA listed species is slight - to negligible.

Alternative 2a-4 (Preferred)

Interactions with MMPA protected species are already very rare, however when interactions do occur, they are most common in the commercial fishery. Under alternative 2a-2, fishing effort in the short term is expected to decrease given the reduction in commercial allocation from 17% to 14%. In the long term, as rebuilding progresses and biomass increases, fishing effort is expected to increase.

There are many non-ESA listed marine mammals that, even with continued fishery interactions, are maintaining an optimum sustainable level (i.e., PBR levels have not been exceeded) over the last several years. For these stocks/species, it appears that the fishery management measures that have been in place over this timeframe have resulted in levels of effort that result in 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. However, given these interaction do still occur, the expected impacts on MMPA protected species range from slight - to slight +.

Similar to MMPA protected species, interactions with ESA listed species are already very rare, but when interactions do occur, they are most common in the commercial fishery due to the use of bottom trawl and gillnet gear. By definition, all ESA-listed species are in poor condition and any take can negatively impact that species' recovery. The risk of an interaction is strongly associated with the amount of gear in the water, the duration of time the gear is in the water (e.g., tow time, soak time), and the presence of listed species in the same area and time as the gear, with risk of an interaction increasing with increases in of any of these factors. For these reasons, the expected impacts on ESA listed species is slight - to negligible.

Alternative 2a-5

Interactions with MMPA protected species are already very rare, however when interactions do occur, they are most common in the commercial fishery. Under alternative 2a-2, fishing effort in the short term is expected to decrease given the reduction in commercial allocation from 17% to 16%. In the long term, as rebuilding progresses and biomass increases, fishing effort is expected to increase.

There are many non-ESA listed marine mammals that, even with continued fishery interactions, are maintaining an optimum sustainable level (i.e., PBR levels have not been exceeded) over the last several years. For these stocks/species, it appears that the fishery management measures that have been in place over this timeframe have resulted in levels of effort that result in 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. However, given these interaction do still occur, the expected impacts on MMPA protected species range from slight - to slight +.

Similar to MMPA protected species, interactions with ESA listed species are already very rare, but when interactions do occur, they are most common in the commercial fishery due to the use of bottom trawl and gillnet gear. By definition, all ESA-listed species are in poor condition and any take can negatively impact that species' recovery. The risk of an interaction is strongly associated with the amount of gear in the water, the duration of time the gear is in the water (e.g., tow time, soak time), and the presence of listed species in the same area and time as the gear, with risk of an interaction increasing with increases in of any of these factors. For these reasons, the expected impacts on ESA listed species is slight - to negligible.

Comparisons within 2a alternatives

Interactions with MMPA protected and ESA listed species are rare occurrences but are occasionally reported as a result of commercial fishing. For MMPA protected species, all impacts are expected to be slight - to slight +. For ESA listed species, all impacts are expected to be slight - to negligible.

All of the 2a alternatives either maintain or decrease the commercial allocation. However, given the commercial sector is more likely to interact with MMPA protected and ESA listed species, the allocations associated with alternative 2a-1 have the potential to be negative to a greater degree than the other alternatives. The remaining alternatives are listed in order of slightly more negative to least negative given the commercial allocations: 2a-5, 2a-4, 2a-3, and 2a-2.

Alternative 2b-1 (Preferred) (Status quo)

Alternative 2b-1 is the preferred and status quo alternative that states no phase-in of the allocations can occur. Therefore, this alternative will result in the same allocations as presented above and thus, the expected impacts on MMPA protected and ESA listed species under this alternative are slight - to slight + and slight - to negligible, respectively. The justification of the expected impacts for the 2a alternatives also applies for alternative 2b-1.

Alternative 2b-2

Alternative 2b-2 states that a phase-in of the allocations can occur, and the duration to phase-in will match that of the preferred rebuilding plan alternative (7-years). The expected impacts on MMPA protected and ESA listed species under this alternative are slight - to slight + and slight - to negligible, respectively. The justification of the expected impacts for the 2a alternatives also applies for alternative 2b-2 given the amount of allocation to be phased-in is so small and will have indistinguishable impacts to protected resources over time.

Comparisons within 2b alternatives

The differences in impacts between alternatives 2b-1 and 2b-2 will be indistinguishable because the adjustments in quota through phasing-in allocations are so small and the commercial and recreational fisheries rarely interact with MMPA protected and ESA listed species.

7.3.2. Impacts to Alternative Set 3 (Commercial Allocations to the States)

This section details the impacts associated with the commercial allocations to the states, the ability to phase-in the allocations over a specified duration, a trigger approach, and implementing a minimum default allocation. All impacts are expected to be slight - to slight + for MMPA protected and slight - to negligible for ESA listed species.

One alternative must be selected from alternative set 3a, 3b, 3c, and 3d and only one alternative can be selected from each set.

Alternative 3a-1 (Status quo)

Alternative 3a-1 is the status quo alternative, which was set in Amendment 1 in 2000, that would keep the commercial allocations to the states based on landings data from 1981-1989. The expected impacts on MMPA protected and ESA listed species under this alternative are slight - to slight + and slight - to negligible, respectively. In the short term, commercial effort will remain the same under this alternative, which will maintain the current amount of limited gear in the water. In the long term, commercial effort will increase as a result of the ongoing rebuilding plan, however interactions with MMPA protected and ESA listed species are already very rare.

There are many non-ESA listed marine mammals that, even with continued fishery interactions, are maintaining an optimum sustainable level (i.e., PBR levels have not been exceeded) over the last several years. For these stocks/species, it appears that the fishery management measures that have been in place over this timeframe have resulted in levels of effort that result in 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. However, given these interactions do still occur, the expected impacts on MMPA protected species range from slight - to slight +.

Similar to MMPA protected species, interactions with ESA listed species are already very rare, but when interactions do occur, they are most common in the commercial fishery due to the use of bottom trawl and gillnet gear. By definition, all ESA-listed species are in poor condition and any take can negatively impact that species' recovery. The risk of an interaction is strongly associated with the amount of gear in the water, the duration of time the gear is in the water (e.g., tow time, soak time), and the presence of listed species in the same area and time as the gear, with risk of an interaction increasing with increases in of any of these factors. For these reasons, the expected impacts on ESA listed species is slight - to negligible.

Alternative 3a-2

Alternative 3a-2 would update the commercial allocations to the states based on landings data from 2014-2018. Compared to the baseline, the expected impacts on MMPA protected and ESA listed species under this alternative are slight - to slight + and slight - to negligible, respectively. Commercial effort is still restricted by quotas and management measures, yet effort may increase slightly given this alternative provides larger allocations to the northern states that need more

quota. These allocations (see Table 5) are more reflective of how the fishery has been operating in recent years, as compared to 1981-1989 (the status quo time series used to set allocations).

There are many non-ESA listed marine mammals that, even with continued fishery interactions, are maintaining an optimum sustainable level (i.e., PBR levels have not been exceeded) over the last several years. For these stocks/species, it appears that the fishery management measures that have been in place over this timeframe have resulted in levels of effort that result in 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. However, given these interactions do still occur, the expected impacts on MMPA protected species range from slight - to slight +.

Similar to MMPA protected species, interactions with ESA listed species are already very rare, but when interactions do occur, they are most common in the commercial fishery due to the use of bottom trawl and gillnet gear. By definition, all ESA-listed species are in poor condition and any take can negatively impact that species' recovery. The risk of an interaction is strongly associated with the amount of gear in the water, the duration of time the gear is in the water (e.g., tow time, soak time), and the presence of listed species in the same area and time as the gear, with risk of an interaction increasing with increases in of any of these factors. For these reasons, the expected impacts on ESA listed species is slight - to negligible.

Alternative 3a-3 (Preferred)

Alternative 3a-3 would update the commercial allocations to the states based on landings data from 2009-2018. Compared to the baseline, the expected impacts on MMPA protected and ESA listed species under this alternative are slight - to slight + and slight - to negligible, respectively. Commercial effort is still restricted by quotas and management measures, yet effort may increase slightly given this alternative provides larger allocations to the northern states that need more quota. These allocations (see Table 5) are more reflective of how the fishery has been operating in recent years, as compared to 1981-1989 (the status quo time series used to set allocations).

There are many non-ESA listed marine mammals that, even with continued fishery interactions, are maintaining an optimum sustainable level (i.e., PBR levels have not been exceeded) over the last several years. For these stocks/species, it appears that the fishery management measures that have been in place over this timeframe have resulted in levels of effort that result in 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. However, given these interactions do still occur, the expected impacts on MMPA protected species range from slight - to slight +.

Similar to MMPA protected species, interactions with ESA listed species are already very rare, but when interactions do occur, they are most common in the commercial fishery due to the use of bottom trawl and gillnet gear. By definition, all ESA-listed species are in poor condition and any take can negatively impact that species' recovery. The risk of an interaction is strongly associated with the amount of gear in the water, the duration of time the gear is in the water (e.g., tow time, soak time), and the presence of listed species in the same area and time as the gear, with risk of an interaction increasing with increases in of any of these factors. For these reasons, the expected impacts on ESA listed species is slight - to negligible.

Alternative 3a-4

Alternative 3a-4 would update the commercial allocations to the states based on a combination of landings data from 1981-1989 and 2009-2018. Compared to the baseline, the expected impacts on the physical habitat and EFH under this alternative are slight - to negligible. Commercial effort is still restricted by quotas and management measures, yet effort may increase slightly given this alternative provides larger allocations to the northern states that need more quota. These allocations (see Table 5) are more reflective of how the fishery has been operating in recent years, as compared to solely 1981-1989 (the status quo time series used to set allocations).

There are many non-ESA listed marine mammals that, even with continued fishery interactions, are maintaining an optimum sustainable level (i.e., PBR levels have not been exceeded) over the last several years. For these stocks/species, it appears that the fishery management measures that have been in place over this timeframe have resulted in levels of effort that result in 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. However, given these interactions do still occur, the expected impacts on MMPA protected species range from slight - to slight +.

Similar to MMPA protected species, interactions with ESA listed species are already very rare, but when interactions do occur, they are most common in the commercial fishery due to the use of bottom trawl and gillnet gear. By definition, all ESA-listed species are in poor condition and any take can negatively impact that species' recovery. The risk of an interaction is strongly associated with the amount of gear in the water, the duration of time the gear is in the water (e.g., tow time, soak time), and the presence of listed species in the same area and time as the gear, with risk of an interaction increasing with increases in of any of these factors. For these reasons, the expected impacts on ESA listed species is slight - to negligible.

Comparisons within 3a alternatives

Under alternatives 3a-2 and 3a-3, MA, RI and NY will experience similar increases in their commercial allocations while DE, MD, VA and FL will experience decreases in allocations compared to the status quo alternative[23]. These allocations are based on more recent time series (5 or 10 years) and more accurately reflect the current needs of the fishery and stakeholders. By allowing these states to harvest more bluefish (while also further reducing harvest in other states that were not landing their entire quota), the potential for interactions with MMPA protected and ESA listed species increase. However, the overall commercial allocation will either stay the same or decrease (see section 7.3.1), ultimately reducing the commercial sectors overall impact on habitat. The negative impacts associated with 3a-2 and 3a-3 may be to a greater degree than under alternative 3a-4 or 3a-1 because these allocations are being increased for states in the north that are anticipated to utilize their full allocation.

Alternative 3b-1 (Status quo)

Alternative 2b-1 is the status quo alternative that states no phase-in of the allocations can occur. Therefore, this alternative will result in the same allocations as presented above and thus, the

[23] Maine, New Hampshire, South Carolina and Georgia will lose the largest allocation percentages through the reallocation process, however it is relative to their already small allocation that those states are not utilizing.

expected impacts on MMPA protected and ESA listed species under this alternative are slight - to slight + and slight - to negligible, respectively. The justification of the expected impacts for the 3a alternatives also applies for alternative 3b-1.

Alternative 3b-2 (Preferred)

Alternative 3b-2 is the preferred alternative that states a phase-in of the allocations can occur, and the duration to phase-in will match that of the preferred rebuilding plan alternative (7-years). The expected impacts on MMPA protected and ESA listed species under this alternative are slight - to slight + and slight - to negligible, respectively. The justification of the expected impacts for the 3a alternatives also applies for alternative 3b-2 given the amount of allocation to be phased-in is so small and will have indistinguishable impacts to protected resources over time.

Comparisons within 3b alternatives

The differences in impacts between alternatives 3b-1 and 3b-2 will be indistinguishable because the adjustments in quota through phasing-in allocations are so small and the fishery rarely interacts with MMPA protected and ESA listed species.

Alternative 3c-1 (Preferred) (Status quo)

The expected impacts on MMPA protected and ESA listed species under this alternative are slight - to slight + and slight - to negligible, respectively, because the commercial sector is still constrained by their quotas/management measures. Moreover, the commercial sector continues to have limited gear interactions with protected species. The justification of the expected impacts for the 3a alternatives also applies for alternative 3c-1 given no trigger would be applied and the allocations would remain the same.

Alternative 3c-2

Alternative 3c-2 would implement a trigger level equal to the average of the initial commercial quota for each time series associated with alternative set 3a that do not include transfers from the recreational to commercial fishery (see Table 8, Table 9, and Table 10). Ultimately, the commercial quota time series selected would correspond with the time series associated with the preferred commercial allocations to the state alternative. Compared to the baseline, the expected impacts on MMPA protected and ESA listed species under this alternative are slight - to slight + and slight - to negligible, respectively, because the commercial sector is still constrained by their quotas/management measures. Moreover, the commercial sector continues to have limited gear interactions with protected species. The justification of the expected impacts for the 3a alternatives also applies for alternative 3c-2 given the application of a trigger would have indistinguishable impacts on protected species since the reallocation of additional quota above a trigger would remain fairly small.

Alternative 3c-3

Alternative 3c-3 would implement a trigger level equal to the average of the final commercial quota that includes transfers from the recreational to the commercial fishery (see Table 8, Table 9, and Table 10). Ultimately, the commercial quota time series selected would correspond with the time series associated with the preferred commercial allocations to the state alternative. Compared to the baseline, the expected impacts on MMPA protected and ESA listed species under this alternative are slight - to slight + and slight - to negligible, respectively, because the commercial

sector is still constrained by their quotas/management measures. Moreover, the commercial sector continues to have limited gear interactions with protected species. The justification of the expected impacts for the 3a alternatives also applies for alternative 3c-3 given the application of a trigger would have indistinguishable impacts on protected species since the reallocation of additional quota above a trigger would remain fairly small.

Comparisons within 3c alternatives

The impacts of the 3c alternatives on MMPA protected and ESA listed species are expected to be slight - to slight + and slight - to negligible, respectively, because each state is still constrained by their respective quotas/management measures. However, when compared to each other, 3c-2 is slightly more negative than 3c-3 because it would implement a lower trigger that allows states in need of more allocation to receive more quota, thus leading to more interactions with bluefish and thus, protected species. Compared to the preferred status quo alternative, the impacts of 3c-2 and 3c-3 are negligible given the trigger is reallocating any surplus quota above a certain threshold.

Alternative 3d-1 (Status quo)

Alternative 3d-1 is the status quo alternative that would not implement a minimum default allocation. The expected impacts on MMPA protected and ESA listed species are expected to be slight - to slight + and slight - to negligible, respectively, because each state is still constrained by their respective quotas/management measures and are working towards rebuilding (i.e., increasing SSB). Moreover, the commercial sector continues to have limited gear interactions with protected species. The justification of the expected impacts for the 3a alternatives also applies for alternative 3d-1 given the application of no minimum default allocation would have status quo impacts on protected species.

Alternative 3d-2 (Preferred)

Alternative 3d-2 is the preferred alternative that would implement a 0.10% minimum default allocation in order to prevent states that would otherwise lose their allocation through the reallocation process to retain a minimum default allocation. The expected impacts on MMPA protected and ESA listed species are expected to be slight - to slight + and slight - to negligible, respectively, because each state is still constrained by their respective quotas/management measures and are working towards rebuilding (i.e., increasing SSB). Moreover, the commercial sector continues to have limited gear interactions with MMPA protected and ESA listed species. The justification of the expected impacts for the 3a alternatives also applies for alternative 3d-2 given the application of a 0.10% minimum default allocation would have indistinguishable impacts on protected species.

Alternative 3d-3

Alternative 3d-3 is the preferred alternative that would implement a 0.23% minimum default allocation in order to prevent states that would otherwise lose their allocation through the reallocation process to retain a minimum default allocation. The expected impacts on MMPA protected and ESA listed species are expected to be slight - to slight + and slight - to negligible, respectively, because each state is still constrained by their respective quotas/management measures and are working towards rebuilding (i.e., increasing SSB). Moreover, the commercial sector continues to have limited gear interactions with MMPA protected and ESA listed species. The justification of the expected impacts for the 3a alternatives also applies for alternative 3d-3

given the application of a 0.25% minimum default allocation would have indistinguishable impacts on protected species.

Comparisons within 3d alternatives

The expected impacts on MMPA protected and ESA listed species are expected to be slight - to slight + and slight - to negligible, respectively, because each state is still constrained by their respective quotas/management measures and are working towards rebuilding (i.e., increasing SSB). However, when compared to each other and status quo, 3d-2 and 3d-3 have indistinguishable differences in terms of directionality. Any differences between each alternative are expected to be minimal and would go largely unnoticed.

7.3.3. Impacts to Alternative Set 4 (Rebuilding Plan)

This section details the impacts associated with each rebuilding plan on protected species. For all alternatives, impacts are expected to be slight - to slight + for MMPA protected species and slight - to negligible for ESA listed species.

Alternative 4a (Status quo)

The no action/status quo alternative would not implement a rebuilding plan, no changes to the current risk policy would occur, and the current specifications would remain in place. The impacts of not implementing a rebuilding plan are expected to be slight - to slight + for MMPA protected species and slight - to negligible for ESA listed species. The recreational sector utilizes gear (rod and reel, handline) that rarely interacts with protected species. Additionally, commercial effort will remain the same or decrease under the allocation alternatives, which will further minimize gear interactions with protected species.

There are many non-ESA listed marine mammals that, even with continued fishery interactions, are maintaining an optimum sustainable level (i.e., PBR levels have not been exceeded) over the last several years. For these stocks/species, it appears that the fishery management measures that have been in place over this timeframe have resulted in levels of effort that result in 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. However, given these interactions do still occur, the expected impacts on MMPA protected species range from slight - to slight +.

Similar to MMPA protected species, interactions with ESA listed species are already very rare, but when interactions do occur, they are most common in the commercial fishery due to the use of bottom trawl and gillnet gear. By definition, all ESA-listed species are in poor condition and any take can negatively impact that species' recovery. The risk of an interaction is strongly associated with the amount of gear in the water, the duration of time the gear is in the water (e.g., tow time, soak time), and the presence of listed species in the same area and time as the gear, with risk of an interaction increasing with increases in of any of these factors. For these reasons, the expected impacts on ESA listed species is slight - to negligible.

Alternative 4b

The projection methodology prepared by the NEFSC stock assessment scientist indicates 4b should rebuild the stock to the SSB target of 198,717 mt in 4 years, as presented in Figure 4. The impacts of the constant harvest rebuilding plan are expected to be slight - to slight + for MMPA

protected species and slight - to negligible for ESA listed species. The recreational sector utilizes gear (rod and reel, handline) that rarely interacts with protected species. Additionally, commercial effort will remain the same or decrease under the allocation alternatives in the short term, which will further minimize gear interactions with protected species. However, as biomass increases overtime through the ongoing rebuilding plan, fishing effort is expected to rise, which heightens the potential for protected species interactions. But again, interactions with protected species in the bluefish fishery are already rare occurrences and effort is still constrained by annual quotas and management measures.

There are many non-ESA listed marine mammals that, even with continued fishery interactions, are maintaining an optimum sustainable level (i.e., PBR levels have not been exceeded) over the last several years. For these stocks/species, it appears that the fishery management measures that have been in place over this timeframe have resulted in levels of effort that result in 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. However, given these interactions do still occur, the expected impacts on MMPA protected species range from slight - to slight +.

Similar to MMPA protected species, interactions with ESA listed species are already very rare, but when interactions do occur, they are most common in the commercial fishery due to the use of bottom trawl and gillnet gear. By definition, all ESA-listed species are in poor condition and any take can negatively impact that species' recovery. The risk of an interaction is strongly associated with the amount of gear in the water, the duration of time the gear is in the water (e.g., tow time, soak time), and the presence of listed species in the same area and time as the gear, with risk of an interaction increasing with increases in of any of these factors. For these reasons, the expected impacts on ESA listed species is slight - to negligible.

Alternative 4c

The projection methodology prepared by the NEFSC stock assessment scientist indicates 4c should rebuild the stock to the SSB target of 198,717 mt in 5 years, as presented in Figure 4. The expected impacts of alternative 4c are expected to be slight - to slight + for MMPA protected species and slight - to negligible for ESA listed species given biomass would increase yearly in relation to the Council's risk policy, until rebuilt in 2026. The recreational sector utilizes gear (rod and reel, handline) that rarely interacts with protected species. Additionally, commercial effort will remain the same or decrease under the allocation alternatives in the short term, which will further minimize gear interactions with protected species. However, as biomass increases overtime through the ongoing rebuilding plan, fishing effort is expected to rise, which heightens the potential for protected species interactions. But again, interactions with protected species in the bluefish fishery are already rare occurrences and effort is still constrained by annual quotas and management measures.

There are many non-ESA listed marine mammals that, even with continued fishery interactions, are maintaining an optimum sustainable level (i.e., PBR levels have not been exceeded) over the last several years. For these stocks/species, it appears that the fishery management measures that have been in place over this timeframe have resulted in levels of effort that result in 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. However, given these interactions do still occur, the expected impacts on MMPA protected species range from slight - to slight +.

Similar to MMPA protected species, interactions with ESA listed species are already very rare, but when interactions do occur, they are most common in the commercial fishery due to the use of bottom trawl and gillnet gear. By definition, all ESA-listed species are in poor condition and any take can negatively impact that species' recovery. The risk of an interaction is strongly associated with the amount of gear in the water, the duration of time the gear is in the water (e.g., tow time, soak time), and the presence of listed species in the same area and time as the gear, with risk of an interaction increasing with increases in of any of these factors. For these reasons, the expected impacts on ESA listed species is slight - to negligible.

Alternative 4d (Preferred)

The projection methodology prepared by the NEFSC stock assessment scientist indicates 4d should rebuild the stock to the SSB target of 198,717 mt in 7 years, as presented in Figure 4. The expected impacts of alternative 4d are expected to be slight - to slight + for MMPA protected species and slight - to negligible for ESA listed species given harvest would be set in relation to a constant fishing mortality rate (constant F) that allows for the highest harvest, while achieving a rebuilt status in 2028. The recreational sector utilizes gear (rod and reel, handline) that rarely interacts with protected species. Additionally, commercial effort will remain the same or decrease under the allocation alternatives in the short term, which will further minimize gear interactions with protected species. However, as biomass increases overtime through the ongoing rebuilding plan, fishing effort is expected to rise, which heightens the potential for protected species interactions. But again, interactions with protected species in the bluefish fishery are already rare occurrences and effort is still constrained by annual quotas and management measures.

There are many non-ESA listed marine mammals that, even with continued fishery interactions, are maintaining an optimum sustainable level (i.e., PBR levels have not been exceeded) over the last several years. For these stocks/species, it appears that the fishery management measures that have been in place over this timeframe have resulted in levels of effort that result in 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. However, given these interactions do still occur, the expected impacts on MMPA protected species range from slight - to slight +.

Similar to MMPA protected species, interactions with ESA listed species are already very rare, but when interactions do occur, they are most common in the commercial fishery due to the use of bottom trawl and gillnet gear. By definition, all ESA-listed species are in poor condition and any take can negatively impact that species' recovery. The risk of an interaction is strongly associated with the amount of gear in the water, the duration of time the gear is in the water (e.g., tow time, soak time), and the presence of listed species in the same area and time as the gear, with risk of an interaction increasing with increases in of any of these factors. For these reasons, the expected impacts on ESA listed species is slight - to negligible.

Comparisons within alternatives

The impacts to MMPA protected and ESA listed species under alternatives 4b, 4c or 4d are slight - to slight + and slight - to negligible, respectively. In the long term, the impacts tied to 4d are

negative to a greater degree than 4c, and then 4b, because 4d allows for higher catch limits over the course of the rebuilding plan. This has the potential to increase interactions with protected species, despite interactions being rare within the bluefish fishery.

7.3.4. Impacts to Alternative Set 5 (Sector Transfers)

This section details the impacts associated with sector transfers and transfer cap on protected species. For all alternatives, impacts are expected to be slight - to slight + for MMPA protected species and slight - to negligible for ESA listed species.

Alternative 5a-1 (Status quo)

Under alternative 5a-1, transfers from the recreational to the commercial sector could continue but transfers from the commercial to the recreational sector would not be included as an option in the FMP. Compared to the baseline, alternative 5a-1 is anticipated to have slight - to slight + for MMPA protected species and slight - to negligible for ESA listed species. The recreational sector utilizes gear (rod and reel, handline) that rarely interacts with protected species. Additionally, commercial effort will remain the same or decrease under the allocation alternatives in the short term, which will further minimize gear interactions with protected species. However, as biomass increases overtime through the ongoing rebuilding plan, fishing effort is expected to rise, which heightens the potential for protected species interactions. But again, interactions with protected species in the bluefish fishery are already rare occurrences and effort is still constrained by annual quotas and management measures, despite any quota transfers.

There are many non-ESA listed marine mammals that, even with continued fishery interactions, are maintaining an optimum sustainable level (i.e., PBR levels have not been exceeded) over the last several years. For these stocks/species, it appears that the fishery management measures that have been in place over this timeframe have resulted in levels of effort that result in 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. However, given these interactions do still occur, the expected impacts on MMPA protected species range from slight - to slight +.

Similar to MMPA protected species, interactions with ESA listed species are already very rare, but when interactions do occur, they are most common in the commercial fishery due to the use of bottom trawl and gillnet gear. By definition, all ESA-listed species are in poor condition and any take can negatively impact that species' recovery. The risk of an interaction is strongly associated with the amount of gear in the water, the duration of time the gear is in the water (e.g., tow time, soak time), and the presence of listed species in the same area and time as the gear, with risk of an interaction increasing with increases in of any of these factors. For these reasons, the expected impacts on ESA listed species is slight - to negligible.

Alternative 5a-2 (Preferred)

Under alternative 5a-2, each year during the setting or review of annual catch limits, the Council and Board would have the ability to recommend a transfer of quota between the recreational and commercial sectors, affecting the final commercial quota and RHL. The Council and Board could recommend a transfer from the commercial fishery to the recreational fishery or from the recreational fishery to the commercial fishery. Similar to 5a-1 and compared to the baseline, alternative 5a-2 is anticipated to have slight - to slight + for MMPA protected species and slight -

to negligible for ESA listed species. Additionally, the commercial sector has minimal impact on habitat because they primarily prosecute the fishery with gill nets. Moreover, the continued limited interaction with the habitat limits the recovery potential of impacted areas. Additionally, commercial effort will remain the same or decrease under the allocation alternatives in the short term, which will further minimize gear interactions with protected species. However, as biomass increases overtime through the ongoing rebuilding plan, fishing effort is expected to rise, which heightens the potential for protected species interactions. But again, interactions with protected species in the bluefish fishery are already rare occurrences and effort is still constrained by annual quotas and management measures, despite any quota transfers.

There are many non-ESA listed marine mammals that, even with continued fishery interactions, are maintaining an optimum sustainable level (i.e., PBR levels have not been exceeded) over the last several years. For these stocks/species, it appears that the fishery management measures that have been in place over this timeframe have resulted in levels of effort that result in 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. However, given these interactions do still occur, the expected impacts on MMPA protected species range from slight - to slight +.

Similar to MMPA protected species, interactions with ESA listed species are already very rare, but when interactions do occur, they are most common in the commercial fishery due to the use of bottom trawl and gillnet gear. By definition, all ESA-listed species are in poor condition and any take can negatively impact that species' recovery. The risk of an interaction is strongly associated with the amount of gear in the water, the duration of time the gear is in the water (e.g., tow time, soak time), and the presence of listed species in the same area and time as the gear, with risk of an interaction increasing with increases in of any of these factors. For these reasons, the expected impacts on ESA listed species is slight - to negligible.

Comparisons within 5a alternatives

In the short term, transfers will not occur as they are not allowed while the stock is overfished and/or overfishing is occurring leading to negligible impacts to protected species. In the long term, impacts may be negative to a greater degree under alternative 5a-1 because increases to the commercial quota may lead to additional interactions with protected species, however interactions with protected species are rare occurrences and the commercial sector is still constrained by their respective quotas and management measures. Under 5a-2, impacts are to a lesser degree because transfers to the commercial sector are less likely to occur since the recreational sector has been fully utilizing the RHL in recent years.

Alternative 5b-1 (Status quo)

Alternative 5b-1 is to have slight - to slight + on MMPA protected species and slight - to negligible on ESA listed species because the recreational sector utilizes gear (rod and reel, handline) that rarely interacts with the protected species, and thus will not exacerbate the current conditions (i.e., many species will maintain PBR levels have not been exceeded). Additionally, the commercial sector has minimal impact on protected species because interactions are rare occurrences, however any interaction leads to a negative impact. Ultimately, no changes to the current transfer provisions will result in little to no changes to the baseline impacts on protected species.

Alternative 5b-2 (Preferred)

Alternative 5b-2 is anticipated to have slight - to slight + impacts on MMPA protected species and slight - to negligible impacts on ESA listed species. Similar to 5b-1, the recreational sector utilizes gear (rod and reel, handline) that rarely interacts with the protected species, and thus will not exacerbate the current conditions (i.e., many species will maintain PBR levels have not been exceeded). Additionally, the commercial sector has minimal impact on protected species because interactions are rare occurrences, however a transfer cap that scales with biomass may increase interactions with protected species, and in turn leads to potential negative impacts.

Comparisons within 5b alternatives

Given transfers will not occur while the stock is overfished and/or overfishing is occurring, both 5b-1 and 5b-2 are anticipated to have slight - to slight + on MMPA protected species and slight - to negligible on ESA listed species in the short term. In the long term, 5b-2 is anticipated to have impacts that are negative to a greater degree than 5b-1 since the alternative allows for transfers to scale with biomass (i.e., may lead to more targeted effort on bluefish when biomass is high).

7.3.5. Impacts to Alternative Set 6 (Management Uncertainty)

This section details the impacts associated with modifying how the Council accounts for management uncertainty. All impacts are expected to be negligible

Alternative 6a (Status quo)

This alternative is expected to have negligible impacts on protected species because it applies to the management process and keeps the management uncertainty provisions in the FMP status quo.

Alternative 6b (Preferred)

This alternative is expected to have negligible impacts on protected species because it applies to the management process yet offers more flexibility to effectively account for management uncertainty.

Comparisons within alternatives

Alternatives 6a and 6b both include impacts that are negligible on protected species because they apply solely to the management process.

7.4. Impacts to Human Communities

The following sections describe the expected socioeconomic impacts of each alternative on the human communities. The impacts are based on expected changes in fishing effort and overall biomass and are considered in relation to potential changes in landings, prices, revenues, fishing opportunities, and angler satisfaction.

7.4.1. Impacts to Alternative Set 2 (Commercial/Recreational Allocations)

This section details the impacts associated with the sector allocations and the ability to phase-in the allocations over a specified duration. The duration to phase in allocation was set as the number of years required to rebuild the stock (as indicated by the preferred rebuilding plan). All the alternatives are slight - to slight + because they either keep the allocations status quo or increase the allocations to the recreational sector, which is responsible for approximately 90% of overall bluefish catch. Increasing the recreational allocation creates more recreational opportunity.

Decreased commercial allocations do decrease commercial opportunities, but the ongoing rebuilding plan is anticipated to increase overall biomass and thus, increase the quotas used to constrain harvest in the long term.

To estimate the impact on the commercial sector, commercial revenues are estimated for allocations under the status quo of pre-transfer quota (i.e.,17% of the ACL) and are compared to revenues estimated under the four additional proposed allocation sub-alternatives (2a-2 – 2a-5, 11%, 13%, 14%, and 16% of the ACL) to provide insight into how allocation changes could impact revenue. Revenues are estimated using the allocated pre-transfer quota percentage and all quota is assumed to be landed. The price model described in APPENDIX A is used to generate average annual ex-vessel bluefish prices at the various landings levels. The pre-transfer landings are multiplied by the predicted price and presented in 2020 constant dollars as the estimated revenue. Average differences in revenues between the status quo (17% of the ACL) and the additional proposed allocation percentages are presented in Table 36. Over 1999-2019, annual revenues decrease by an average of $200K (6%), $590K (18%), $790K (29%) and $1.19M (35%) under the 16%, 14%, 13% and 11% commercial allocations relative to the 17% allocation, respectively. Average differences in annual revenues decrease in magnitude when averaged over the last 10 years and further decrease when compared to the 5-year average annual revenue differences driven by relatively lower historical ABC's from 2010-2019. This analysis is informative in the potential average reduction in revenue that may be experienced under each allocation alternative. However, it is important to remember that this analysis assumes that the entire commercial quota be landed, which may not always be the case, especially when considering that commercial quotas will increase substantially as the stock rebuilds back to the biomass target.

Table 36: Average differences in estimated commercial bluefish revenues by pre-transfer alternative relative to the pre-transfer quota status quo (2a-1 vs. 2a-2-5).

Time Series	Average Differences in Estimated Revenues (Millions of 2020 Constant Dollars)			
	11% Commercial Quota (2a-2) vs 17% Status Quo (2a-1)	13% Commercial Quota (2a-3) vs 17% Status Quo (2a-1)	14% Commercial Quota (2a-4) vs 17% Status Quo (2a-1)	16% Commercial Quota (2a-5) vs 17% Status Quo (2a-1)
Averaged over Entire Time Series (1999-2019)	-$1.19M	-$0.79M	-$0.59M	-$0.20M
Standard Deviation	*0.14*	*0.09*	*0.07*	*0.02*
Averaged over Past 10 Years (2010-2019)	-$1.09M	-$0.72M	-$0.54M	-$0.18M
Standard Deviation	*0.12*	*0.08*	*0.06*	*0.02*
Averaged over Past 5 Years (2015-2019)	-$0.98M	-$0.65M	-$0.49M	-$0.16M
Standard Deviation	*0.03*	*0.02*	*0.01*	*0.00*
Average Percent Decrease Relative to Annual Status Quo Revenues (1999-2019)	35%	24%	18%	6%

Note: This calculation does not consider transfers from the recreational sector and is based solely on the full utilization of the pre-transfer quota.

It is difficult to identify and quantify the economic impacts stemming from increases in recreational bluefish quota. Without a demand model, it is impossible to estimate the changes in angler effort and expenditures resulting from quota increases. Qualitatively, increases in recreational bluefish quota is expected to have neutral or slight positive economic impacts which may result from increases in recreational sector quota. Increases in bag limits might increase angler satisfaction as well as recreational for-hire and independent angler trips which would result in increased expenditures and effort. However, the economic impacts resulting from increases in recreational quota could be neutral given the high catch and release nature of the sector—where the same number of trips may occur despite the changes in quota.

Alternative 2a-1 (Status quo)

Alternative 2a-1 is the status quo alternative that would keep the allocations at 83% recreational and 17% commercial. This allocation alternative is based on landings data from 1981-1989 and was set in Amendment 1 in 2000. The expected impacts on the human communities under this alternative are slight - to slight + because each sector is still constrained by their respective quotas/management measures and are working towards rebuilding (i.e., increasing SSB).

Alternative 2a-2

Alternative 2a-2 sets the allocations at 89% recreational and 11% commercial. This allocation alternative is based on catch data from 2014-2018 and 2009-2018. Compared to the baseline, the expected impacts to the human communities under this alternative are slight - to slight + because each sector is still constrained by their respective quotas/management measures and are working towards rebuilding (i.e., increasing SSB).

Compared to status quo, over the 1999-2019 time series, the average percent decrease relative to annual status quo revenues for the commercial sector under alternative 2a-2 are anticipated to be 35% (Table 36). This reduction in commercial revenue in the short term leads to the slight - impacts, however as biomass increases, commercial quotas will also increase and lead to potentially larger revenues in the long term.

For the recreational sector, the increase in allocation by 6% will have slight + impacts. This increased allocation will offer more opportunity to harvest bluefish, ultimately increasing overall angler satisfaction. Moreover, the for-hire sector has the potential to increase the frequency of trips (i.e., effort) and overall revenue.

Alternative 2a-3

Alternative 2a-3 sets the allocations at 87% recreational and 13% commercial. This allocation alternative is based on catch data from 1999-2018. Compared to the baseline, the expected impacts to the human communities under this alternative are slight - to slight + because each sector is still constrained by their respective quotas/management measures and are working towards rebuilding (i.e., increasing SSB).

Compared to status quo, over the 1999-2019 time series, the average percent decrease relative to annual status quo revenues for the commercial sector under alternative 2a-3 are anticipated to be 24% (Table 36). This reduction in commercial revenue in the short term leads to the slight - impacts, however as biomass increases, commercial quotas will also increase and lead to potentially larger revenues in the long term.

For the recreational sector, the increase in allocation by 4% will have slight + impacts. This increased allocation will offer more opportunity to harvest bluefish, ultimately increasing overall angler satisfaction. Moreover, the for-hire sector has the potential to increase the frequency of trips (i.e., effort) and overall revenue.

Alternative 2a-4 (Preferred)

Alternative 2a-4 is the preferred alternative and sets the allocations at 86% recreational and 14% commercial. This allocation alternative is based on catch data from 1981-2018 and landings data from 2014-2018 and 2009-2018. Compared to the baseline, the expected impacts to the human communities under this alternative are slight - to slight + because each sector is still constrained by their respective quotas/management measures and are working towards rebuilding (i.e., increasing SSB).

Compared to status quo, over the 1999-2019 time series, the average percent decrease relative to annual status quo revenues for the commercial sector under alternative 2a-4 are anticipated to be 18% (Table 36). This reduction in commercial revenue in the short term leads to the slight -

impacts, however as biomass increases, commercial quotas will also increase and lead to potentially larger revenues in the long term.

For the recreational sector, the increase in allocation by 3% will have slight + impacts. This increased allocation will offer more opportunity to harvest bluefish, ultimately increasing overall angler satisfaction. Moreover, the for-hire sector has the potential to increase the frequency of trips (i.e., effort) and overall revenue.

Alternative 2a-5

Alternative 2a-5 sets the allocations at 84% recreational and 16% commercial. This allocation alternative is based on landings data from 1981-2018 and 1999-2018. Compared to the baseline, the expected impacts to the human communities under this alternative are slight - to slight + because each sector is still constrained by their respective quotas/management measures and are working towards rebuilding (i.e., increasing SSB).

Compared to status quo, over the 1999-2019 time series, the average percent decrease relative to annual status quo revenues for the commercial sector under alternative 2a-5 are anticipated to be 6% (Table 36). This reduction in commercial revenue in the short term leads to the slight - impacts, however as biomass increases, commercial quotas will also increase and lead to potentially larger revenues in the long term.

For the recreational sector, the increase in allocation by 1% will have slight + impacts. This increased allocation will offer more opportunity to harvest bluefish, ultimately increasing overall angler satisfaction. Moreover, the for-hire sector has the potential to increase the frequency of trips (i.e., effort) and overall revenue.

Comparisons within 2a alternatives

Aside from the no action/status quo alternatives, all alternatives result in a reduced allocation to the commercial sector, which is expected to decrease commercial quotas compared to the current allocations. The commercial sector could experience a loss in revenue due to corresponding decreased quotas and a reduction in potential landings of bluefish. However, with the exception of 2020, the commercial sector has not fully utilized its post transfer quota in over a decade, so a decrease in allocation may not necessarily lead to a decrease in commercial landings or revenues in the long term. The economic analysis discussed above looks at historical landings to inform the potential future economic impacts of a reduction in the commercial allocation.

For the commercial sector, slight negative impacts are expected on all alternatives that adjust the sector allocations (2a-2 – 2a-5). When comparing the non-status quo alternatives to each other, alternative 2a-2 is negative to a greater degree than 2a-3, 2a-4, and 2a-5, given that the reduction in commercial allocation is largest for alternative 2a-2, followed by 2a-3, 2a-4, and 2a-5.

For the recreational sector, slight positive impacts are expected on all alternatives that adjust the sector allocations (2a-2 – 2a-5). When comparing the non-status quo alternatives to each other, alternative 2a-2 is positive to a greater degree than 2a-3, 2a-4, and 2a-5, given that the increase in recreational allocation is largest for alternative 2a-2, followed by 2a-3, 2a-4, and 2a-5.

Alternative 2b-1 (Preferred) (Status quo)

Alternative 2b-1 is the preferred and status quo alternative that states no phase-in of the allocations can occur. The expected impacts on the human communities under this alternative are slight - to slight + because each sector is still constrained by their respective quotas/management measures and are working towards rebuilding (i.e., increasing SSB).

Alternative 2b-2

Alternative 2b-2 allows for the phase-in of allocations. The duration at which the allocations would be phased-in would match the duration of the preferred rebuilding alternative. Compared to the baseline, the expected impacts on the human communities under this alternative are slight - to slight + because spreading the reduction in allocation over multiple years will reduce the initial economic burden on commercial stakeholders. For the recreational sector, phasing-in allocations would go largely unnoticed considering the recreational sector makes up the vast majority of the overall ABC/ACL. Additionally, each sector is still constrained by their respective quotas/management measures and are working towards rebuilding (i.e., increasing SSB).

Comparisons within 2b alternatives

Considering the small range that the phased-in allocations would change over 4-7 years, minimal impacts are expected for the recreational fishery, which already holds the larger share of the ACL. However, a shift in allocation away from the commercial sector is a much larger annual impact to the commercial sector relative to its smaller initial allocation. As such, a phase-in approach may slightly reduce the economic burden on commercial stakeholders and likely have short-term economic benefits in the form of increased landings and revenues over the non-phase in alternative if all else was held constant.

Under Alternative 2b-1, the preferred allocation selected from the 2a set of alternatives will occur in a single year upon implementation. This will likely have a range of social impacts depending upon the alternative selected from the 2a allocation set. Alternative 2b-1 will likely have neutral to low negative impacts on the commercial fishery if alternatives 2a-4 or 2a-5 are selected, but the negative impacts increase substantially if alternatives 2a-2 or 2a-3 are selected due to the abrupt and sizeable change in allocations to the commercial fishery. However, this remains contingent on the continuation of sector transfers and if the transfers decrease in relation to historical transfers given the MRIP update.

The impacts of the 2b alternatives are expected to be slight - to slight + on the human communities because the amount of allocation to be phased-in over time will be very small (less than 2% per year in all scenarios) and each sector is still constrained by their respective quotas/management measures. However, when compared to each other, 2b-2 is slightly more positive than 2b-1 since it would allow the reduction in commercial allocation to occur over the duration of the selected rebuilding plan. This would reduce the overall economic burden on the commercial sector in the short term. Moreover, given the recreational allocation is significantly larger than the commercial allocation, the phase-in of a small portion of the recreational allocation would go largely unnoticed.

7.4.2. Impacts to Alternative Set 3 (Commercial Allocations to the States)

This section details the impacts associated with the commercial allocations to the states, the ability to phase-in the allocations over a specified duration, a trigger approach, and implementing a minimum default allocation.

One alternative must be selected from alternative set 3a, 3b, 3c, and 3d and only one alternative can be selected from each set.

The socioeconomic impacts of the existing allocations vary from state to state. Some states report negative economic impacts associated with current allocations due to a mismatch between their current allocation and their fishery capacity and/or bluefish availability in their waters. Commercial fishermen that land bluefish within a state that consistently harvests less than its quota have the benefit of operating within an unconstrained fishery. Future fluctuations in stock size are less likely to restrict fishing effort and mitigate revenue losses within that state. Each state manages their fishery differently in terms of total number of participants, trip limits, seasons, and other measures. A restriction in one or more of these measures is the driver of the social and economic impacts to industry participants. For example, a restriction in the daily trip limit will likely have an outsized impact on larger vessels compared to smaller vessels which may already harvest bluefish under the newly imposed daily trip limit.

The proposed allocation alternatives incorporate more recent data that are reflective of current state-specific performance and have the potential to increase economic efficiency. Nonetheless, any reduction in allocation may limit a state's potential for market expansion and future increases in landings and ex-vessel revenue compared to the no action alternative. Revenue is also variable in nature and is influenced by fluctuations in costs and prices.

Revising the commercial allocation could lead to negative impacts with respect to commercial fishers' attitudes towards management, as well as detrimental impacts on the ability of some fishers to continue to participate in the fishery. According to the Social Performance Indicators[24], the five most highly engaged communities in the commercial bluefish fishery from 2009 to 2019 are: 1) Wanchese, NC; 2) Montauk, NY; 3) Narragansett/Point Judith, RI; 4) Hampton Bays/Shinnecock, NY; and 5) New Bedford, MA (Figure 10). For commercial bluefish stakeholders located in these ports, the reduction in allocation to the commercial fishery may have the most substantial negative social impacts.

[24] https://apps-nefsc.fisheries.noaa.gov/socialsci/pm/index.php.

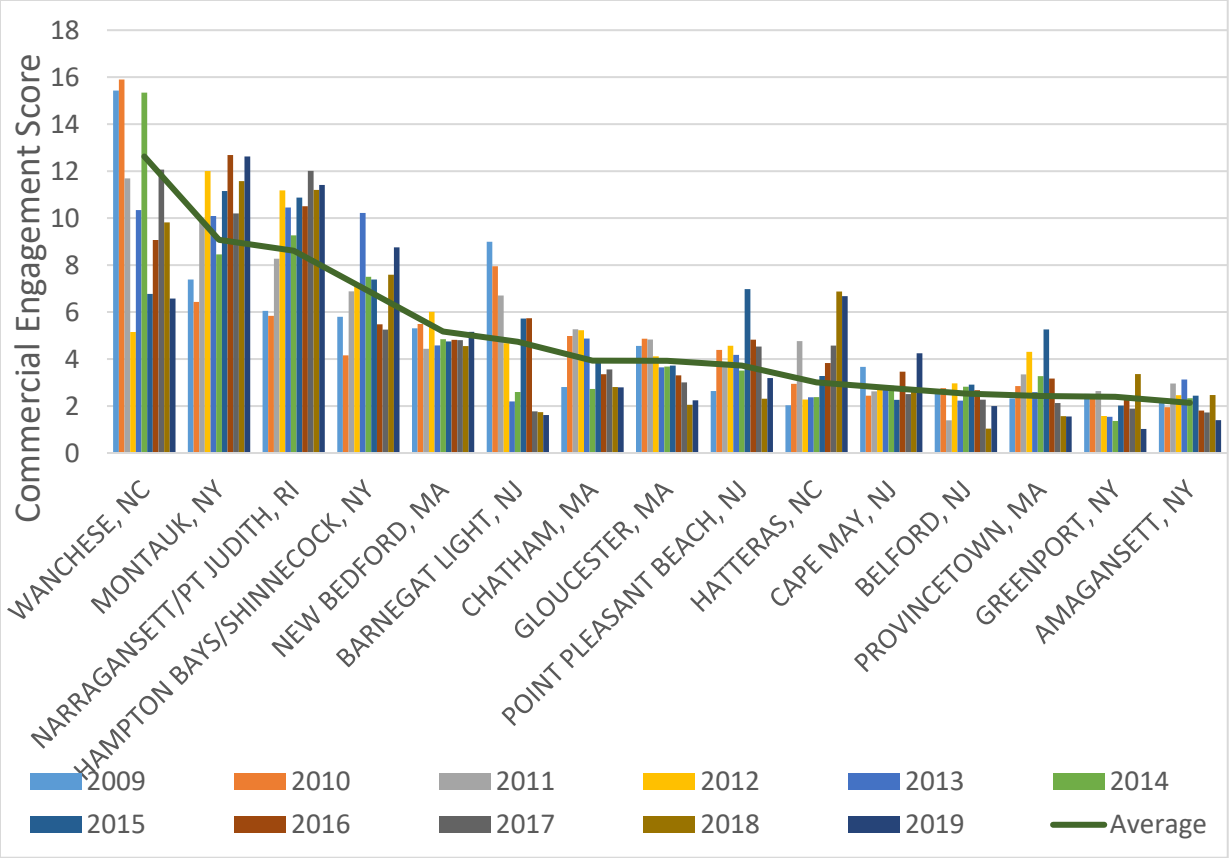

Figure 10: Commercial Bluefish Engagement Scores by Community: Top Fifteen Communities in Average Engagement from 2009-2019.

The current state-level commercial allocations consider landings data from 1981-1989. Through transfers, states which predict to land bluefish quantities above their allocated quota can request additional quota from states which are not expected to land their allocation. This transfer increases the requesting state's landings and revenues, overall. In addition, no incentives are given to the state transferring out quota. In theory, this transaction could be classified as a Pareto improvement, where the transfer of quota does not negatively impact either participating party. Given that these state-to-state transfer channels exist, the economic impacts of the proposed reallocations at the state-level are expected to be marginal during years of higher bluefish population levels given that 1) allocations are based on realized landings/catch data and 2) states can transfer quota depending on their predicted performance in any given year. However, in years when the coastwide commercial quota is low resulting from an overfished stock, there may not be a sufficient number of states with additional quota available to cover other states' needs. During these years, states with a small allocation relative to their share of recent coastwide landings are likely to be negatively impacted the most. In addition, there is opportunity cost in the form of time and effort associated with transfers. There is a decrease in economic efficiency linked with the processing and approving of transfer requests. If transfers continue, the maximum economic benefits are associated with the reallocation plan which accurately captures each states' quota needs and minimizes the need for quota transfers.

To highlight how each allocation alternative relates to decreases in state quota transfers, both realized landings and average reallocation quantities by sub-alternative are depicted in Figure 11. Here, the distribution of each state's annual bluefish landings are summarized by box and whisker plots. The interquartile range of state-level bluefish landings are portrayed by the gray boxes and the whiskers, which indicate the maximum and minimum annual bluefish landing quantity for each state from 1999-2019.[25] Average annual allocations are calculated using the percentages presented in 3a-1 to 3a-4 which include the status quo of allocations determined using the 1981-1989 time series of landings data, allocations based on the previous five years of state landings, allocations based on landings from the previous 10 years, and allocations based on landings from 1981-89 and 2009-18. State allocations by sub-alternative are calculated using the historical commercial sector quota and each allocation plan's corresponding quota percentage from 1999-2019. The average allocations by state and plan are plotted against realized bluefish landings for comparison.

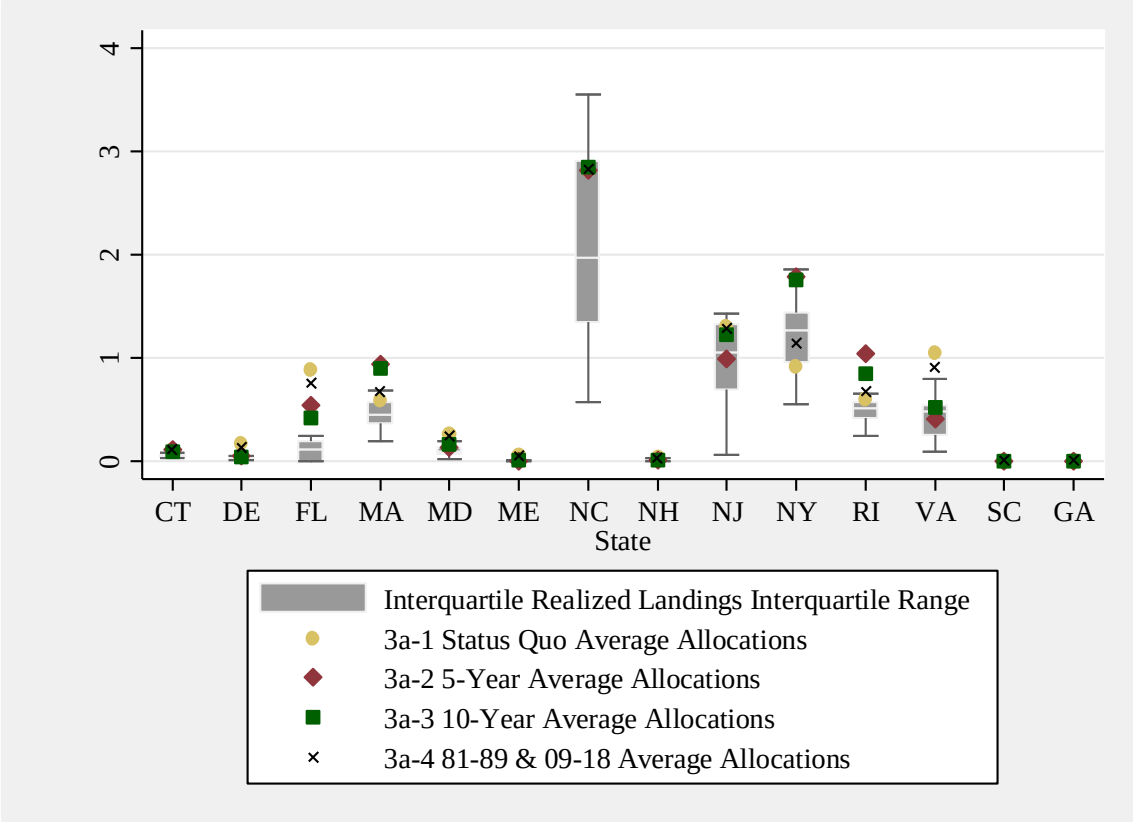

Figure 11: Realized annual commercial bluefish landings box and whisker plots (1999-2019) and average annual allocations (1999-2019) by proposed state-level allocation sub-alternative by state. Median landings represented by white horizontal line within box and whisker.

[25] The 1999-2019 time series is used to show how the proposed allocations align with realized landings over the past two decades.

Alternative 3a-1 (Status quo)

Under alternative 3a-1, impacts are expected to range from slight - to slight +. However, impacts are likely negative for commercial fishery stakeholders located in states with smaller proportions of allocations relative to what commercial stakeholders believe should be their states' allocations. The submitted scoping comments were divided roughly in half, with 52% of commenters supporting status quo and 48% in favor of altering the commercial allocations to the states. Among the commercial stakeholders who submitted comments opposed to altering the state allocations were those from NJ (and other states where reductions would take place) who were opposed to reductions in the NJ allocation. Others supported the status quo so long as flexibility remained to transfer quotas between states when necessary. On the other hand, roughly half of the submitted comments were in favor of revisiting state commercial allocations.

Alternative 3a-2

Alternative 3a-2 would set allocations using a five-year time series of landings data (2014-2018). The expected impacts associated with alternative 3a-2 are expected to range from slight - to slight +. MA, RI, and NY would see the most substantial increases in allocations using this approach, whereas NJ, VA, and FL would see the largest reductions in commercial allocations under this approach. NY has two of the top five (Montauk and Hampton Bays/Shinnecock) and four of the fifteen most highly engaged communities in the commercial bluefish fishery (Figure 10). Relative to status quo, alternative 3a-2 would likely result in positive social impacts for these NY communities given the substantial increase in allocations to the state. While FL and VA do not have any communities among the top fifteen in commercial bluefish engagement, four of the fifteen highest in engagement are located in NJ. Therefore, while FL and VA may not experience substantial negative impacts from the reductions in commercial allocations, NJ communities and user groups will likely experience slight negative social impacts from alternative 3a-2.

Alternative 3a-3 (Preferred)

Under alternative 3a-3, a 10-year time series of landings data would inform the distribution of state allocations of commercial bluefish. The expected impacts associated with alternative 3a-2 are expected to range from slight - to slight +. This scenario would increase the allocations for RI (~3%), MA (~3%), and NY (~9%) considerably, but reduce allocations for VA and FL by a similarly substantial amount (~6%). Unlike alternative 3a-2, however, this alternative would only reduce the NJ allocation by less than one percent. Relative to the status quo, alternative 3a-3 would likely result in positive social impacts for commercial stakeholders in MA, RI, and NY, while at the same time limiting the negative impacts of reducing the allocation to NJ. As discussed under alternative 3a-2, communities in FL and VA do not feature among the most highly engaged in commercial bluefish activity (Figure 10), whereas MA, RI, NY, and NJ all have several communities with relatively high engagement in commercial bluefish fishery activities. Alternative 3a-3 provides relative benefits to most of the north Mid-Atlantic and New England user groups without affecting stakeholders in NJ as dramatically as alternative 3a-2.

Alternative 3a-4

Under alternative 3a-4, state allocations would be redistributed based partially on landings data from the 1981-1989 time series and partially on the 2009-2018 time series. The expected impacts associated with alternative 3a-2 are expected to range from slight - to slight +. This approach

provides the most limited change in state allocations among other alternatives to the status quo. Northern states such as MA, RI, and NY would see modest increases in allocations (under 3%), while southern states such as NJ, VA, and FL would only see minor decreases in allocations (~2% or less). Alternative 3a-4 would likely result in negligible to slight positive social impacts for the northern states and negligible to slight negative impacts for the southern states relative to the status quo alternative. Among all state allocation alternatives, alternative 3a-4 would likely produce the least impactful changes to the social factors among commercial bluefish fishery stakeholders and communities (Figure 10).

Comparisons within 3a alternatives

There is no consistent trend in impacts stemming from each allocation alternative when compared across states. For example, under status-quo, quota allocations for FL would be much greater than the state's median landings value (above the state's maximum annual landings value); however, for NY, quota allocated under the status quo alternative would be much less than the state's median realized landings. When comparing which sub-alternative is closest in value to the median realized landings of each state, plan 3a-3 (ten-year) performs the best, with landings predictions closest to 38% of state median landings values and furthest from only 8% of state median landings.[26] The 3a-2 plan (five-year) is second in performance based on this metric, which is closest to the median landings for 31% of states but furthest from the median value for 25% of states. The status quo (3a-1) plan had average allocations most similar to the median landings values for 23% of states but is furthest from the median landings value for 67% of states. Lastly, 3a-4 (1989-91 & 2009-18 based allocations) is nearest to 8% of state median landings values but furthest from the median value of 0% of the states. It should be reiterated that landings and revenues may not be impacted by the state-level reallocations if transfer requests continue to be issued and approved. However, by determining the alternative which best predicts state landings, the need for transfers will decrease—increasing efficiency within the commercial sector. A slight economic advantage is expected for states which are allocated quota above their historic median landings value, as these states will have the ability to land above their expected median landings without requesting additional quota from another state, while states which are allocated a quota slightly below their annual median may need to request quota on an annual basis.

Overall, impacts are expected to range from slight - to slight + for all 3a alternatives, however states will not experience the impacts evenly. As presented in Table 37, states to the north (e.g., MA, RI and NY) are currently in more need of larger commercial allocations compared to states in the south. This is evident as a result of northern states continuing to fully utilize their commercial quota, as well as transfers of quota from southern states. Therefore, the alternatives that offer larger allocations for northern states, which reflect more recent landings (as depicted by the time series), are likely to be slight positive to a greater degree (3a-2 and 3a-3) than those that do not reflect as recent landings (3a-4 and 3a-1). These positive impacts will allow for increased fishing opportunities, revenue, and overall business for commercial stakeholders that currently are in need of a larger allocation.

[26] This analysis excludes Georgia and South Carolina because each plan had an equal average allocation estimate.

Table 37: State-by-state commercial bluefish allocations along the U.S. Atlantic coast including the percent change (negative in red; positive in blue) from status quo for each alternative.

Allocation Alternatives Based on Landings Data							
	3a-1	3a-2		3a-3		3a-4	
State	Status quo (1981-1989)	5-year (2014-2018)		10-year (2009-2018)		1/2 '81-'89 1/2 '09-'18	
ME	**0.67%**	0.00%	***-100%***	0.01%	***-99%***	0.49%	***-27%***
NH	**0.41%**	0.03%	***-93%***	0.12%	***-71%***	0.33%	***-20%***
MA	**6.72%**	10.64%	***58%***	10.16%	***51%***	7.66%	***14%***
RI	**6.81%**	11.81%	***73%***	9.64%	***42%***	7.59%	***11%***
CT	**1.27%**	1.18%	***-7%***	1.00%	***-21%***	1.19%	***-6%***
NY	**10.39%**	20.31%	***95%***	19.94%	***92%***	13.01%	***25%***
NJ	**14.82%**	11.23%	***-24%***	13.94%	***-6%***	14.57%	***-2%***
DE	**1.88%**	0.58%	***-69%***	0.40%	***-79%***	1.47%	***-22%***
MD	**3.00%**	1.50%	***-50%***	1.84%	***-39%***	2.68%	***-11%***
VA	**11.88%**	4.62%	***-61%***	5.85%	***-51%***	10.26%	***-14%***
NC	**32.06%**	32.06%	***0%***	32.38%	***1%***	32.13%	***0%***
SC	**0.04%**	0.00%	***-100%***	0.00%	***-100%***	0.03%	***-25%***
GA	**0.01%**	0.00%	***-100%***	0.00%	***-100%***	0.01%	***0%***
FL	**10.06%**	6.07%	***-40%***	4.75%	***-53%***	8.59%	***-15%***
Total	**100.02%**	**100.01%**[27]		**100.03%**		***100.00%***	

Alternative 3b-1 (Status quo)

Under alternative 3b-1, impacts are expected to range from slight - to slight +. The state allocations selected from among the 3a set of alternatives would occur in a single year upon implementation and the socioeconomic impacts of alternative 3b-1 will align with whichever 3a alternative is selected for determining the future of state allocations of commercial bluefish.

Alternative 3b-2 (Preferred)

Alternative 3b-2 allows for the phase-in of allocations. The duration at which the allocations would be phased-in would match the duration of the preferred rebuilding alternative. Compared to the baseline, the expected impacts on the human communities under this alternative are slight - to slight + because spreading the reduction in allocation over multiple years will reduce the initial economic burden on commercial stakeholders. Additionally, each state is still constrained by their respective quotas/management measures and are working towards rebuilding (i.e., increasing SSB). Both the positive and negative social impacts discussed in section 7.4.1 would still apply, but they would be phased in over time. This could mitigate, to an extent, the negative social impacts

[27] Some percentages exceed 100% due to rounding but will be adjusted by the regional office upon implementation.

by providing a buffer through smaller percentage changes over time, but also slow the realization of some states' increases in quota and their associated positive social impacts.

Comparisons within 3b alternatives

The impacts described in section 7.4.1 largely apply here to the commercial allocations to the states. The biological, social, and economic impacts of the phase-in alternatives for the commercial allocations to the states under consideration in this amendment are dependent on three main factors: 1) the difference between the status quo allocation percentage and the allocation percentage selected, 2) the duration of the phase-in period, which will be the same duration as the preferred rebuilding plan, and 3) the continuation of state-to-state transfers. Based on the range of allocation percentages in Section 5.1, the commercial allocations to the states could shift by as much as 2.48 percentage points per year (NY), or as little as 0.01 percentage points (NH, SC, GA) per year under the above phase-in timeframes of 4-7 years. Ultimately, the range of impacts vary from state to state. States that are losing a percentage of their allocation will experience slight - impacts compared to the slight + impacts for states that are increasing their allocation. However, the degree of impacts vary slightly within those states that will experience increases or decreases in allocation given the phase-in of allocations if different between states.

Alternative 3c-1 (Preferred) (Status quo)

Alternative 3c-1 is the preferred and status quo alternative that states no commercial quota trigger would be implemented. The expected impacts on the human communities under this alternative are slight - to slight + because the allocations, and thus impacts, would match those exactly as described above in section 7.4 for alternatives 3a-1 to 3a-4.

Alternative 3c-2

Alternative 3c-2 would implement a trigger level equal to the average of the initial commercial quota for each time series associated with alternative set 3a that do not include transfers from the recreational to commercial fishery (see Table 8, Table 9, and Table 10). Ultimately, the commercial quota time series selected would correspond with the time series associated with the preferred commercial allocations to the state alternative. Compared to the baseline, the expected impacts on the human communities under this alternative are slight - to slight + because each sector is still constrained by their respective quotas/management measures and are working towards rebuilding (i.e., increasing SSB).

Alternative 3c-3

Alternative 3c-3 would implement a trigger level equal to the average of the final commercial quota that includes transfers from the recreational to the commercial fishery (see Table 8, Table 9, and Table 10). Ultimately, the commercial quota time series selected would correspond with the time series associated with the preferred commercial allocations to the state alternative. Compared to the baseline, the expected impacts on the human communities under this alternative are slight - to slight + because each sector is still constrained by their respective quotas/management measures and are working towards rebuilding (i.e., increasing SSB).

Comparisons within 3c alternatives

The trigger approach would allocate quota differently above a specified pre- or post-transfer threshold than the allocation method described in section 5.2.1-5.2.4. To analyze the economic

impacts of this difference in allocation, a commercial quota 100,000 lbs. above both the pre- and post-transfer threshold levels is used.[28] Revenues are calculated at the state-level using allocations under the trigger scheme. The revenues generated from the trigger-allocated quota are compared to revenues generated under a no-trigger allocation scenario across the various commercial sector allocations proposed in section 6.3 (i.e., 3a-1 through 3a-4). Since ex-vessel bluefish prices are needed at the state-level and a state-level price model has yet to be developed, annual state ex-vessel bluefish prices, averaged over 1996-2019, are used for the calculation of revenues and reported in 2020 constant dollars. One limitation of this analysis is that average state prices omit the inverse relationship between ex-vessel prices and estimated landing quantities. Average state prices reflect landing quantities closer to that of the pre-transfer trigger threshold amounts, as bluefish landings have never reached the proposed post-transfer trigger threshold levels.

Conceptually, when the trigger is activated, states will receive greater quantities of quota if they are grouped into an allocation category which results in higher allocations than the non-trigger alternative allocation method. The opposite is true for a state that is allocated a higher percentage of quota under the non-trigger allocation but is grouped in an allocation bracket lower than its original allocation. For example, ME is allocated 0.67% under the status quo (i.e., 17% of the ABC for commercial sector pre-transfer allocations) with no trigger. With a trigger, the allocation of additional quota to ME would be set at 0.1% given that it falls in the ≤1% allocation range, resulting in less allocated quota than would be received under the state's baseline allocation percentage. The state of MA, on the other hand, would be allocated 6.72% of the additional quota under the status quo with no trigger, but quota allocation after the trigger threshold would increase to 7.50% under the trigger sub-alternative.

When an additional 100,000 lbs. is allocated under the trigger vs. the non-trigger status quo, average revenues decrease for NC, ME and NH, when averaged across all state allocation alternatives (Figure 12). On average, NC revenues would decrease by $7,912, ME by $167, and NH by $101. It should be noted, however, that whether a state earns increases or decreases in revenues varies across the allocation alternatives. For example, RI would earn a revenue increase of $2,854 under 3a-2 (i.e., the five-year allocation) but a decrease in revenues (-$1,275) under 3a-3 (i.e., the ten-year allocation). The highest increases in revenues when averaged across the alternatives are earned by MA, NJ and VA with increases of $3,430, $2,508, and $1,378, respectively.

This analysis highlights the variation in economic outcomes and their dependence on the allocation sub-alternatives proposed in section 5.2.7-5.2.9. Though triggers would impact the initial allocation of the quota, this analysis assumes that each state will fully utilize their allocated quota with no state-to-state transfers. If additional allocations resulting from the trigger method are not utilized and transfers are to continue, there may be little change in landings/revenues and the burden of transfers will be the main economic consequence of this sub-alternative.

[28] Average total realized bluefish landings from 1999-2019 equal 5.68 M lbs. which also informs the average price data used calculate revenues. Given that the post-transfer trigger quantities exceed the average realized landings, a minimum overage quantity of 100,000 lbs. was chosen to highlight the possible economic impacts of the trigger-induced allocation process of additional quota.

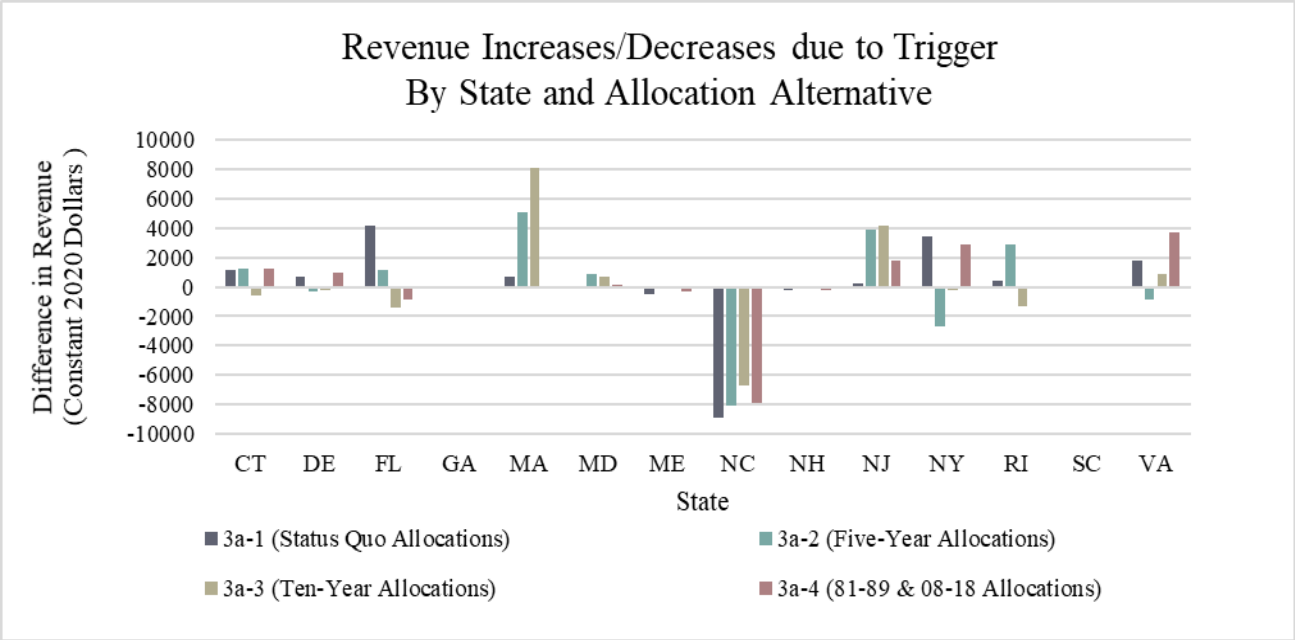

Figure 12: Differences in commercial bluefish revenues (2020 constant dollars) resulting from trigger-induced allocations by state and state-level allocation sub-alternative.

Ultimately, the range of impacts to be experienced by some states are to a greater degree under alternative 3c-2 compared to 3c-3 given the trigger would be tripped at a lower quota, which would provide larger allocations to states in need.

Alternative 3d-1 (Status quo)

Alternative 3d-1 is the status quo alternative that would not implement a minimum default allocation. The expected impacts on the human communities under this alternative are slight - to slight + because the allocations, and thus impacts, would match those exactly as described above in section 7.4 for alternatives 3a-1 to 3a-4.

Alternative 3d-2 (Preferred)

Alternative 3d-2 is the preferred alternative that would implement a 0.10% minimum default allocation in order to prevent states that would otherwise lose their allocation through the reallocation process to retain a minimum default allocation. The expected impacts on the human communities under this alternative are slight - to slight + because each sector is still constrained by their respective quotas/management measures and are working towards rebuilding (i.e., increasing SSB). Moreover, slight - impacts may be experienced by states that would incur a smaller allocation due to providing a minimum default allocation to all states, however the loss of allocation would be quite small and go largely unnoticed. States that are anticipated to have very small allocations (i.e., ME, NH, SC and GA) would have slight + impacts as a result of a minimum default allocation because it will allow for continued harvest when incidental catches occur. These catches can in turn generate revenue for commercial stakeholders.

Alternative 3d-3

Alternative 3d-3 is the preferred alternative that would implement a 0.25% minimum default allocation in order to prevent states that would otherwise lose their allocation through the reallocation process to retain a minimum default allocation. The expected impacts on the human communities under this alternative are slight - to slight + because each sector is still constrained by their respective quotas/management measures and are working towards rebuilding (i.e., increasing SSB). Moreover, slight - impacts may be experienced by states that would incur a smaller allocation due to providing a minimum default allocation to all states, however the loss of allocation would be quite small and go largely unnoticed. States that are anticipated to have very small allocations (i.e., ME, NH, SC and GA) would have slight + impacts as a result of a minimum default allocation because it will allow for continued harvest when incidental catches occur. These catches can in turn generate revenue for commercial stakeholders.

Comparisons within 3d alternatives

Differences in state bluefish revenues resulting from allocations with minimum defaults vs. allocations without the minimum defaults are calculated across the various state-allocation alternatives proposed (3a-1 through 4). Revenues are estimated and compared across both of the proposed minimum defaults (0.10% and 0.25%). Landings for each allocation series (3a-1 to 3a-4) are simulated using historic pre-sector transfer quota quantities given that pre-sector transfer allocations are closer to realized landings relative to post-transfer quantities (1999-2019) and the assumption that all allocated quota is landed is necessary for the analysis. The simulated allocated quota, and therefore estimated landings, for each series is multiplied by the average state ex-vessel bluefish price. Average annual state bluefish prices ($/lb) are used rather than an econometric model as a peer-reviewed state-level annual price model has yet to be developed. The use of average state bluefish prices omits the inverse relationship between price and quantity of bluefish landed, which is a limitation of this specific analysis. The average difference in revenues under minimum default allocations and their non-minimum default counterparts are presented in Figure 13.

In terms of revenue gains or losses, NC's revenues decrease the most under the minimum default allocation, with average losses of $55K and $137K for the 0.10% and 0.25% minimum defaults, respectively (Figure 13). This is followed by NY and NJ where revenues decrease on average by $29K and $19K under the 0.10% minimum default and $66K and $49K under the 0.25% minimum default for NY and NJ, respectively. The states with the highest increases in revenues are NH, ME, GA and SC. This is not surprising given that these states have the lowest allocations across all of the state-level reallocation plans, all of which are allocated under 1% of the commercial quota on when averaged across the non-minimum default allocations. SC, GA, ME and NH earn average annual revenue increases of $21K, $21K, $25K and $25K under the 0.10% minimum default and $52K, $52K, $62K and $62K under the 0.25% minimum default, respectively. Revenues for the states not mentioned previously range from an average decrease of $8K to average increase of $17K for the 0.10% minimum default and an average decrease of $15K to average gain of $41K under the 0.25% minimum default when summarized across all proposed state-level allocation alternatives. Lastly, if transfers are to occur and if the states receiving minimum allocations are not projected to land their quota, it is possible for quota transfers to counteract the decreases in revenue stemming from minimum default allocations.

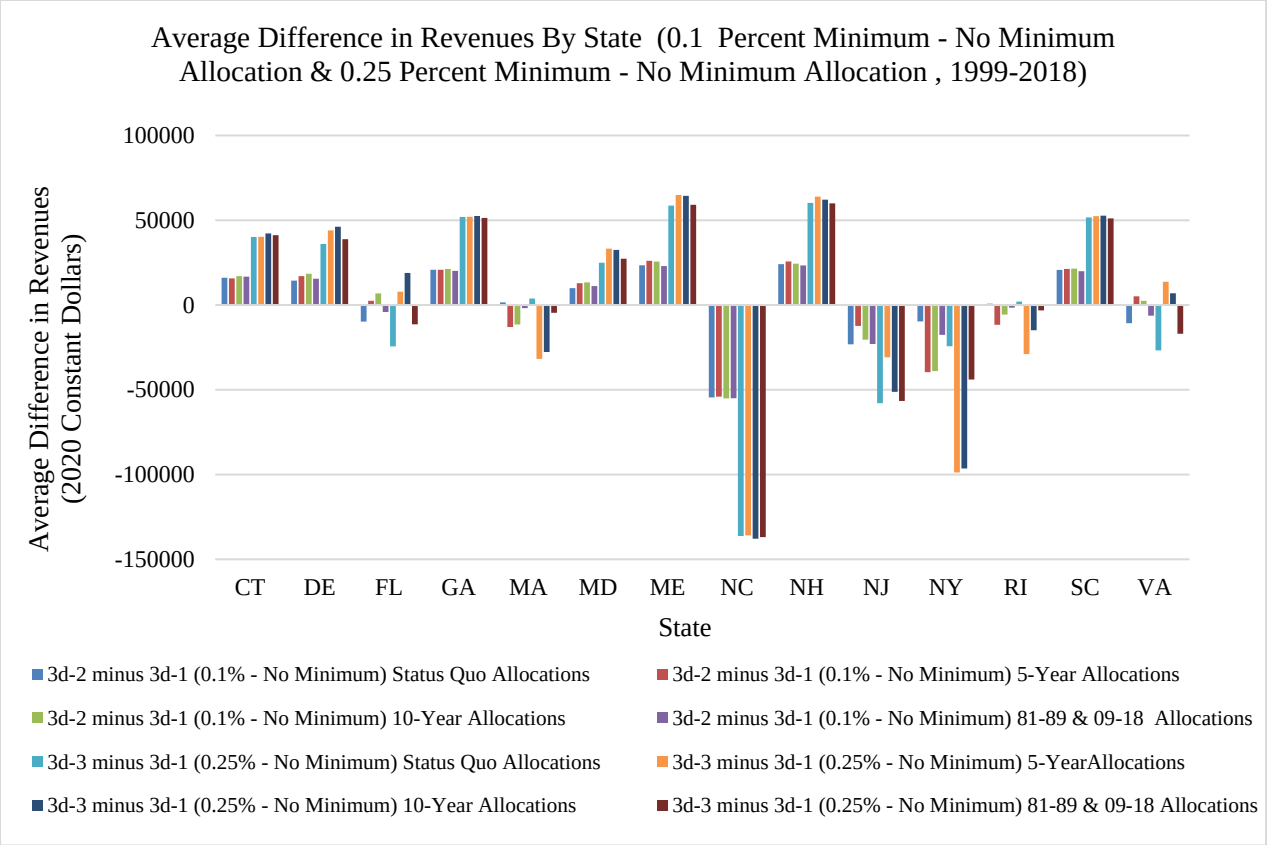

Figure 13: Average difference in commercial bluefish revenues under minimum default allocations and no minimum default allocations (1999-2019) by commercial allocation alternative and state.

Ultimately, the impacts associated with 3d-2 are positive to a greater degree than 3d-3 and 3d-1 for most states because a 0.10% minimum default allocation offers enough quota to states that rarely harvest bluefish. This alternative also does not take too much quota (compared to alternative 3d-3) away from states that fully utilize their allocations.

7.4.3. Impacts to Alternative Set 4 (Rebuilding Plan)

This section details the impacts associated with each rebuilding plan on the human communities. For all alternatives except status quo, impacts are expected to be slight - to slight +.

Alternative 4a (Status quo)

The no action/status quo alternative would not implement a rebuilding plan, no changes to the current risk policy would occur, and the current specifications would remain in place. The impacts of not implementing a rebuilding plan are expected to be high - for the human communities. According to MSA, the Council must approve a rebuilding plan by the end of 2021 that is scheduled to reach the SSB target within 10 years following implementation. By not implementing a rebuilding plan, the Council will be out of compliance with MSA. Moreover, not implementing a rebuilding plan would be associated with high - impacts for both commercial and recreational sectors because overall quotas would be lowered and potentially lead to a moratorium. This will lead to decreased angler satisfaction and revenues.

Alternative 4b

The projection methodology prepared by the NEFSC stock assessment scientist indicates 4b should rebuild the stock to the SSB target of 198,717 mt in 4 years, as presented in Figure 4. The impacts of the constant harvest rebuilding plan are expected to be slight - to slight + for the human communities. This approach applies perhaps the most constraining rebuilding plan given that catch would be set at a constant level of 7,385 mt over the four-year period. Relative to the no action alternative, alternative 4b would have positive social impacts due to the MAFMC implementing a rebuilding plan as it is legally required to do, but this approach may have neutral to negative social impacts relative to the other rebuilding plan alternatives under consideration. Most commercial crew and hired captains reported through Crew Survey [29]results that they believed the rules and regulations in their primary fisheries have been too restrictive. If the projection holds and the stock is rebuilt in four years, however, the potential negative impacts may be offset by an improved stock status and likely increases in catch thereafter, subject to constraining fishing mortality below the threshold.

Alternative 4c

The projection methodology prepared by the NEFSC stock assessment scientist indicates 4c should rebuild the stock to the SSB target of 198,717 mt in 5 years, as presented in Figure 4. The expected impacts of alternative 4c are expected to be slight - to slight + the human communities given biomass would increase yearly in relation to the Council's risk policy, until rebuilt in 2026. Under this alternative, there would likely be positive social impacts relative to the no action alternative and positive impacts relative to alternative 4b, the four-year rebuilding plan. Alternative 4c provides for more catch over the course of the rebuilding plan, thus allowing more flexibility for stakeholders across user groups to continue to access the resource and potentially preserve employment and income opportunities in the short term as the stock is being rebuilt.

Alternative 4d (Preferred)

The projection methodology prepared by the NEFSC stock assessment scientist indicates 4d should rebuild the stock to the SSB target of 198,717 mt in 7 years, as presented in Figure 4. The expected impacts of alternative 4d are expected to be slight - to slight + for the human communities given harvest would be set in relation to a constant fishing mortality rate (constant F) that allows for the highest harvest, while achieving a rebuilt status in 2028. This alternative would likely produce positive social impacts relative to the no action alternative and alternative 4b but might result in only neutral to low positive impacts relative to alternative 4c. While the amount of allowable catch is higher in the short term than under alternative 4c, the additional time to rebuild the stock might reduce the opportunities for employment and income from the bluefish resource over the longer-term relative to a shorter rebuilding plan target. However, if alternative 4d provides the greatest probability of rebuilding the stock then the potential negative impacts relative to alternative 4c might be negated by the benefits of a rebuilt stock for stakeholders to utilize across

[29] Silva, Angela, Gentile, Lauren E., Cutler, Matthew J., and Colburn, Lisa L. (Forthcoming). A Comparison of Waves I (2012/2013) and II (2018/2019) of the Survey on the Socio-economic Aspects of Commercial Fishing Crew in the Northeast U.S." NOAA Technical Memorandum.

the spectrum of resource user groups. Additionally, most crew and hired captains interviewed through the Crew Surveys reported that the rules and regulations change so quickly that it can be hard to keep up. A longer rebuilding period with more gradual changes to allowable catch might reduce the amount of uncertainty in fishing business decisions and thus mitigate potential negative social impacts of a rebuilding plan.

Comparisons within alternatives

Forecasted bluefish commercial landings and revenues are compared across the 4-year (alternative 4b), 5-year (alternative 4c), and 7-year (alternative 4d) rebuilding schedules. Landings and revenues are estimated from 2019 to 2028 for each rebuilding plan with the expectation that each plan will be implemented in 2022. Landings and revenues for 2019 and 2020 in this analysis were based off of the values used in the projections and likely differ from 2019 and 2020 realized values because the projections were conducted before final data for these years were made available Moreover, rebuilding projections will continue to be revised every two years as the assessment is updated. For plans which indicate the stock will be rebuilt in less than 7 years, the ABC upon rebuilding the stock is assumed to equal 26,677 mt (58.8 M lbs.)[30] for the remaining years in the time series, allowing for meaningful comparison between rebuilding schedules. For each plan, a minimum and maximum commercial allocation percentage was used to simulate allocations (11% and 17%, respectively, as proposed by alternatives 2a-1 and 2a-2). This analysis assumes that all allocated commercial quota is landed in each forecasted year. Revenue streams are estimated using the predicted landings and ex-vessel bluefish prices are predicted using the modeling methods and parameters specified in Appendix B. Once estimated, future revenues streams are discounted to obtain present values for each rebuilding plan. Discounting revenue streams accounts for the time value of money when assessing future benefits. We present three different discount rates (0%, 3% and 7%) which are applied to the forecasted revenue streams.[31] The 0% discount rate serves as a baseline, while the 3% and 7% discount rates are suggested by NOAA's Social Rate of Time Preference (NOAA 1999) and the Executive Branch's Office of Management and Budget Circular No. A-94 discounting recommendations, respectively.

Trends in landings by rebuilding plan are shown in Figure 14 while average landings are summarized in Figure 15, where A and B represents the 11% and 17% commercial allocations for each figure, respectively. Alternative 4b (i.e., the 4-year plan) had the lowest overall landings in terms of average landings (3.6 M lbs and 5.5 M lbs under the 11% and 17% commercial allocations, respectively). Alternative 4d had the highest average annual landings with averages of 4.9 M lbs and 7.5 M lbs under the 11% and 17% commercial allocations, respectively.

Discounted revenue streams across the various rebuilding timelines are shown in Figure 16, where the three discount rates (0%, 3% and 7%) are applied to the 11% commercial quota allocations for panels A-C and to the 17% commercial allocations in panels D-F. Additionally, average revenues by plan are presented in Figure 17 where panels A and B refer to the 11% and 17% commercial quota allocations, respectively. The highest average annual revenues by rebuilding plan follow

[30] The 26,677 MT quantity is the terminus year of the 5-year rebuilding projection based on P* using the Mid-Atlantic Fishery Management Council's rebuilding risk policy.

[31] The discount rate is a highly disputed topic in the field of economics. The discount rates presented are used to ensure that a low and high discount rate is accounted for when presenting results.

trends similar to those of the landings results. Average annual revenues for alternative 4b range from $1.8 M-$2.7 M and $2.8 M-$4.2 M across the discounted revenue streams under the 11% and 17% commercial allocations, respectively. The highest average annual revenues range from $2.2 M-$3.3 M and $3.5 M-$5.1 M across the three discount rates under the 11% and 17% commercial allocations, respectively. Overall, alternative 4d (i.e., 7-year schedule) has the highest economic benefits and alternative 4b (i.e., 4-year schedule) the lowest, in terms of average annual bluefish landings and revenues.

Without a demand model, it is unclear how the proposed rebuilding plans will impact recreational bluefish fishing effort. However, given the high catch and release nature of the fishery, there is likely to be little shift in the demand for recreational fishing given the changes in proposed ABCs by the rebuilding plans. Any increases in recreational TAL may have a slight positive economic impact in possibly more for-hire trips which may have higher value on catching and retaining fish. It is overall unclear to what degree recreational effort and angler expenditures will be impacted by the proposed rebuilding plans.

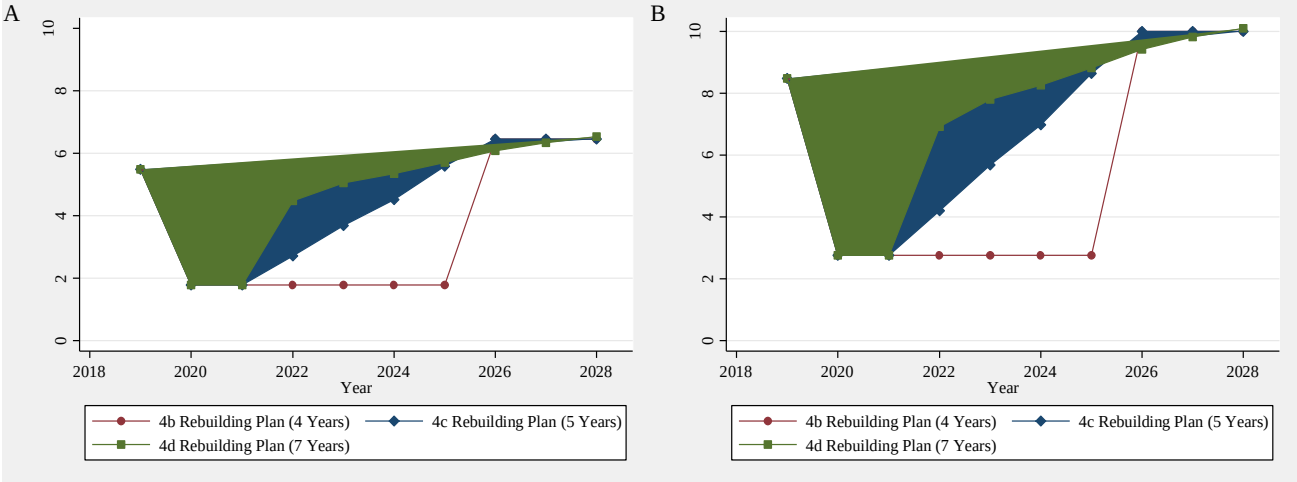

Figure 14: Projected commercial bluefish landings under an 11% and 17% commercial sector allocation (A and B, respectively) by rebuilding plan for years 2019-2028.

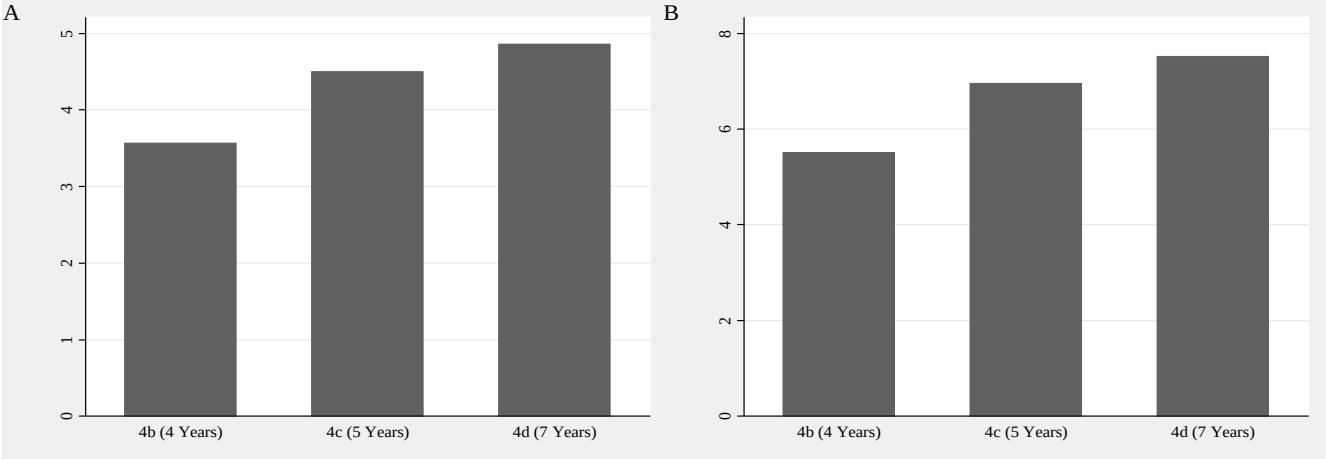

Figure 15: Average projected commercial bluefish landings (2019-2028) under an 11% and 17% commercial sector allocation (A and B, respectively) by rebuilding plan.

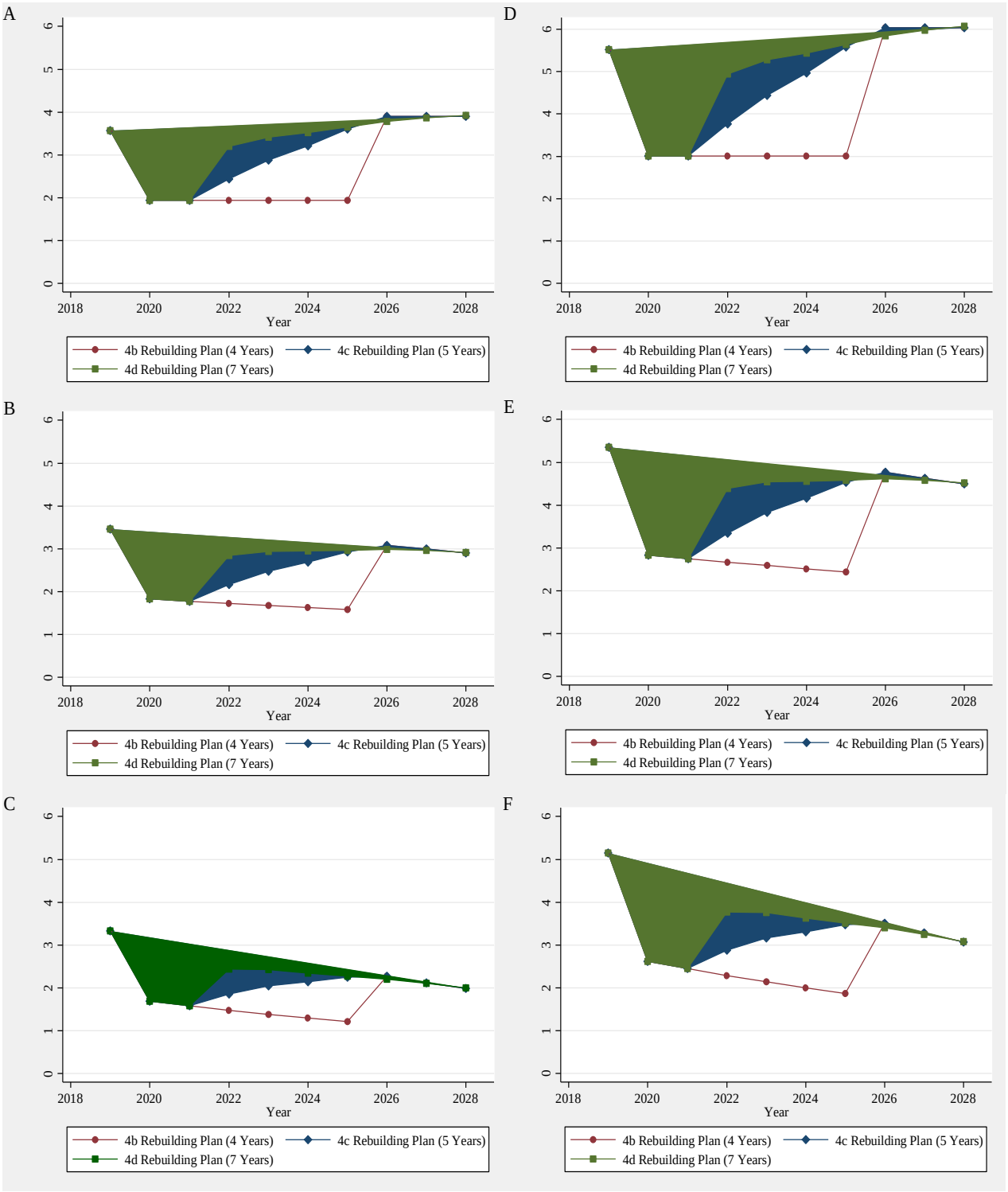

Figure 16: Estimated commercial bluefish revenues under 11% (A-C) and 17%(D-F) commercial allocations and discounted at 0%, 3%, and 7% by rebuilding plan and year (2019-2028).

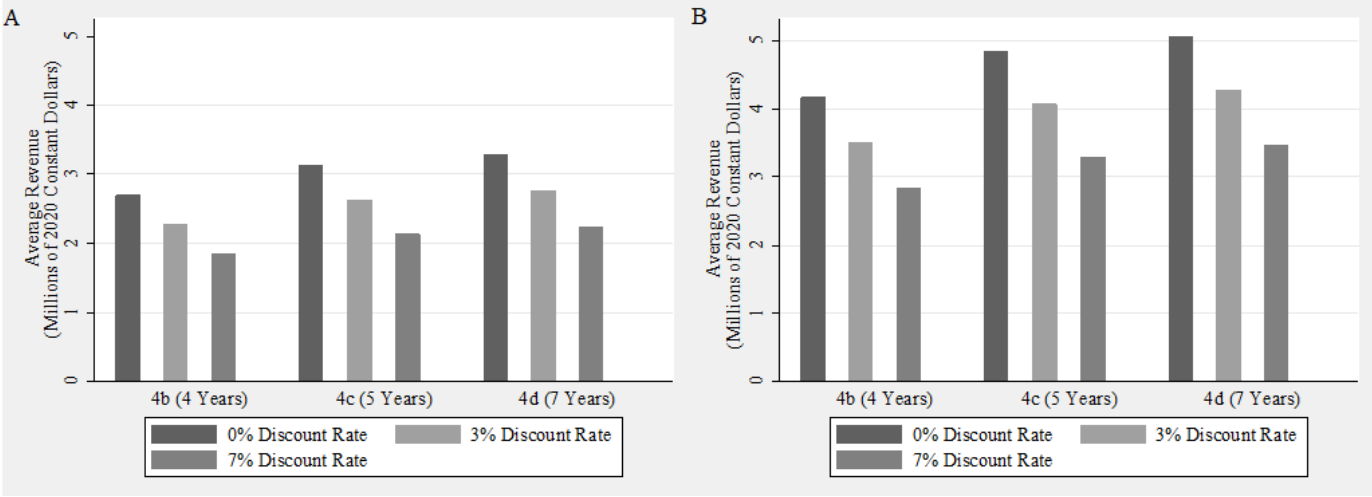

Figure 17: Average annual commercial bluefish revenues (2019-2028) discounted at 0%, 3% and 7% by rebuilding alternative and under 11% (A) and 17% (B) commercial quota allocations.

The rebuilding plan should be as short as possible while considering the needs of the fishing communities that depend on the resource and accounting for the uncertainty inherent in the cyclical and environmentally driven nature of the stock. Ultimately, the impacts associated with alternatives 4b-d are slight - to slight +. Given the spread in projected catch over the course of the plans, alternative 4c may be a fair middle point that considers both the biological and social requirements as required in MSA. Furthermore, alternatives 4c and 4d offer catches that increase steadily over the duration of the rebuilding plan, as compared to the constant harvest approach (4b) which rebuilds as quickly as possible with low harvest limits. Therefore, 4c and 4d may be positive to a greater degree than 4b since they offer higher gross and average revenues to the commercial sector compared. Furthermore, 4b has the potential to be particularly damaging to the commercial sector. The culmination of rebuilding plan alternative 4b could create an instability in market supply and weaken supply chain linkages in addition to offering the lowest economic returns to the commercial sector. This in turn could compound the commercial sector's economic burden by imposing several years of reduced market share due to low quotas during the rebuilding period.

7.4.4. Impacts to Alternative Set 5 (Sector Transfers)

This section details the impacts associated with sector transfers and transfer cap on the human communities.

Alternative 5a-1 (Status quo)

Under alternative 5a-1, transfers from the recreational to the commercial sector could continue but transfers from the commercial to the recreational sector would not be included as an option in the FMP. Alternative 5a-1 is anticipated to have slight - to slight + impacts on the human communities because it only allows for quota increases to the commercial sector pending an availability of surplus recreational quota. However, in the short term, sector transfers will not occur while the stock is overfished and/or overfishing is occurring, and thus, the impacts are expected to be negligible.

Alternative 5a-2 (Preferred)

Under alternative 5a-2, each year during the setting or review of annual catch limits, the Council and Board would have the ability to recommend a transfer of quota between the recreational and commercial sectors, affecting the final commercial quota and RHL. The Council and Board could recommend a transfer from the commercial fishery to the recreational fishery or from the recreational fishery to the commercial fishery. Alternative 5a-2 is anticipated to have negligible to slight + impacts on the human communities when compared to the baseline. Allowing for bi-directional transfers across sectors might improve flexibility for stakeholders throughout the fluid and changing quota needs of various stakeholders across user groups, sectors, and state lines. This may be especially helpful for some stakeholders in light of new rebuilding plans and allocation changes, which might have disparate impacts on stakeholders depending upon their initial positions and access to the resource prior to the change in allocations and implementation of a rebuilding plan. However, in the short term, sector transfers will not occur while the stock is overfished and/or overfishing is occurring, and thus, the impacts are expected to be negligible.

Comparisons within 5a alternatives

Given transfers will not occur while the stock is overfished and/or overfishing is occurring, both 5a-1 and 5a-2 are anticipated to have similar, yet negligible impacts on the human communities in the short term. In the long term, 5a-2 is anticipated to have impacts that are positive to a greater degree than 5a-1 since the alternative allows for transfers to go in either direction and creates more opportunity harvest bluefish and increase overall revenue and angler satisfaction.

The economic impacts of 5a-1 (status quo, recreational to commercial sector transfers, only) are expected to continue to be negligible for the recreational sector and positive for the commercial sector. The commercial sector has historically utilized a portion of the additional transferred quota by increasing landings above the initial pre-transfer commercial allocation. The additional quota transferred from the recreational sector to the commercial sector may also contribute to increases in job opportunities and/or higher paying trips for crew members along with increases in revenues. A bi-directional transfer, suggested by alternative 5a-2, would only provide positive economic impacts to the recreational sector if a future quota transfer were large enough to allow for a liberalization of recreational measures. In the absence of an increase in the bag limit resulting from a higher post-transfer RHL, the recreational sector is likely to experience negligible economic impacts.

Alternative 5b-1 (Status quo)

Alternative 5b-1 includes a 10.5 million lb cap was set through Amendment 1 and was based on the average commercial landings for the period 1990-1997. This alternative is expected to have slight - to slight + impacts to the human communities. The existing transfer cap was specifically designed for one-way transfers, and as such, selecting bi-directional transfers with no action on the transfer cap does not cap transfers from the commercial sector to the recreational sector. However, due to the smaller commercial allocation it is highly unlikely that the commercial sector would ever transfer more than 10.5 million lb to the recreational sector, meaning a 10.5 million lb cap on commercial to recreational transfers would not be restrictive anyway.

Alternative 5b-2 (Preferred)

Alternative 5b-2 would implement a maximum transfer cap of up to 10% of the ABC. This alternative is expected to have negligible to slight + impacts to the human communities. Considering a recent time series of ABCs (Table 38), 10% of the average of ABCs from 2000-2019 would result in a sector transfer of 2.97 M lbs. This estimate is smaller than the average transfer over the same time period (4.30 M lbs). However, since alternative 5b-2 is a percentage of the total ABC, future transfer amounts would scale with biomass as bluefish continues through the rebuilding plan. By comparison, the status quo alternative will result in no transfers if the commercial quota exceeds 10.5 M lbs. The ability to scale with biomass will allow for opportunities to increase revenue as the stock continues to rebuild and biomass increases.

Table 38: Recreational to commercial sector transfer amounts, ABCs in million lb, and estimates of retroactive 10% transfer caps from 2000-2019.

Year	Sector Transfer Amount	ABC	10% Transfer Cap
2000	0	36.840	3.684
2001	3.150	37.840	3.784
2002	5.933	29.100	2.910
2003	4.161	39.500	3.950
2004	5.085	34.215	3.422
2005	5.254	34.215	3.422
2006	5.367	29.150	2.915
2007	4.780	32.033	3.203
2008	4.088	31.887	3.189
2009	4.838	34.081	3.408
2010	5.387	34.376	3.438
2011	4.772	31.744	3.174
2012	5.052	32.044	3.204
2013	4.686	27.472	2.747
2014	3.340	24.432	2.443
2015	1.579	21.544	2.154
2016	1.577	19.456	1.946
2017	5.033	20.642	2.064
2018	3.535	21.815	2.182
2019	4.000	21.820	2.182

Comparisons within 5b alternatives

The economic impact of sector transfer caps on the commercial bluefish sector are investigated by comparing realized landings data to predicted landings under a 10% ABC cap transfer scenario over 2001-2019.[32] Revenues are also estimated under these two scenarios. Ex-vessel bluefish prices are estimated using the price model and methods described in APPENDIX A. Revenues are

[32] Sector transfers occurred on an annual basis from 2001-2019.

estimated as opposed to incorporating realized revenues in order to establish an equal comparison between the status quo transfer cap alternative (5b-1) and the 10% ABC transfer cap alternative (5b-2) and their economic implications. Quotas under alternative 5b-2 are estimated using the historic ABC's for each year and for each of the sector allocation sub-alternatives presented in section 5.1.1-5.1.5 (i.e., 2a-1 to 2a-5). Then 10% of the ABC is added to the pre-transfer quantities to produce the post-transfer values. Similar to previous economic analyses, it is assumed that all allocated quota is landed when comparing the projected commercial quotas under alternative 5b-2 to the realized landings. It should be noted that in every year in the time series, realized landings have been less than the full allocation generated under the 5b-2 scenario (Figure 18). If the proposed transfer cap had been implemented over the time series, and all else was held constant, landings would not have been restricted by the transfer cap. Further, in some years (2001, 2015, and 2016) the realized post-transfer quantities are less than the 5b-2 scenario [33] such that a transfer cap equal to 10% of the ABC would not have impacted landings in these years even if the full historic post transfer landings had been fully utilized.

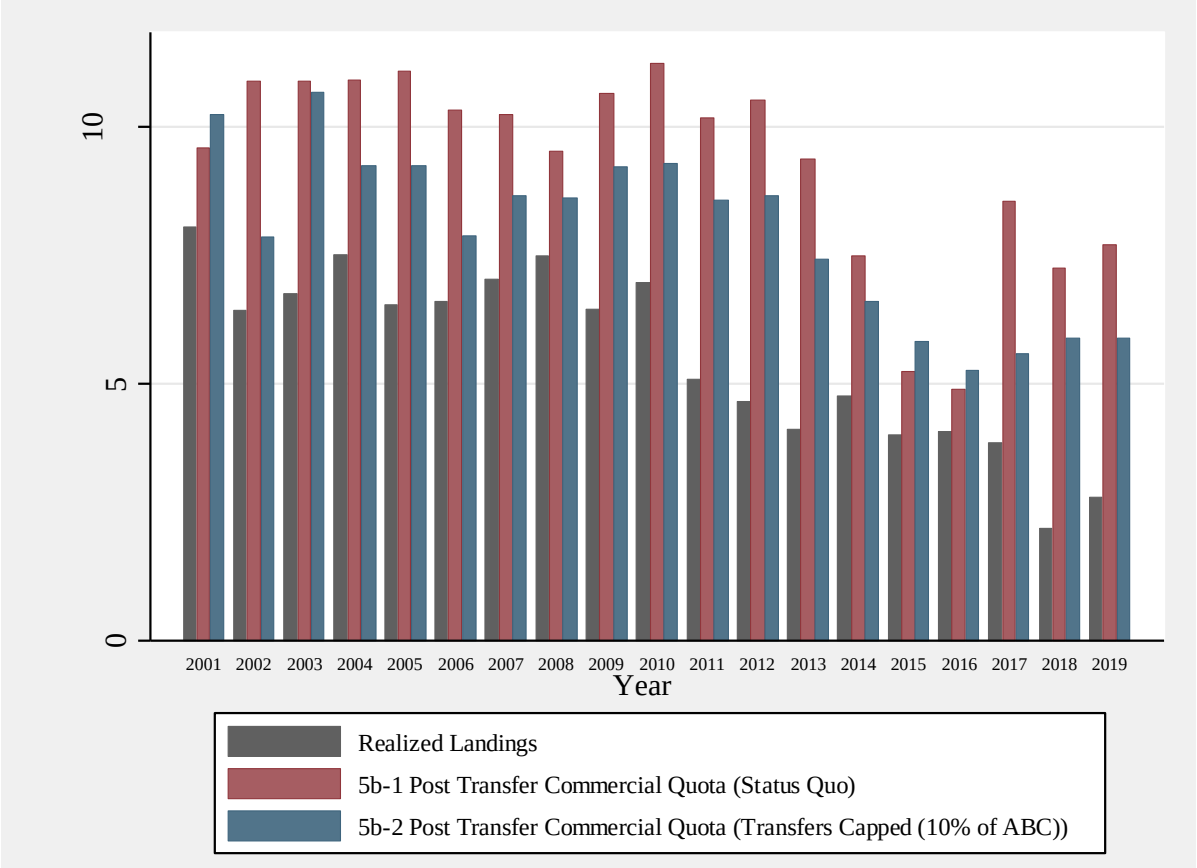

Figure 18: Realized bluefish landings, historical post-transfer commercial bluefish quotas under the status quo alternative 5b-1, and post-transfer commercial bluefish quota with a transfer cap of 10% of the ABC (5b-2) applied over 2001 to 2019.

[33] The realized sector transfer was less than 10% of the ABC.

There are only a handful of years where predicted landings under the 5b-2 transfer scenario are less than realized landings when investigated across the proposed commercial allocations described in section 5.1 (Figure 19). Specifically, there are only six years where predicted landings are less than realized landings, all occurring under the 2a-2 (11% commercial allocation) alternative.

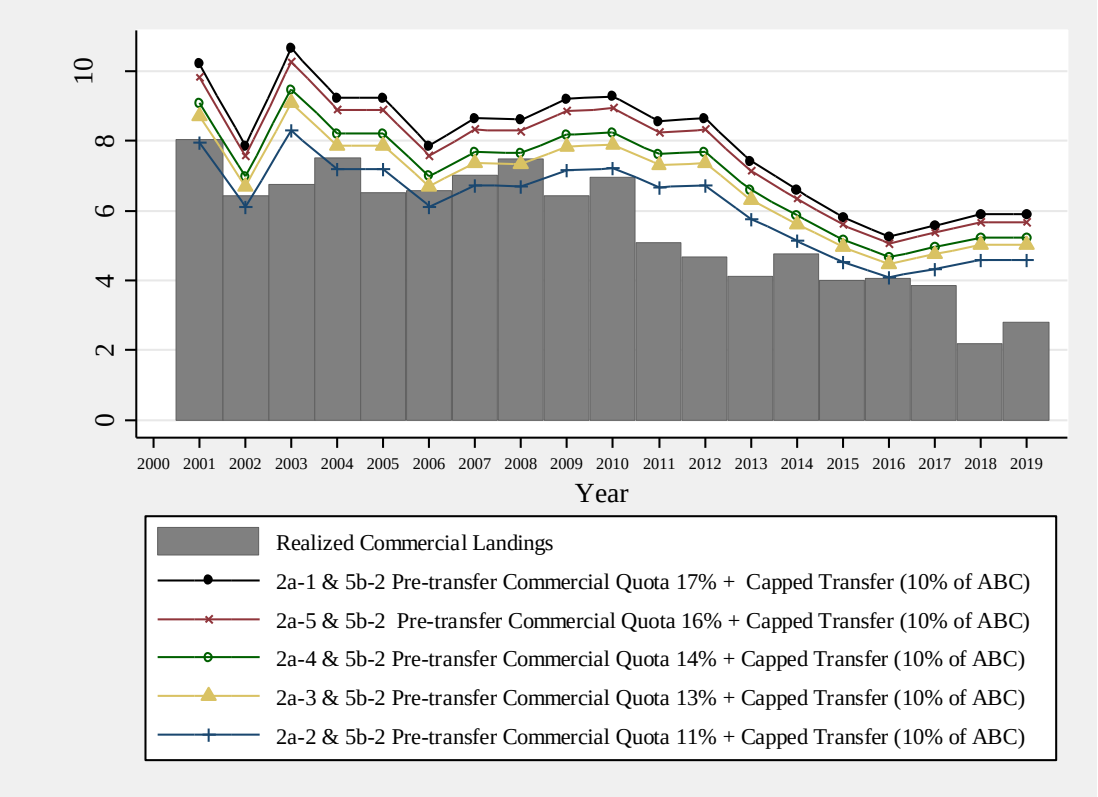

Figure 19: Realized commercial bluefish landings and predicted commercial landings under the 10% ABC cap transfer scenario across proposed commercial allocation alternatives from 2001-2019.

Despite the few instances where realized landings are less than landings predicted under the 5b-2 scenario, estimated revenues are higher under all 5b-2 landings scenarios relative to revenues estimated under the realized landings scenario (Figure 20). This result is driven by the inverse relationship between ex-vessel price and landings (described further in Appendix A). However, higher revenues under the 5b-2 transfer scenario are heavily reliant on the price model which only describes about 68% of the variability in annual prices and is informed by a limited sample size.

In summary, realized commercial bluefish landings are almost always less than the possible landings under the 5b-2 transfer scenario. In the six cases where realized landings *do* exceed landings from the capped transfer scenarios, the differences in revenue are marginal. Overall, there are few cases where bluefish landings/revenues are expected to be impacted by the implementation of a sector transfer cap of 10% of the ABC.

The economic impacts of implementing a 10% cap on sector transfers on the recreational sector of the bluefish fishery are expected to be negligible to slight +. Although, these caps would limit the transfer quantities from the commercial sector to the recreational sector, recreational harvest, effort, and expenditures are not expected to be impacted by this sub-alternative unless a sector transfer resulted in the need to adjust recreational measures. In reverse, transfers from the recreational to the commercial sector only occur when the recreational sector is predicted to harvest quantities below the recreational RHL, such that the existence of a transfer cap should not impact recreational harvest, effort, or expenditures.

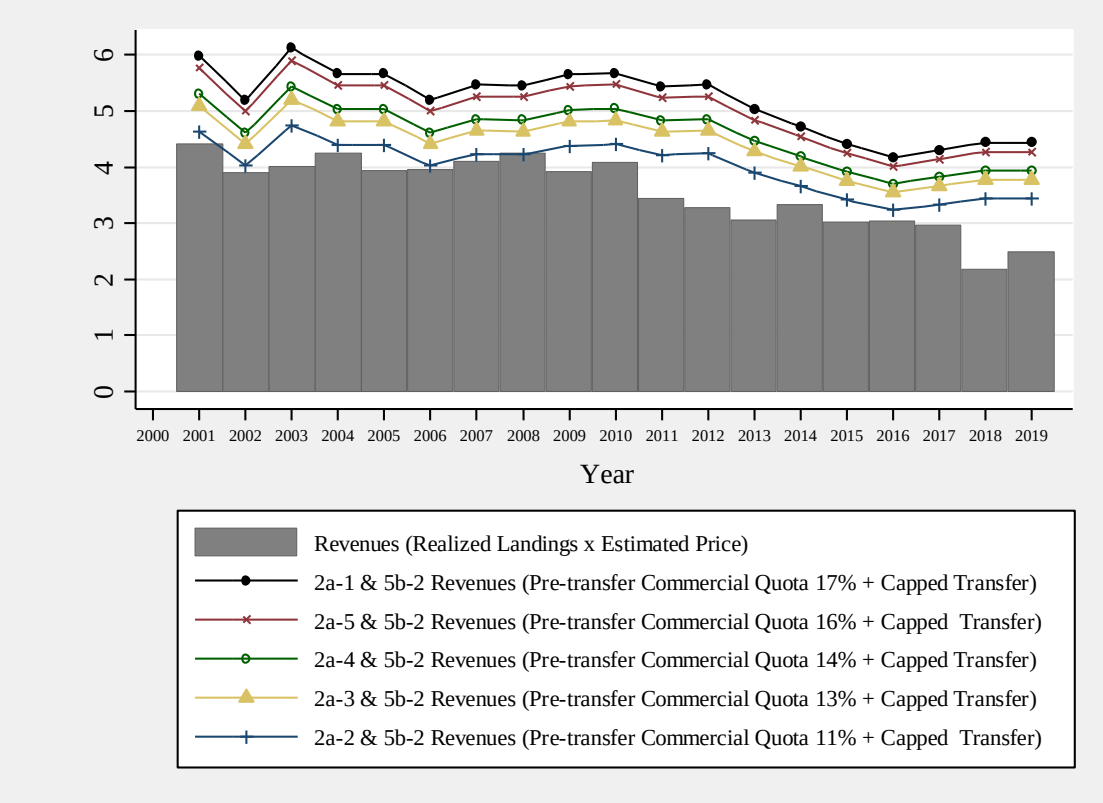

Figure 20: Estimated commercial bluefish revenues (realized landings multiplied by estimated ex-vessel bluefish price) and estimated commercial revenues under the 10% ABC cap sector transfer scenarios across proposed sector allocation alternatives from 2001-2019.

7.4.5. Impacts to Alternative Set 6 (Management Uncertainty)

This section details the impacts associated with modifying how the Council accounts for management uncertainty.

Alternative 6a (Status quo)

The status quo alternative would maintain the bluefish flowchart as displayed in Figure 5, which demonstrates that any uncertainty buffer applied to the fishery-level ACL applies to both sector specific ACTs equally. This alternative is expected to have negligible impacts to the human communities because it applies to the management process and keeps the management uncertainty provisions in the FMP status quo.

Alternative 6b (Preferred)

Alternative 6b would provide greater flexibility by establishing ACLs and ACTs for each sector as displayed in the bluefish flow chart in Figure 6. Specifically, the proposed flowchart allows for management uncertainty to be accounted for within each sector. This targeted approach would allow for the identification of sources of management uncertainty that are specific to one sector and are not present in the other. This alternative is expected to have negligible to slight + impacts to the human communities because it applies to the management process yet offers more flexibility to effectively account for uncertainty.

Comparisons within alternatives

Alternative 6b includes impacts that are slight + compared to the solely negligible impacts associated with 6a because the flexibility tied to alternative 6b allows for a more streamlined and accurate management process when accounting for uncertainty for bluefish.

7.5. Cumulative Effects Analysis

A cumulative effects analysis (CEA) is required by the Council on Environmental Quality (CEQ; 40 CFR part 1508.7) and NOAA policy and procedures for NEPA, found in NOAA Administrative Order 216-6A (Companion Manual, January 13, 2017). The purpose of the CEA is to consider the combined effects of many actions on the human environment over time that would be missed if each action were evaluated separately. CEQ guidelines recognize that it is not practical to analyze the cumulative effects of an action from every conceivable perspective. Rather, the intent is to focus on those effects that are truly meaningful. The following remarks address the significance of the expected cumulative impacts as they relate to the federally managed bluefish fishery.

A cumulative effects assessment makes effect determinations based on a combination of: 1) impacts from past, present, and reasonably foreseeable future actions; 2) the baseline conditions of the VECs (the combined effects from past, present, and reasonably foreseeable future actions plus the present condition of the VEC); and 3) impacts of the alternatives under consideration for this action.

7.5.1. Consideration of the VECs

The valued ecosystem components for the bluefish fishery are generally the "place" where the impacts of management actions occur and are identified in section 7.

- *Target Species*
- *Non-target species*
- *Physical environment / Essential Fish Habitat*
- *Protected species*
- *Human communities*

The CEA identifies and characterizes the impacts on the VECs by the alternatives under consideration when analyzed in the context of other past, present, and reasonably foreseeable future actions.

7.5.2. Geographic Boundaries

The analysis of impacts focuses on actions related to the commercial and recreational harvest of bluefish. The Western Atlantic Ocean is the core geographic scope for each of the VECs. The core geographic scopes for the managed species are the management units for bluefish described in

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 bluefish 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 Florida directly involved in the commercial or recreational harvest or processing of bluefish (section 6.4).

7.5.3. Temporal Boundaries

Overall, while the effects of the historical bluefish fisheries are important and considered in the analysis, the temporal scope of past and present actions for bluefish and non-target species and other fisheries, the physical environment and EFH, and human communities is primarily focused on actions that occurred after FMP implementation (1990 for bluefish). 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 (2024) 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. The impacts discussed in this section are focused on the cumulative effects of the proposed action (i.e., the suite of preferred alternatives) in combination with the relevant past, present, and reasonably foreseeable future actions over these time scales.

7.5.4. Actions Others Than Those Proposed in this Document

The impacts of the alternatives considered in this document are described in sections 7.1 through 7.4. The sections below present meaningful past, present, and reasonably foreseeable future actions other than the alternatives considered in this document and include the establishment of the original FMP, all subsequent amendments and frameworks, and the setting of annual specifications (annual catch limits and measures to constrain catch and harvest). Key actions are described below.

Fishery Management Actions

Bluefish FMP (Past and Present) Actions

The historical management practices of the Council have resulted in positive impacts on the health of the bluefish stock (section 6.1) with the exception of recent years, which led to an overfished status (driven mainly by the recalibration of the MRIP estimates). The Council has taken numerous actions to manage the commercial and recreational fisheries for this species. The specifications process is intended to provide the opportunity for the Council and NMFS to regularly assess the status of the fishery and to make necessary adjustments to ensure that there is a reasonable expectation of meeting the objectives of the FMP and the targets associated with any rebuilding programs under the FMP. 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 often have negative short-term socioeconomic impacts. The fishery has ACLs and AMs which are regularly adjusted to ensure landings are constrained to the catch and landings

limits. These impacts are usually necessary to bring about long-term sustainability of a given resource, and as such, should, in the long-term, promote positive effects on human communities, especially those that are economically dependent upon the bluefish fishery.

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 of the identified 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, but are not limited to 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 the managed resource, non-target species, and protected resources. Decreased habitat suitability would tend to reduce the tolerance of these VECs to the impacts of fishing effort. Mitigation of this outcome through regulations that would reduce fishing effort could then negatively impact human communities. The overall impact to the affected species and their habitats on a population level is likely neutral to negative, since a large portion of these species 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 in "waters of the U.S." and includes both riverine and marine habitats.

Reasonably Foreseeable Future Actions

The Council and Commission recently began using a newly revised time series of recreational catch estimates in management, including incorporating these estimates into the recent stock assessment and resulting catch limits proposed through this action (section 5). The revised time series of recreational data prompted re-evaluation of allocations within the FMP, both between the commercial and recreational sectors and within the commercial sector. One or more FMP actions may be initiated in the next 5 to 10 years to follow-up on the allocations set through this amendment.

The Council and Commission continue to develop specifications every two years following updated management track assessment, and each year, the specifications are reviewed. Every time a new specifications package is developed, an action is initiated to implement the specifications package.

Other Fishery Management Actions

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

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

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

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

In the reasonably foreseeable future, the MAFMC and NEFMC are considering modifications to observer coverage requirements through an omnibus amendment that considers measures that would allow the Councils to implement industry-funded monitoring coverage in some FMPs above levels required by the Standard Bycatch Reporting Methodology (SBRM) in order to assess the amount and type of catch, monitor annual catch limits, and/or provide other information for management. This action could have long-term positive impacts on target species, non-target species, and protected species through improved monitoring and scientific data on these stocks. This could potentially result in negative socioeconomic impacts to commercial fishing vessels due to increased costs.

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

Fishery Management Action Summary

The Council has taken many actions to manage the associated commercial and/or recreational bluefish fisheries. The MSA is the statutory basis for federal fisheries management. The cumulative impacts on the VECs of past, present, and reasonably foreseeable future federal fishery management actions under the MSA should generally be associated with positive long-term

outcomes because they constrain fishing effort and manage stocks at sustainable levels. Constraining fishing effort through regulatory actions can have negative short-term socioeconomic impacts. These impacts are sometimes necessary to bring about long-term sustainability of a resource, and as such should promote positive effects on human communities in the long-term. A summary of the cumulative impacts of past, present, and reasonably foreseeable future actions on each VEC is provided in Table 39.

Table 39: Summary of expected impacts of combined past, present, and reasonably foreseeable future actions on each VEC.

VEC	Past Actions (P)	Present Actions (Pr)	Reasonably Foreseeable Future Actions (RFFA)	Combined Effects of Past, Present, and Future Actions
Managed Resources	**Positive** Combined effects of past actions have decreased effort, improved habitat protection	**Slight Negative to Slight Positive** Current regulations continue to manage for a sustainable stock. The ongoing rebuilding plan will increase overall biomass	**Positive** Future actions are anticipated to strive to maintain a sustainable stock	**Positive** Stocks are being managed sustainably
Non-Target Species	**Positive** Combined effects of past actions have decreased effort and reduced bycatch	**Slight Negative to Slight Positive** Current regulations continue to decrease effort/increase efficiency and reduce bycatch	**Positive** Future regulations are being developed to improve monitoring and address bycatch issues	**Positive** Decreased effort/increased efficiency and reduced bycatch continue; most non-target stocks continue to be sustainably managed under ACLs/AMs
Habitat	**Mixed** Combined effects of effort reductions and better control of non-fishing activities have been positive, but fishing activities and non-fishing activities have reduced habitat quality	**Slight Negative to Negligible** Effort reductions and better control of non-fishing activities have been positive, but fishing activities continue to reduce habitat quality	**Mixed** Future r likely control effort and habitat stocks improve, effort may incre additional non-fishing ac	**Mixed** Continued fisheries management will likely control effort and thus fishery related habitat impacts but fishery and non-fishery related activities will continue to reduce habitat quality
Protected Resources	**Negligible to slight Positive** Combined effects of past fishery actions have reduced effort and thus interactions with protected resources,	**Slight Negative to Negligible** Current regulations continue to control effort, thus reducing opportunities for interactions,	**Mixed** Future regulations will likely control effort and thus protected species interactions, but as stocks improve effort will likely increase, possibly increasing interactions	**Negligible to Slight Positive** Continued effort controls along with past regulations will likely help stabilize protected species interactions
Human Communities	**Mixed** Management actions have imposed requirements that reduced short-term revenues and increased costs, however, stock improvements have led to community benefits and in the long term	**Slight Negative to Slight Positive** Management actions continue to constrain effort, at times reducing short-term revenues, however, stock improvements continue to benefit human communities in the long term; price and revenues are generally increasing	**Mixed** Future regulations will likely control effort and thus reduce revenues at times, but long-term maintenance of sustainable stock will lead to long-term benefits to human communities	**Mixed** Continued fisheries management will impose requirements that may reduce short-term revenues or increase costs; sustainable management should improve community benefits in long-term

Non-Fishing Impacts

Nearshore Human Activities

Non-fishing activities that occur in the marine nearshore and offshore environments and connected watersheds can cause the loss or degradation of habitat and/or affect the fish and protected species that utilize those areas. The impacts of most nearshore, human-induced, non-fishing activities tend to be localized in the areas where they occur, although effects on species could be felt throughout their populations since many marine organisms are highly mobile. For offshore projects, some impacts may be localized while others may have regional influence, especially for larger projects. The following discussion of impacts is based on past assessments of activities and assumes these activities will continue as projects are proposed.

Examples of non-fishing activities include point source and non-point source pollution, shipping, dredging/deepening, wind energy development, oil and gas development, construction, and other activities. Specific examples include at-sea disposal areas, oil and mineral resource exploration, aquaculture, construction of offshore wind farms, and bulk transportation of petrochemicals. Episodic storm events and the restoration activities that follow can also cause impacts. The impacts from these activities primarily stem from habitat loss due to human interaction and alteration or natural disturbances. These activities are widespread and can have localized impacts on habitat related to accretion of sediments, pollutants, habitat conversion, and shifting currents and thermoclines. For protected species, primary concerns associated with non-fishing activities include vessel strikes, dredge interactions (especially for sea turtles and sturgeon), and underwater noise. These activities have both direct and indirect impacts on protected species. Wherever these activities co-occur, they are likely to work additively or synergistically to decrease habitat quality and as such may indirectly constrain the productivity 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. Non-fishing activities can cause target, non-target, and protected species to shift their distributions away from preferred areas, and may also lead to decreased reproductive ability and success (from current changes, spawning disruptions, and behavior changes), disrupted or modified food web interactions, and increased disease. While localized impacts may be more severe, the overall impact on the affected species and their habitats on a population level is unknown, but likely to have impacts that mostly range from no impact to slight negative, depending on the species and activity.

Non-fishing activities permitted by other Federal agencies (e.g. beach nourishment, offshore wind facilities) require examinations of potential impacts on the VECs. The MSA imposes an obligation on other Federal agencies to consult with the Secretary of Commerce on actions that may adversely affect EFH (50 CFR 600.930). NMFS and the eight regional fishery management councils engage in this review process by making comments and recommendations on federal or state actions that may affect habitat for their managed species. Agencies need to respond to, but do not necessarily need to adopt these recommendations. Habitat conservation measures serve to potentially minimize the extent and magnitude of indirect negative impacts federally-permitted activities could have on resources under NMFS' jurisdiction. In addition to guidelines mandated by the MSA, NMFS evaluates non-fishing effects during 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. Non-fishing activities must also meet the mandates under the ESA, specifically Section 7(a)(2)[34], which ensures that agency actions do not jeopardize the continued existence of endangered species and their critical habitat.

In recent years, offshore wind energy and oil and gas exploration have become more relevant activities in the Greater Atlantic region. They are expected to impact all VECs, as described below.

Impacts of offshore wind energy development on Biological Resources (Target species, Non-target species, Protected Species) and the Physical Environment

Construction activities may have both direct and indirect impacts on marine resources, ranging from temporary changes in distribution to injury and mortality. Impacts could occur from changes to habitat in the areas of wind turbines and cable corridors and increased vessel traffic to and from these areas. Species that reside in affected wind farms year round may experience different impacts than species that seasonally reside in or migrate through these areas. Species that typically reside in areas where wind turbines are installed may return to the area and adapt to habitat changes after construction is complete. Inter-array and electricity export cables will generate electromagnetic fields, which can affect patterns of movement, spawning, and recruitment success for various species. Effects will depend on cable type, transmission capacity, burial depth, and proximity to other cables. Substantial structural changes in habitats associated with cables are not expected unless cables are left unburied (see below). However, the cable burial process may alter sediment composition along the corridor, thereby affecting infauna and emergent biota. Taormina et al. (2018) provide a recent review of various cable impacts, and Hutchinson et al. (2020) and Taormina et al. (2020) examine the effects of electromagnetic fields in particular.

The full build out of offshore wind farms will result in broad habitat alteration. The wind turbines will alter hydrodynamics of the area, which may affect primary productivity and physically change the distribution of prey and larvae. It is not clear how these changes will affect the reproductive success of marine resources. Scour and sedimentation could have negative effects on egg masses that attach to the bottom. Benthic habitat will be altered due to the placement of scour protection at wind turbine foundations, and over cables that are not buried to target depth in the sediment, converting soft substrates into hard substrates. This could alter species composition and predator/prey relationships by increasing favorable habitat for some species and decreasing habitat for others. The placement of wind turbines will also establish new vertical structure in the water column, which could serve as reefs for bottom species, fish aggregating devices for pelagic species, and substrate for the colonization of other species, e.g., mussels. Various authors have studied these types of effects (e.g., Bergström et al. 2013, Dannheim et al. 2019, Degraer et al. 2019, Langhamer 2012, Methratta and Dardick 2019, Stenberg et al. 2015).

34 "Each Federal agency shall, in consultation with and with the assistance of the Secretary, insure that any action authorized, funded, or carried out by such agency (hereinafter in this section referred to as an "agency action") is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of critical habitat."

Elevated levels of sound produced during site assessment activities, construction, and operation of offshore wind facilities will impact the soundscape[35]. Temporary, acute, noise impacts from construction activity could impact reproductive behavior and migration patterns; the long-term impact of operational noise from turbines may also affect behavior of fish and prey species, through both vibrations in the immediate area surrounding them in the water column, and through the foundation into the substrate. Depending on the sound frequency and source level, noise impacts to species may be direct or indirect (Finneran 2015; Finneran 2016; Nowacek et al. 2007; NRC 2000; NRC 2003; NRC 2005; Madsen et al. 2006; Piniak 2012; Popper et al. 2014; Richardson et al. 1995; Thomsen et al. 2006). Exposure to underwater noise can directly affect species via behavioral modification (avoidance, startle, spawning) or injury (sound exposure resulting in internal damage to hearing structures or internal organs) (Bailey et al. 2010; Bailey et al. 2014; Bergström et al. 2014; Ellison et al. 2011; Ellison et al. 2018; Forney et al. 2017; Madsen et al. 2006; Nowacek et al. 2007; NRC 2003; NRC 2005; Richardson et al. 1995; Romano et al. 2004; Slabbekoorn et al. 2010; Thomsen et al. 2006; Wright et al. 2007). Indirect effects are likely to result from changes to the acoustic environment of the species, which may affect the completion of essential life functions (e.g., migrating, breeding, communicating, resting, foraging)[36] (Forney et al. 2017; Richardson et al. 1995; Slabbekoorn et al. 2010; Thomsen et al. 2006).

Wind farm survey and construction activities and turbine/cable placement will substantially affect NMFS scientific research surveys, including stock assessment surveys for fisheries and protected species[37] and ecological monitoring surveys. Disruption of such scientific surveys could increase scientific uncertainty in survey results and may significantly affect NMFS' ability to monitor the health, status, and behavior of marine resources and protected species and their habitat use within this region. Based on existing regional Fishery Management Councils' acceptable biological catch control rule processes and risk policies (e.g., 50 CFR §§ 648.20 and 21), increased assessment uncertainty could result in lower commercial quotas and recreational harvest limits that may reduce the likelihood of overharvesting and mitigate associated biological impacts on fish stocks. However, this would also result in lower associated fishing revenue and reduced recreational fishing opportunities, which could result in indirect negative impacts on fishing communities.

Impacts of Offshore Wind Energy Development on Socioeconomic Resources

One offshore wind pilot project off Virginia installed two turbines in 2020**.** Several potential offshore wind energy sites have been leased or identified for future wind energy development in federal waters from Massachusetts to North Carolina (see leasing and BOEM maps below – Figure 21 and Figure 22). According to BOEM, approximately 22 gigawatts (close to 2,000 wind turbines based on current technology) of Atlantic offshore wind development via 17 projects are reasonably foreseeable along the east coast (BOEM 2020a). [BOEM has recently begun a planning process for the Gulf of Maine via a regional intergovernmental renewable energy task force (https://www.boem.gov/Gulf-of-Maine). It is not clear at this time where development might occur

35 See NMFS Ocean Noise Strategy Roadmap:

https://cetsound.noaa.gov/Assets/cetsound/documents/Roadmap/ONS_Roadmap_Final_Complete.pdf

36 See NMFS Ocean Noise Strategy Roadmap (footnote #2)

37 Changes in required flight altitudes due to proposed turbine height would affect aerial survey design and protocols (BOEM 2020a).

in the Gulf of Maine. Given the water depth in the region, floating turbines will likely be the primary type of wind turbine foundations to be deployed in the area.] As the number of wind farms increases, so too would the level and scope of impacts to affected habitats, marine resources, and human communities.

Offshore wind energy development is being considered in parts of the outer continental shelf that overlap with the bluefish resource, specifically on the Atlantic coast where commercial stakeholders deploy gill nets. The bluefish fishery has been active in these areas at present and is expected to be for the near future (see section 6). The social and economic impacts of offshore wind energy on fisheries could be generally negative due to the overlap of wind energy areas with productive bluefish fishing grounds. Impacts may vary by year based on the cyclical nature of abundance present in the bluefish fishery.

There could also be social and economic benefits in the form of jobs associated with construction and maintenance, and replacement of some electricity generated using fossil fuels with renewable sources (AWEA 2020).

It remains unclear how fishing or transiting to and from fishing grounds (whether or not those grounds are within a wind farm) might be affected by the presence of a wind farm. While no offshore wind developers have expressed an intent to exclude fishing vessels from wind turbine arrays once construction is complete, it could be difficult for operators to tow bottom-tending mobile gear or transit amongst the wind turbines, depending on the spacing and orientation of the array and weather conditions.[38] If vessel operators choose to avoid fishing or transiting within wind farms, effort displacement and additional steaming time could result in negative socioeconomic impacts to affected communities, including increased user conflicts, decreased catch and associated revenue, safety concerns, and increased fuel costs. If vessels elect to fish within wind farms, effects could be both positive and negative due to increased catch rates, reduced catch and associated revenue, user conflicts, gear damage/loss, and increased risk of allision or collision.

Impacts of Oil and Gas Development on Biological and Socioeconomic Resources

For oil and gas, this timeframe could include leasing and possible surveys, depending on the direction of BOEM's 5-year planning process in the North and Mid-Atlantic regions. (Note that there are fewer oil and gas development activities in the region than offshore wind; therefore, the non-fishing impacts focus more heavily on offshore wind.) Seismic surveys to detect and quantify mineral resources in the seabed impact marine species and the acoustic environment within which marine species live. These surveys have uncertain impacts on fish behaviors that could cumulatively lead to negative population level impacts. For protected species (sea turtle, fish, small cetacean, pinniped, large whale), the severity of these behavioral or physiological impacts is based on the species' hearing threshold , the overlap of this threshold with the frequencies emitted by the

38 The United States Coast Guard has considered transit and safety issues related to the Massachusetts and Rhode Island lease areas in a recent port access route study, and has recommended uniform 1 mile spacing in east-west and north-south directions between turbines to facilitate access for fishing, transit, and search and rescue operations. Future studies in other regions could result in different spacing recommendations (UCSG 2020).

survey, as well as the duration of time the surveys would operate, as these factors influence exposure rate (Ellison et al. 2011; Ellison et al. 2018; Finneran 2015; Finneran 2016; Madsen et al. 2006; Nelms et al. 2016; Nowacek et al. 2007; Nowacek et al. 2015; NRC 2000; NRC 2003; NRC 2005; Piniak 2012; Popper et al. 2014; Richardson et al. 1995; Thomsen et al. 2006; Weilgart 2013). If fishery resources are affected by seismic surveys, then so in turn the fishermen targeting these resources would be affected. However, such surveys could increase jobs, which may provide some positive effects on human communities (BOEM 2020b). It is important to understand that seismic surveys for mineral resources are different from surveys used to characterize submarine geology for offshore wind installations, and thus these two types of activities are expected to have different impacts on marine species.

Offshore Energy Summary

The overall impact of offshore wind energy and oil and gas exploration on the affected species and their habitats at a population level is unknown, but likely to range from no impact to moderate negative, depending on the number and locations of projects that occur. The individual project phases (site assessment, construction, operation, and decommissioning) as well as different aspects of the technology (foundations, cables/pipelines, turbines) will have varying impacts on resources. Mitigation efforts, such as habitat conservation measures, time of year construction restrictions, layout modifications, and fishery compensation funds could lessen the magnitude of negative impacts as well. The overall impact on socioeconomic resources is likely slight positive to moderate negative; potentially positive due to a potential increase in jobs and recreational fishing opportunities, but negative due to displacement and disruption of commercial fishing effort.

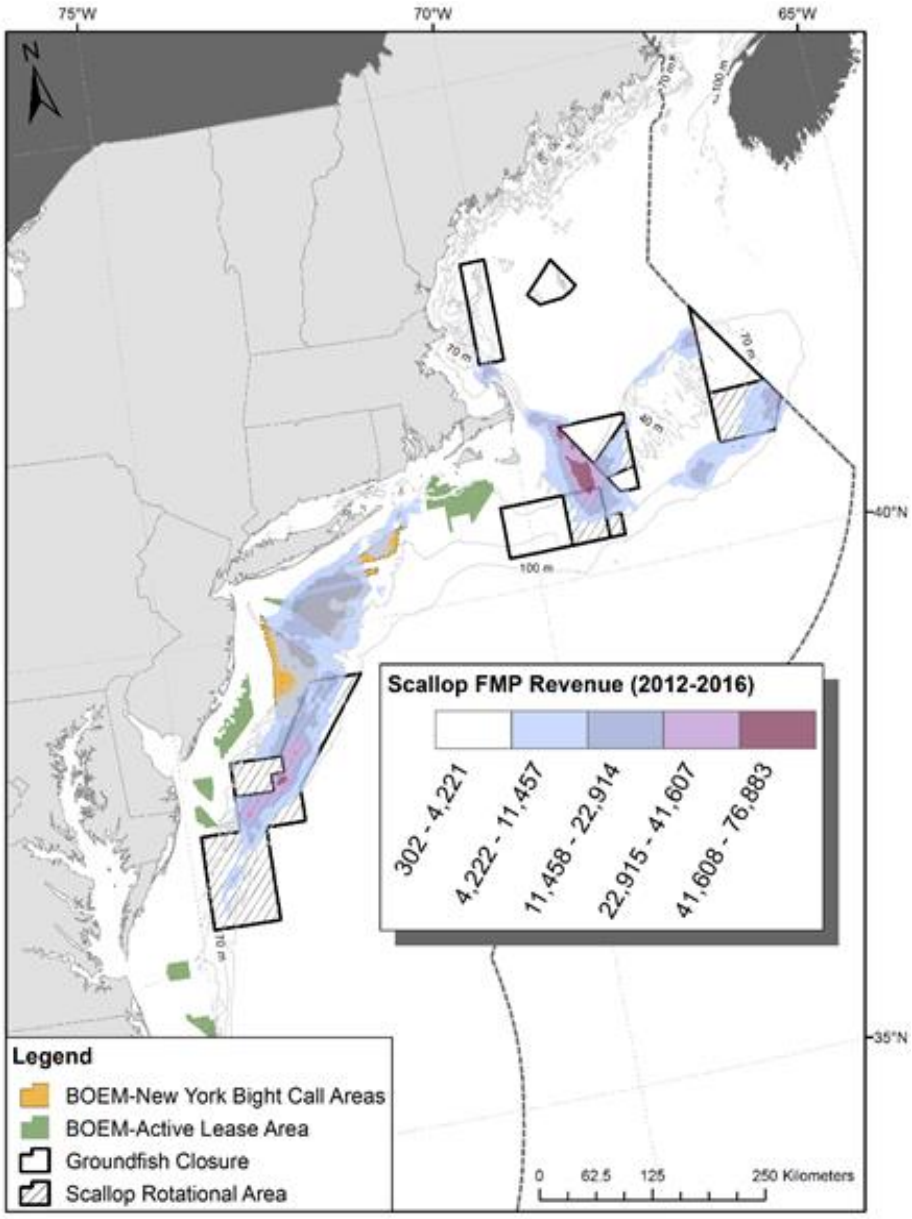

Figure 21: Sum of Sea Scallop FMP revenues (2012-2016) relative to wind energy call areas and active lease areas. Approximate revenues are based on VTR data.

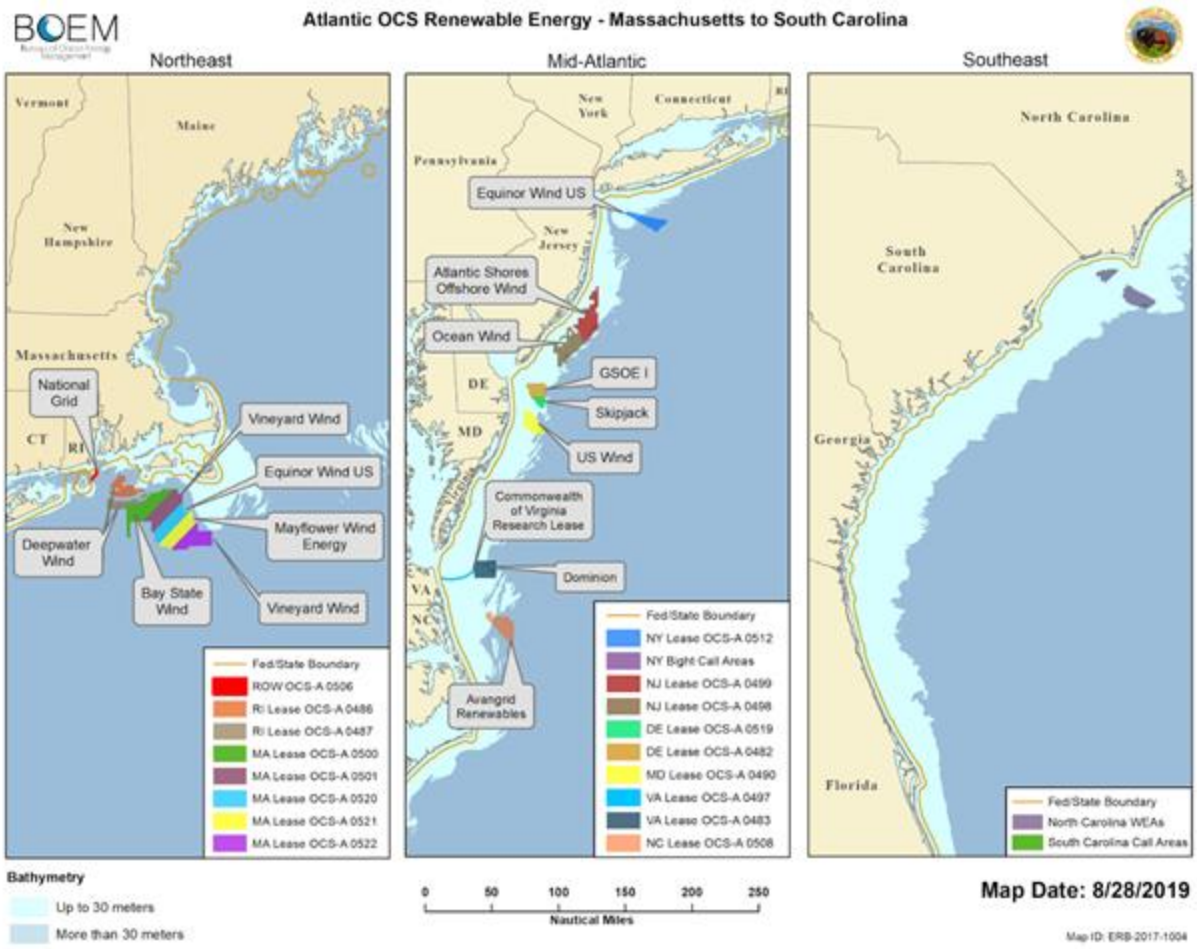

Figure 22: Map of BOEM Wind Planning areas, Wind Energy Areas, and Wind Leasing Areas on the Atlantic Outer Continental Shelf.

Global Climate Change

Global climate change affects all components of marine ecosystems, including human communities. Physical changes that are occurring and will continue to occur to these systems include sea-level rise, changes in sediment deposition; changes in ocean circulation; increased frequency, intensity and duration of extreme climate events; changing ocean chemistry; and warming ocean temperatures. The rates of physical and chemical changes in marine ecosystems have been most rapid in recent decades (Johnson et al. 2019). 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). The general trend of changes can be explained by warming causing increased ocean stratification, which reduces primary production, lowering energy supply for higher trophic levels and changing metabolic rates. Different responses to warming can lead to altered food-web structures and ecosystem-level changes. Shifts in spatial distribution are generally to higher latitudes (i.e., poleward) and to deeper waters as species seek cooler waters within their normal temperature preferences. Climate change will also potentially exacerbate the stresses imposed by fishing and other non-fishing human activities and stressors. Survival of

marine resources under a changing climate depends on their ability to adapt to change, but also how and to what degree those other human activities influence their natural adaptive capacity.

Results from the Northeast Fisheries Climate Vulnerability Assessment indicate that climate change could have impacts on Council-managed species that range from negative to positive, depending on the adaptability of each species to the changing environment (Hare et al. 2016).

Based on this assessment, bluefish was determined to have a moderate vulnerability to climate change. The exposure of bluefish to the effects of climate change was determined to be "high" due to the impacts of ocean surface temperature, ocean acidification, and air temperature. Exposure to all three factors occurs during all life stages. Bluefish is an obligate estuarine-dependent species. Spawning occurs on the shelf and juveniles inhabit estuaries. Adults make seasonal north-south migrations exposing them to changing conditions inshore and offshore. The distributional vulnerability of bluefish was ranked as "high," given that bluefish spawn in shelf waters and eggs and larvae are broadly dispersed. Adults use a range of habitats including estuarine, coastal, and shelf. The life history of the species has a strong potential to enable shifts in distribution. Bluefish were thus determined to have low biological sensitivity to climate change (Hare et al. 2016).[39]

Overall vulnerability results for additional Greater Atlantic species, including most of the non-target species identified in this action, are shown in Figure 23 (Hare et al. 2016). While the effects of climate change may benefit some habitats and the populations of species through increased availability of food and nutrients, reduced energetic costs, or decreased competition and predation, a shift in environmental conditions outside the normal range can result in negative impacts for those habitats and species unable to adapt. This, in turn, may lead to higher mortality, reduced growth, smaller size, and reduced reproduction or populations. Thus, already stressed populations are expected to be less resilient and more vulnerable to climate impacts. Climate change is expected to have impacts that range from positive to negative depending on the species. However, 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. The social and economic impacts of climate change will depend on stakeholder and community dependence on fisheries, and their capacity to adapt to change. Commercial and recreational fisheries may adapt in different ways, and methods of adaptation will differ among regions. In addition to added scientific uncertainty, climate change will introduce implementation uncertainty and other challenges to effective conservation and management.

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

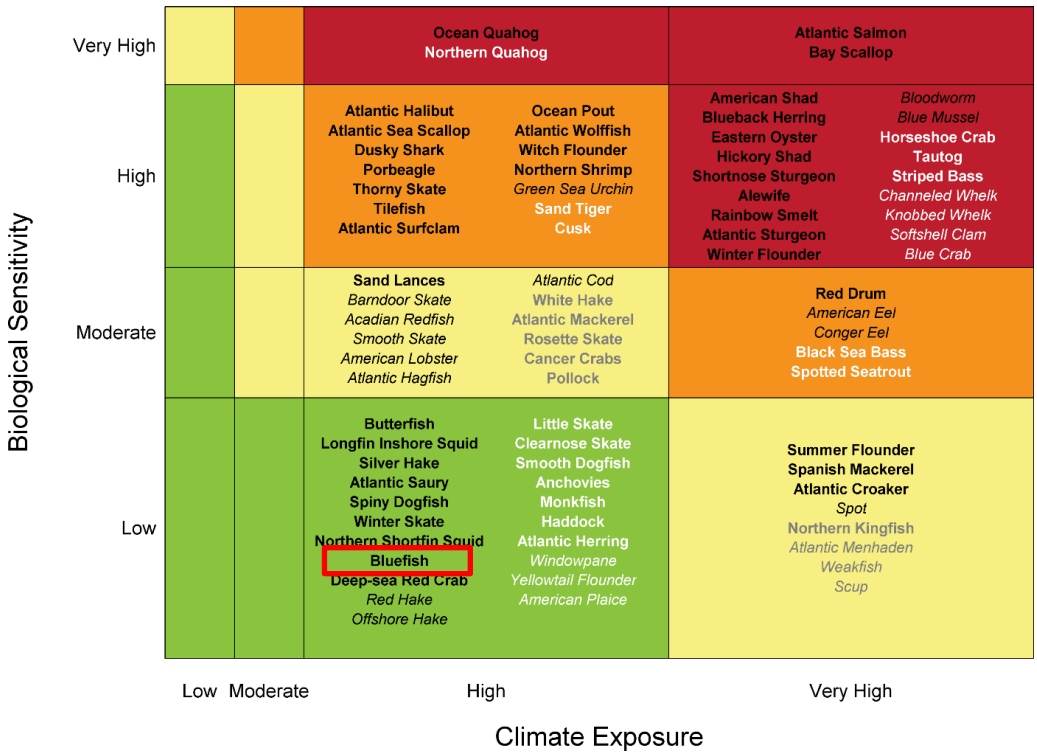

Figure 23: Overall climate vulnerability score for Greater Atlantic species, with bluefish highlighted with a red box. Overall climate vulnerability is denoted by color: low (green), moderate (yellow), high (orange), and very high (red). Certainty in score is denoted by text font and text color: very high certainty (>95%, black, bold font), high certainty (90–95%, black, italic font), moderate certainty (66–90%, white or gray, bold font), low certainty (<66%, white or gray, italic font). Figure source: Hare et al. 2016.

Baseline Condition for the Resources, Ecosystems, and Human Communities

For the purposes of this CEA, the baseline condition is considered as the present condition of the VECs plus the combined effects of the past, present, and reasonably foreseeable future actions.

Table 39 (above) summarizes the added effects of the condition of the VECs (i.e., status/trends/stresses from Affected environment and impacts) and the sum effect of the past, present, and reasonably foreseeable future actions (from previous summary table or Past, present, reasonably foreseeable future action section above). The resulting CEA baseline for each VEC is exhibited in the last column of Table 39 and further detailed in section 6. As mentioned above, the CEA Baseline is then used to assess cumulative effects of the proposed management actions. Ultimately, target and non-target species are being managed sustainably, as management measures are continuously adjusted based on biomass levels and interactions. Increased fishing effort on bluefish will continue to interact with habitat that has been subject to fishing pressure for decades. However, the gear used in the bluefish fisheries already has limited interaction with habitat and this is not projected to be exacerbated over time. For protected species, continued effort controls along with past regulations will likely help stabilize protected species interactions. Finally, human communities will experience different impacts in the short term versus the long term. However,

overall, long term impacts are expected to increase landings/revenues, and ultimately, angler satisfaction.

Summary of Effects of the Proposed Actions

The preferred alternatives and impacts of the proposed actions are described in section 7 and summarized in Table 40below.

Table 40: Incremental impacts of the proposed actions and preferred alternatives.

Management Measures	Target species	Non-target species	Habitat/EFH	Protected Resources	Human communities
Alternative Set 1	FMP Goals and Objectives are not true alternatives. See section 4.2.				
Alternative Set 2: 2a-4, 2b-1	Slight - to Slight +	Slight - to Slight +	Slight - to Negligible	Slight - to Slight + (MMPA) Slight - to Negligible (ESA-Listed	Slight - to Slight +
Alternative Set 3: 3a-2, 3b-2, 3c-1, 3d-2	Slight - to Slight +	Slight - to Slight +	Slight - to Negligible	Slight - to Slight + (MMPA) Slight - to Negligible (ESA-Listed	Slight - to Slight +
Alternative Set 4: 4d	Slight +	Slight - to Slight +	Slight - to Negligible	Slight - to Slight + (MMPA) Slight - to Negligible (ESA-Listed)	Slight - to Slight +
Alternative Set 5: 5a-2, 5b-2	Slight - to Slight +	Slight - to Slight +	Slight - to Negligible	Slight - to Slight + (MMPA) Slight - to Negligible (ESA-Listed)	Negligible to Slight +
Alternative Set 6: 6b	Negligible to Slight +	Negligible	Negligible	Negligible	Negligible to Slight +

7.5.5. Magnitude and Significance of Cumulative Effects

In determining the magnitude and significance of the cumulative impacts of the preferred alternatives, the incremental impacts of the direct and indirect impacts should be considered, on a VEC-by-VEC basis, in addition to the effects of all actions (those identified and discussed relative

to the past, present, and reasonably foreseeable future actions of both fishing and non-fishing actions). Table 40 provides a summary of likely impacts found in the various groups of management alternatives contained in this action. The CEA baseline that, as described above in Table 39 represents the sum of past, present, and reasonably foreseeable future actions and conditions of each VEC. When an alternative has a positive impact on the VEC, for example, reduced fishing mortality on a managed species, it has a positive cumulative effect on the stock size of the species when combined with "other" actions that were also designed to increase stock size. In contrast, when an alternative has negative effects on a VEC, such as increased mortality, the cumulative effect on the VEC would be negative and tend to reduce the positive effects of the other actions. The resultant positive and negative cumulative effects are described below for each VEC. As seen above in the non-fishing impacts section, non-fishing impacts on the VECs generally range from no impact to slight negative.

7.5.5.1 Magnitude and Significance of Cumulative Effects on Target Species

Past fishery management actions taken through the bluefish FMP and the annual specifications process such as catch limits, commercial quotas, and RHLs for the target species ensure that 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; however, these actions have generally had a positive cumulative effect on bluefish. It is anticipated that the future management actions described in Section 7.5.4 will have additional indirect positive effects on the target species through actions which reduce and monitor bycatch, protect habitat, and protect the ecosystem services on which the productivity of the target species depends.

As noted previously (Section 7.1), none of the preferred alternatives are expected to result in significantly increased levels of fishing effort or changes to the character of that effort relative to current conditions. Therefore, impacts of the fisheries on target species are not expected to change relative to current conditions under the preferred alternatives (i.e., generally positive for target species). The proposed actions described in this document would positively reinforce the past and anticipated positive cumulative effects on target species by achieving the objectives specified in the FMP.

When the direct and indirect effects of the Bluefish Allocation and Rebuilding Amendment alternatives are considered in combination with all other actions (i.e., past, present, and reasonably foreseeable future actions), *the cumulative effects are expected to yield non-significant positive impacts on bluefish.*

7.5.5.2 Magnitude and Significance of Cumulative Effects on Non-Target Species

The combined impacts of past federal fishery management actions on non-target species have been mixed, as decreased effort and reduced catch of non-target species continue, though some stocks are in poor status. Current regulations continue to manage for sustainable stocks, thus controlling effort on direct and discard/bycatch species. As noted in section 7.1, the actions proposed by the Bluefish Allocation and Rebuilding Amendment would likely continue this trend. Future actions are anticipated to continue rebuilding non-target species stocks and limit the take of incidental/bycatch in the striped bass fishery, particularly through mitigation measures like sub-ACLs and AMs. The other measures proposed in this action would likely have primarily no impact

on non-target species. Continued management of directed stocks will also control catch of non-target species.

As noted previously in Section 7.1, none of the preferred alternatives are expected to result in significantly increased levels of fishing effort or changes to the character of that effort relative to current conditions. Therefore, impacts of the fishery on non-target species are not expected to change relative to the current condition under the preferred alternatives (i.e., slight positive for non-target species). The proposed actions in this document would positively reinforce past and anticipated cumulative effects on non-target species by achieving the objectives in the FMP.

When the direct and indirect effects of the Bluefish Allocation and Rebuilding Amendment alternatives are considered in combination with all other actions (i.e., past, present, and reasonably foreseeable future actions), *the cumulative effects are expected to yield non-significant slight negative to slight positive impacts on non-target species (given striped bass are overfished).*

7.5.5.3 Magnitude and Significance of Cumulative Effects on Physical Environment

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 Sections 6.2 and 7.2 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.

Many additional non-fishing activities, as described above (non-fishing actions section), are concentrated near-shore and likely work either additively or synergistically to decrease habitat quality. The effects of these actions, combined with impacts resulting from years of commercial fishing activity, have negatively affected habitat. 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. 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. Reductions in overall fishing effort and protection of sensitive habitats have mitigated some negative effects.

As noted previously in section 7.4, none of the preferred alternatives are expected to result in significantly increased levels of fishing effort or changes to the character of that effort relative to current conditions. Although the impacted areas have been fished for many years with many different gear types and therefore will not likely be further impacted by these measures, continued fishing effort will continue to impact habitats. Therefore, the impacts of the fishery on the physical environment are not expected to change relative to the current condition under the preferred alternatives (i.e., slight negative for physical environment).

When the direct and indirect effects of the Bluefish Allocation and Rebuilding Amendment alternatives are considered in combination with all other actions (i.e., past, present, and reasonably foreseeable future actions), *the cumulative effects are expected to yield non-significant no impact to slight negative impacts on the physical environment and EFH.*

7.5.5.4 Magnitude and Significance of Cumulative Effects on Protected Species

Given their life history dynamics, large changes in protected species abundance over long time periods, and the multiple and wide-ranging fisheries management actions that have occurred, the cumulative impacts on protected species were evaluated over a long-time frame (i.e., from the early 1970s when the Marine Mammal Protection Act and Endangered Species Act were implemented through the present).

Numerous protected species (ESA listed and/or MMPA protected) occur in the Northwest Atlantic. The distribution and status of those species in the region are described in section 6.3. Depending on species and status, the population trends for these protected resources are variable, and as follows:

Sea Turtles

Nest counts inform population trends for sea turtle species. In the affected environment (see section 6.3), four sea turtle species were identified in the region: Northwest Atlantic Ocean DPS of loggerhead, Kemp's ridley, North Atlantic DPS of green, and leatherback sea turtles. For the Northwest Atlantic Ocean DPS of loggerhead sea turtles, there are five unique recovery units that comprise the DPS. Nesting trends for each of these recovery units are variable; however, recent data from Florida index nesting beaches, which comprise most of the nesting in the DPS, indicate a 19% increase in nesting from 1989 to 2018 (https://myfwc.com/research/wildlife/sea-turtles/nesting/loggerhead-trends/). For Kemp's ridley sea turtles, from 1980 through 2003, the number of nests at three primary nesting beaches (Rancho Nuevo, Tepehuajes, and Playa Dos) increased 15 percent annually (Heppell et al. 2005); however, due to recent declines in nest counts, decreased survival of immature and adult sea turtles, and updated population modeling, this rate is not expected to continue and the overall trend is unclear (NMFS and USFWS 2015; Caillouett et al. 2018). The North Atlantic DPS of green sea turtle is showing a positive trend in nesting (Seminoff et al. 2015). Leatherback turtle nesting in the Northwest Atlantic is showing an overall negative trend, with the most notable decrease occurring during the most recent time frame of 2008 to 2017 (NW Atlantic Leatherback Working Group 2018).

Large Whales

Large whale assessment indicate that for some species there is decreasing (i.e., North Atlantic right whales) trend in the population, while for other species, as a trend analysis has not been conducted, it is unknown what the population trajectory is.[40]

Small cetaceans and Pinnipeds

For most small cetaceans and pinniped populations, it is unknown what the population trajectory is as a trend analysis has not been conducted for these populations.[41] However, in the most recent stock assessment reports, population trends were provided for common bottlenose dolphin stocks and gray seals; the analysis indicated a declining trend in population size for all common bottlenose

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

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

dolphin stocks and an increasing trend for the gray seal population (Hayes et al. 2018; Hayes et al. 2019).

Atlantic Sturgeon

Population trends for Atlantic sturgeon are difficult to discern; however, the most recent stock assessment report concludes that Atlantic sturgeon, at both coastwide and DPS level, are depleted relative to historical levels (ASSRT 2007; ASMFC 2017).

Atlantic Salmon

There is no population growth rate available for Gulf of Maine DPS Atlantic salmon; however, the consensus is that the DPS exhibits a continuing declining trend (NOAA 2016; USFWS and NMFS 2018).

Taking into consideration the above information, past fishery management actions taken through the respective FMPs and annual specifications process have had slight indirect positive cumulative effects on protected species. The actions have constrained fishing effort both at a large scale and locally, and have implemented, pursuant to the ESA, MMPA, or MSA, gear modifications, requirements, and management areas. These measures and/or actions have served to reduce interactions between protected species and fishing gear. It is anticipated that future management actions, described in Section 7.5.4 will result in additional indirect positive effects on protected species. These impacts could be broad in scope.

The preferred alternatives would not substantially modify current levels of fishing effort in terms of the overall amount of effort, timing, and location. They would allow existing fishing effort to continue. As described in section 7.3, the proposed action is expected to have impacts on protected species that range from slight - to slight + for MMPA protected species and slight - to negligible for ESA-Listed species, depending on the species.

When the direct and indirect effects of the Bluefish Allocation and Rebuilding Amendment alternatives are considered in combination with all other actions (i.e., past, present, and reasonably foreseeable future actions), *the cumulative effects are expected to yield non-significant slight negative impacts to slight positive impacts.*

7.5.5.5 Magnitude and Significance of Cumulative Effects on Human Communities

Past fishery management actions taken through the respective FMPs and annual specifications process such as catch limits, commercial quotas, and RHLs have had both positive and negative cumulative effects on human communities. They have benefitted domestic fisheries through sustainable fishery management, but can also reduce participation in fisheries. The impacts from annual specification of management measures are largely dependent on how effective those measures are in meeting their intended objectives and the extent to which mitigating measures are effective. Quota overages may alter the timing of commercial fishery revenues such that revenues can be realized a year earlier. Fishermen may be impacted by reduced revenues in years which the overages are deducted. Similarly, recreational fisheries may have decreased harvest opportunities due to reduced harvest limits as a result of overages and more restrictive management measures (e.g. minimum fish size, possession limits, fishing seasons) implemented to address overages.

It is anticipated that the future management actions described in Section 7.5.4 will result in positive effects for human communities due to sustainable management practices, although additional

indirect negative effects on some 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 overall positive cumulative effects. Despite the potential for negative short-term effects on human communities due to reduced revenue, positive long-term effects are expected due to the long-term sustainability of the managed stocks.

By providing revenues and contributing to the overall functioning of and employment in coastal communities, the bluefish fishery has both direct and indirect positive social impacts. As previously described, the preferred alternatives in section 7.4 are unlikely to result in substantial changes to levels of fishing effort or the character of that effort relative to current conditions. Through implementation of this action, the Council seeks to achieve the primary objective of the MSA, which is to achieve OY from the managed fisheries.

When the direct and indirect effects of the Bluefish Allocation and Rebuilding Amendment alternatives are considered in combination with all other actions (i.e., past, present, and reasonably foreseeable future actions), *the cumulative effects are expected to yield non-significant slight negative to positive impacts (depending on the sector).*

7.5.6. Proposed Action on all the VECs

The Council's preferred alternatives (i.e., the proposed action) are described in section 5. The direct and indirect impacts of the proposed action on the VECs are described in section 7 and are summarized in the Executive Summary (Section 1). 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 (Section 7.5.5).

When considered in conjunction with all other pressures placed on the fisheries by past, present, and reasonably foreseeable future actions, the preferred alternatives are not expected to result in any significant impacts, positive or negative (Section 7.5.5).

The preferred alternatives are consistent with other management measures that have been implemented in the past for the fishery. These measures are part of a broader management scheme for the bluefish 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 negative impacts, but rather that when considered as a whole and as a result of the management measure implemented in these fisheries, the overall long-term trend is positive.

There are no significant cumulative effects associated with the preferred alternatives based on the information and analyses presented in this document and in past FMP documents. Cumulatively,

through 2019, it is anticipated that the preferred alternatives will result in non-significant impacts on all VECs, ranging from slight negative to slight positive.

8. APPLICABLE LAWS

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

8.1.1 National Standards

Section 301 of the MSA requires that FMPs contain conservation and management measures that are consistent with the ten National Standards. The Council continues to meet the obligations of National Standard 1 by adopting and implementing conservation and management measures that will continue to prevent overfishing, while achieving, on a continuing basis, the optimum yield (OY) for bluefish and the U.S. fishing industry. To achieve OY, both scientific and management uncertainty are addressed when establishing catch limits. The Council developed recommendations that do not exceed the ABC recommendations of the SSC, which explicitly address scientific uncertainty. The Council considered management uncertainty and other social, economic, and ecological factors, when recommending ACTs. The Council uses the best scientific information available (National Standard 2) and manages bluefish throughout their 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). The proposed actions are consistent with National Standard 9, which addresses bycatch in fisheries. The Council has implemented many regulations that have indirectly reduced 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, the Council will insure that cumulative impacts of these actions will remain positive overall for the managed species, the ports and communities that depend on these fisheries, and the Nation as a whole.

8.1.2 Essential Fish Habitat Assessment

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

Description of Action

As previously described, the proposed action would implement modifications to the FMP goals and objectives, current allocations between the commercial and recreational sectors, current commercial allocations to the states, initiate a rebuilding plan, revise the quota transfer processes, and revise how the FMP accounts for management uncertainty. The proposed action is described in more detail in section 5.

Potential Adverse Effects of the Action on EFH

The types of habitat impacts caused by the gears used in the bluefish fishery (predominantly gill net in the commercial fishery; predominantly hook and line gear in the recreational fishery) are summarized in section 6.2.3.

As described in section 7, the proposed action is expected to increase the recreational allocation and decrease the commercial allocation, as well as reallocate the distribution of state quotas based

on more recent landings. As a result, fishing effort for bluefish is expected to remain similar to the current conditions given the initiation of a rebuilding plan and the fact that harvest is still constrained by respective quotas and management measures. The locations of fishing are not expected to change and the amount of gear in the water and duration of time that gear is in the water are not expected to increase or in a manner that would cause meaningful increased negative impacts on habitat. The habitats that are impacted by bluefish have been impacted by many fisheries over many years. The levels of fishing effort expected under the preferred alternative are not expected to cause additional habitat damage, but they are expected to limit the recovery of previously impacted areas. Thus, the proposed action for bluefish is expected to have slight negative impacts on habitat and EFH.

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

Measures in the Bluefish FMP which impact EFH were considered in Amendment 1 (MAFMC 2000). Hook and line are the principal gears used in the recreational fishery for bluefish while gill net and trawl are used in the commercial fishery. These gears have minimal adverse impacts on EFH in the region (Stevenson et al. 2004). These characteristics of the fisheries have not changed since Amendment 1. None of the alternatives included in this document were designed to avoid, minimize, or mitigate adverse impacts on EFH.

Section 6.2.3 lists examples of management measures previously implemented by the Council with the intent of minimizing the impacts of various fisheries on habitat. None of these measures substantially restrict the bluefish fishery.

Conclusions

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

8.2. NEPA Finding of No Significant Impact (FONSI)

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

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

The expected impacts of the preferred alternative are fully described in section 7. The preferred alternatives are not expected to result in significant impacts on any VECs, nor will they result in overall significant effects, either beneficial or adverse.

The preferred alternatives establish revised sector allocations based on catch data from 1981-2018 (and landings data from 2014-2018; 2009-2018), revised commercial allocations to the states based on catch data from 2009-2018 with a phase-in approach and minimum default allocation, a rebuilding plan, revisions to the transfer processes, and revisions to how the FMP allows for the Monitoring Committee to address management uncertainty.

As described in section 7, none of the preferred alternatives are expected to have substantial negative impacts on the stock status of any non-target stocks compared to current conditions. As such, the preferred alternatives are expected to have slight positive (moderate negative for no rebuilding plan) to slight positive impacts on non-target species, depending on the species.

The preferred alternatives are not expected to result in notable changes in interactions between fishing gear and protected species (section 7.3) or between fishing gear and physical habitat (section 7.2) compared to recent levels of interactions. As such, the preferred alternatives are expected to have slight negative to negligible impacts on habitat and slight negative to slight positive to impacts on protected species, depending on the species.

The preferred alternatives will reduce the risk of overfishing within the bluefish fishery.

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

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

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

The preferred alternatives are not expected to alter fishing methods or activities or to substantially increase fishing effort. Other types of commercial fishing already occur in the impacted areas. Although it is possible that historic or cultural resources such as shipwrecks could be present, vessels try to avoid fishing too close to most physical structures due to possible loss or entanglement of fishing gear. Therefore, it is not likely that the preferred alternatives would result in substantial impacts to unique areas.

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

The preferred alternatives are based on measures contained in the FMP, which have been in place for many years. The scientific information upon which the annual catch and landings limits are based has been peer reviewed and is the most recent information available. 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 preferred alternatives on the human environment are described in section 7. The preferred alternatives are not expected to alter fishing methods or activities or to substantially increase fishing effort or the spatial and/or temporal distribution of current fishing effort. The impacts to managed species, non-target species, and protected resources will continue to be monitored. The preferred alternatives are not expected to have highly uncertain effects or to involve unique or unknown risks on the human environment.

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

The preferred alternatives are not expected to substantially increase fishing effort or the spatial and/or temporal distribution of current fishing effort. When new stock assessments or other biological information becomes available, the specifications will be adjusted consistent with the FMP and MSA. Specifications are routine adjustments and the adjustments undertaken herein are similar to those taken in the past. None of these specifications results 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 preferred alternatives are not expected to have individually insignificant, but cumulatively significant impacts. The preferred alternatives, together with past, present, and reasonably foreseeable future actions, are not expected to result in significant cumulative impacts on the biological, physical, and human components of the environment.

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

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

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

A variety of gear types are used in the bluefish fishery. Gill nets and bottom otter trawls account for the majority of commercial catch of this species, while hook and line gear accounts for the recreational catch. Gillnet and/or bottom trawl gear are known to interact with endangered and threatened species (section **Error! Reference source not found.**). As described in section 7.3, the preferred alternatives are not expected to increase fishing effort, alter overall fishing operations, or alter the spatial and/or temporal distribution of current fishing effort in a manner that would increase interaction rates with ESA-listed species. Given this, the preferred alternatives are expected to result in slight negative to negligible impacts for ESA-listed species.

This action falls within the range of impacts considered in the Batched Fisheries Biological Opinion, of which the bluefish fishery is considered (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, the 2017 memo 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 listed species above the amount that would otherwise occur if consultation had not been reinitiated,

because allowing these fisheries to continue does not entail making any changes to any fishery during the reinitiation period that would cause an increase in interactions with whales, sea turtles, sturgeon, or Atlantic salmon. Because of this, the continuation of the bluefish fishery during the reinitiation period would not be likely to jeopardize the continued existence of any whale, sea turtle, Atlantic salmon, or sturgeon species." Until replaced, the bluefish FMP is currently covered by the October 17, 2017, memo.

As described in section **Error! Reference source not found.**, the bluefish fishery is not likely to adversely affect any critical habitat designated for listed species. Given this, the bluefish fishery will not adversely affect the essential physical and biological features of North Atlantic right whale or loggerhead (Northwest Atlantic DPS) critical habitat and therefore, will not result in the destruction or adverse modification of critical habitat for these species (NMFS 2013; NMFS 2014a; NMFS 2015a,b).

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

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

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

The preferred alternatives are not expected to notably alter fishing methods or activities. The action is not expected to substantially increase fishing effort or the spatial and/or temporal distribution of current fishing effort.

A variety of gear types are used in the bluefish fishery. Gill nets and bottom otter trawls account for most commercial catch and are the gear of primary concern for interactions with MMPA protected species. Hook and line, the primary recreational gear type, has minimal interactions with protected species (section 6.3.3). For the reasons described in section 7.3, fishing effort under the preferred alternatives are expected to result in slight negative to slight positive impacts for non-ESA listed marine mammals, depending on the species in question.

As described in section 6.3, some marine mammal stocks/species are experiencing levels of interactions that have resulted in exceedance of their PBR levels. These stocks/populations are not at an optimum sustainable level and therefore, their continued existence is at risk. As a result, any potential for an interaction is a detriment to their ability to recover from this condition. As interactions with non-ESA listed marine mammals are possible under the preferred alternatives, the proposed action is likely to result in slight negative impacts to marine mammal stocks/species in poor condition.

There are also many non-ESA listed marine mammals that, even with continued fishery interactions, are maintaining an optimum sustainable level (i.e., PBR levels have not been exceeded) over the last several years. For these stocks/species, it appears that the fishery management measures that have been in place over this timeframe have resulted in levels of effort that result in interaction levels that are not expected to impair their ability to remain at an optimum sustainable level. Should future fishery management actions maintain similar operating conditions

as they have over the past several years, it is expected that these slight positive impacts would remain. Thus, given that the proposed action is not expected to significantly change fishing effort relative to the *status quo*, the impacts on these non-ESA listed species of marine mammals with positive stock status are expected to be negligible to slight positive (i.e., continuation of current operating conditions is not expected to result in exceedance of any of these stocks/species PBR level).

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

The impacts of this action on managed fish species, including target and non-target species, are described in section 7.1. The preferred alternatives are designed to prevent overfishing of bluefish. However, the bluefish stock is currently overfished and thus, we expect (non-significant) negative impacts as the rebuilding stage begins. For non-target species, most species are not currently overfished and not experiencing overfishing (section 6.1.2). As described in section 7, fishing effort is not expected to change under any of these alternatives in a manner that would substantially impact non-target species. The preferred alternatives are not expected to have any significant adverse impacts on managed target or non-target 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 EFH as defined under the MSA and identified in the FMP. The commercial fishery is mostly bottom trawl gear, while the recreational fisheries are almost entirely hook and line (section 6.2.3). These gear types, particularly bottom otter trawls, can adversely impact EFH. As described in section 7.2, the areas fished for bluefish have been fished for many years and are unlikely to be degraded further as the result of the levels of fishing effort that are expected under the proposed action. The proposed actions are expected to result in slight negative to negligible impacts to habitat as the result of continued fishing (section 7.2).

14. Can the proposed action reasonably be expected to adversely affect vulnerable marine or coastal ecosystems, including but not limited to, deep coral ecosystems?

The preferred alternatives are not expected to have significant impacts on the natural or physical environment, including vulnerable marine or coastal ecosystems. The preferred alternatives are not expected to alter fishing methods or activities or to substantially increase fishing effort or the spatial and/or temporal distribution of current fishing effort. The areas fished for bluefish have been fished for many years, and for a variety of species, and this action is not expected to change the locations of fishing activity. While some fishing takes place near the continental slope/shelf break where deep sea corals may be found in and around the submarine canyons, much of this area in the Mid-Atlantic is now protected by a prohibition on bottom-tending gear in the Frank R. Lautenberg Deep Sea Coral Protection Area (81 Federal Register 90246; December 14, 2016). The preferred alternatives are not expected to alter bluefish fishing patterns relative to this protected area or in any other manner that would lead to adverse impacts on deep sea coral or other vulnerable marine or coastal ecosystems.

15. Can the proposed action reasonably be expected to adversely affect biodiversity or ecosystem functioning (e.g., benthic productivity, predator-prey relationships, etc.)?

The impacts of the bluefish fishery on biodiversity and ecosystem functioning have not been assessed; however, the impacts to components of the ecosystem (i.e., non-target species, habitat,

and protected species) have been considered. As described in section 7, the preferred alternatives are not expected to result in substantial changes in fishing effort relative to the *status quo*. The preferred alternatives are not expected to result in a change in the recent spatial/temporal distribution of effort. These expected levels of effort are not likely to negatively impact the stock status of non-target species (section 7.1), they are not likely to cause additional habitat damage beyond that previously caused by a variety of fisheries (section 7.2), and they are not expected to jeopardize any protected species (section 7.3). They are not, however, expected to contribute to the recovery of any damaged habitats or endangered or threatened species. For these reasons, the preferred alternatives are not expected to have a substantial impact on biodiversity and ecosystem function within the affected area.

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

There is no evidence or indication that this fishery has ever resulted in the introduction or spread of nonindigenous species. The preferred alternatives are not expected to alter fishing methods or activities and are not expected to substantially increase fishing effort or the spatial and/or temporal distribution of current fishing effort. Therefore, it is highly unlikely that the preferred alternatives would result in the introduction or spread of a non-indigenous species.

DETERMINATION

In view of the information presented in this document and the analysis contained in the supporting Environmental Assessment prepared for the Bluefish Allocation and Rebuilding Amendment, it is hereby determined that these preferred alternatives 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

On December 16, 2013, NMFS issued a batched fisheries Biological Opinion on the operation of seven commercial fisheries, including the bluefish fishery. The batched fisheries Biological Opinion 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 North 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 MSA and ESA regulations and may do so at any time subject to the Administrative Procedure Act and other applicable laws. As a result, the Council has preliminarily determined that fishing activities conducted pursuant to this action will not affect endangered and threatened species or critical habitat in any manner beyond what has been considered in prior consultations on this fishery.

8.4. Marine Mammal Protection Act

Section 7.3 contains an assessment of the impacts of the proposed action on marine mammals. A final determination of consistency with the MMPA will be made by the agency during rulemaking for this action.

8.5. Coastal Zone Management Act

The Coastal Zone Management Act of 1972, as amended, provides measures for ensuring productive fishery habitat while striving to balance development pressures with social, economic, cultural, and other impacts on the coastal zone. The Council will submit this document to NMFS. NMFS will reach out to the states (Maine through Florida) to determine and confirm whether the proposed actions are consistent to the maximum extent practicable with their coastal zone management programs.

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 alternatives 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 amendment was first initiated in 2017 and was followed by a public scoping process. More recently, the public had the opportunity to review and comment on the amendment during public hearings held in March and April 2021, as well as during Council meetings held in May 2020, June 2020, August 2020, October 2020, February 2021, and June 2021, as well as during Advisory Panel, SSC, and Monitoring Committee meetings leading up to subsequent Council meetings.

The public will have further opportunity to comment on this document and the preferred alternatives once NMFS publishes a request for comments notice in the *Federal Register*.

8.7. Section 515 (Data Quality Act)

Utility of Information Product

The proposed action would implement modifications to the Fishery Management Plan (FMP) goals and objectives, current allocations between the commercial and recreational sectors, current commercial allocations to the states, initiate a rebuilding plan, revise the quota transfer processes, and revise how the FMP accounts for management uncertainty. The proposed actions are described in more detail in section 5. This document includes a description of the alternatives considered, the preferred actions and rationale for selection, and any changes to the implementing regulations of the FMP. As such, this document enables the implementing agency (NMFS) to make a decision on implementation of annual specifications (i.e., management measures) and this document serves as a supporting document for the proposed rule.

The preferred alternatives were developed 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). The public will have further opportunity to comment on this action 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 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). 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 bluefish fishery.

The review process for this specifications document involves Council, NEFSC, GARFO, and NMFS headquarters. 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 specifications document 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

The Paperwork Reduction Act concerns the collection of information. The intent of the Paperwork Reduction Act is to minimize the federal paperwork burden for individuals, small businesses, state and local governments, and other persons, as well as to maximize the usefulness of information

collected by the federal government. 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 Paperwork Reduction Act.

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 13132.

8.10. Regulatory Flexibility Act Analysis and Regulatory Impact Review

This section provides analysis to address the requirements of Executive Order 12866 (Regulatory Planning and Review) and the Regulatory Flexibility Act. These two mandates are addressed together as many of their requirements are duplicative. In addition, many of their requirements duplicate those of the MSA and/or NEPA; therefore, this section contains several references to previous sections of this document.

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 consideration of alternatives that may minimize significant adverse impacts on small entities, while still achieving the stated objective of the action. When an agency publishes a proposed rule, it must either, (1) certify that the proposed action will not have a significant adverse impact on a substantial number of small entities and provide a supporting factual basis, or, (2) if such a certification cannot be supported by a factual basis, prepare and make available for public review an Initial Regulatory Flexibility Analysis that describes the impact of the proposed rule on small entities.

The sections below provide the supporting analysis to assess whether the preferred alternatives will have a "significant impact on a substantial number of small entities."

8.10.1. Basis and Purpose of the Rule

This action is taken under the authority of the MSA and regulations at 50 CFR part 648. Section 4.1 of this document summarizes the purpose and need and objectives of this action.

As described in sections 4 and 5, the proposed amendment alternatives are consistent with the best scientific information available and are intended to prevent overfishing.

Additional non-preferred alternatives were also considered. All alternatives are described in detail in section 5. For the purposes of the RFA, only the preferred alternatives and those non-preferred alternatives which would minimize negative impacts to small businesses are considered.

8.10.2. Description and Number of Regulated Entities

The entities (i.e., the small and large businesses) that may be affected by this action include fishing operations with commercial bluefish permits, and those with federal party/charter permits for

bluefish. Private recreational anglers are not considered "entities" under the RFA, thus economic impacts on private anglers are not considered here.

For RFA purposes only, NMFS established a small business size standard for businesses, including their affiliates, whose primary industry is commercial fishing (50 CFR §200.2). A business primarily engaged in commercial fishing is classified as a small business if it is independently owned and operated, is not dominant in its field of operation (including its affiliates) and has combined annual receipts not in excess of $11 million, for all its affiliated operations worldwide. A business primarily engaged in for-hire fishing is classified as small business if it has combined annual receipts not in excess of $8 million.

In order to identify firms, vessel ownership data,[42] which have been added to the permit database, was used to identify all the individuals who own fishing vessels. With this information, vessels were grouped together according to common owners. The resulting groupings were then treated as a fishing business, for purposes of identifying small and large firms.

According to the ownership database, 526 affiliate firms landed bluefish during the 2018-2020 period, with 521 of those business affiliates categorized as small business (Table 41).[43] The three-year average (2018-2020) combined gross receipts (all species combined) for all small entities only was $197,251,017 and the average bluefish receipts was $899,490; this indicates that bluefish revenues contributed approximately 0.46% of the total gross receipts for these small entities (Table 41). In addition, there were 5 firms categorized as large entities with a combined gross receipts of $110,918,617 and combined bluefish receipts of $19,641, as such, bluefish receipts as a proportion of gross receipts are 0.02% for those large firms.

A business primarily engaged in for-hire fishing activity is classified as a small business if it has combined annual receipts not in excess of $7 million. According to the vessel ownership data 361 for-hire affiliate firms generated revenues from fishing recreationally for various species during the 2018-2020 period; all of those business affiliates are categorized as small business.[44] It is not possible to derive what proportion of the overall revenues for these for-hire firms came from specify fishing activities (e.g., summer flounder, scup, black sea bass, bluefish, groundfish, golden tilefish, weakfish, striped bass, tautog, pelagics). Nevertheless, given the popularity of bluefish as a recreational species in the Mid-Atlantic and New England regions, it is likely that revenues generated from bluefish may be significant for some if not all of these firms. The three-year average (2018-2020) combined gross receipts (all for-hire fishing activity combined) for the small entities was $49,916,903, ranging from less than $10,000 for 105 entities (lowest value $46) to over $1,000,000 for 8 entities (highest value $3,587,272).

8.10.3. Expected Economic Impacts of Proposed Action on Regulated Entities

The expected impacts of the proposed action were analyzed by employing quantitative approaches to the extent possible. Effects on profitability associated with the proposed management measures should be evaluated by looking at the impact of the proposed measures on individual business

[42] Affiliate database for 2018-2020 was provided by the NMFS NEFSC Social Science Branch. This is the latest affiliate data set available for analysis.

[43] For the 2018-2020 period, 1,507 firms held Federal Open Access Commercial Bluefish permits.

[44] For the 2018-2020 period, 708 firms held Federal Open Access Charter/Party permits.

entities' costs and revenues. Changes in gross revenues were used as a proxy for profitability. Where quantitative data were not available, qualitative analyses were conducted.

Expected Impacts on Commercial Entities

As previously stated, 526 affiliates reported revenue from commercial bluefish landings during the 2018-2020 period. Based on combined receipts in 2020, 521 of these commercial entities were classified as small businesses and 5 were classified as large businesses. When considering affiliates which reported revenues from commercial fishing activities, the three-year average (2018-2020) annual combined gross receipts from all commercial fishing activity was $197,251,017 for all combined affiliates classified as small businesses and $110,918,617 for all combined affiliates classified as large businesses. Average annual receipts from commercial landings of bluefish were $899,490 for the combined small businesses and $19,641 for the combined large businesses. On average, bluefish revenues contributed approximately 0.46% to the total gross receipts for the small businesses and 0.02% for the large businesses. Due to the slightly higher dependence on bluefish for the small businesses compared to the large businesses, the small businesses may feel the effects of this action to a greater extent than the large businesses. However, when considered as a group, the small businesses did not rely on bluefish for a notable amount of their annual income; though when considered individually, some businesses are more dependent on this species than others.

Under the proposed action for bluefish, the impacts of the preferred alternatives related to the commercial sector for all VECs fall within the range of slight - to slight +. All alternatives have the potential to impact the commercial sector, however the commercial allocations to the states and the rebuilding plan dictate the process for developing future landings limits. Given the over fished status, rebuilding the bluefish stock should lead to larger biomass levels and ultimately, higher quotas. For a detailed discussion of the economic impacts tied to the alternatives addressing the commercial section, see section 7.4.

The smaller of the small business affiliates (based on annual receipts from all commercial fishing activities) tended to have a greater reliance on bluefish than the larger small business affiliates. These smaller affiliates may experience the negative impacts of the proposed action for bluefish to a greater extent than the larger affiliates which derive a lower proportion of their annual revenues from bluefish.

Table 41: Average annual total gross receipts from all commercial fishing activities during 2018-2020 for the small businesses/affiliates likely to be affected by the proposed action, as well as annual receipts from commercial landings of bluefish.

Revenue (millions of dollars)	Count of affiliates	2018-2020 avg. gross receipts (all firms combined)	2018-2020 avg. bluefish receipts (all firms combined)	Bluefish receipts as proportion of gross receipts
<0.5	436	45,371,837	663,189	1.46%
0.5 to 1	35	25,477,653	75,053	0.29%
1 to <2	31	46,436,705	94,944	0.20%
2 to <5	14	44,168,617	57,187	0.13%
5-11	5	35,796,205	9,116	0.03%
All affiliates	521	197,251,017	899,490	0.46%

Note: The businesses are grouped based on their average annual revenue from commercial fishing during 2016-2018. Businesses were classified as small or large based on their revenues in 2018 only. Only those businesses which reported commercial fishing revenue during 2018-2020 are shown.

Because all permit holders may not be actively fishing and land any bluefish, the more immediate impact of the rule may be felt by the 526 firms that are active participants.[45]

As indicated above in this RFA, the primary units of observation when performing the threshold analysis (presented below) are the small business firms identified above. However, the affiliate database used to identify small/large business firms that have recently participated in the bluefish fishery does not contain detailed ownership data for business entities in the South Atlantic Region. To further assess the impacts of the proposed regulations, South Atlantic Trip Ticket Report data was used identify vessels that have recently participated in the bluefish fishery, given not all Trip Ticket data is captured in the dealer database. South Atlantic Trip Ticket Reports indicate that on average 703 vessels (663 in 2018, 704 in 2019, and 742 in 2020) landed bluefish in North Carolina for the 2018-2020 period (Alan Bianchi, NC Division of Marine Fisheries, pers. comm., 2021). Some of these vessels may be included among the business entities identified as landing bluefish in the affiliate data during the 2018-2020 period, as such, double counting is possible. In addition, up to 444 vessels on average (433 in 2018, 460 in 2019, and 439 in 2020) may have landed bluefish in Florida's east coast for the 2018-2020 period (Steve Brown, Florida Fish and Wildlife

[45] An active participant was defined as being any firm that reported having landed one or more pounds of bluefish in the Northeast affiliate data during calendar year 2016-2018. The dealer data used to create the affiliate data file covers activity by unique vessels that hold a Federal permit and provides summary data for vessels that fish exclusively in state waters. It is possible that if a company owns a state-waters only boat and a federal boat, that connection will not be detected in the affiliation data. Vessels that fish for bluefish in state waters only and sell their product to non-federal dealers will not be captured in the affiliate data at the firm level. Therefore, revenues for all firms in the affiliate data base may be underestimated which could lead to a larger number of small entities than actually exist.

Conservation Commission, pers. comm., 2021). Bluefish landings in Georgia and South Carolina were very small in the 2018-2020 period; as such, it was assumed that no commercial bluefish fishing activity for those two states took place in 2018-2020.

Vessels that landed bluefish in North Carolina during the 2018-2020 period generated on average $634,551 in revenues from all commercial fishing activity combined.

Vessels that landed bluefish in Florida's east coast during the 2018-2020 period generated on average $13,602,870 in revenues from all commercial fishing activity combined. For those entities, bluefish landings contribute with $214,678 or 1.58% of the total value of all fishing activity.

Expected Impacts on Recreational Entities

Under the proposed action for bluefish, the recreational allocation will increase from 83% to 86%. Recreational angler satisfaction and party/charter revenues are expected to be higher when compared to 2018-2020, especially given the rebuilding plan will lead to larger estimates of biomass. As previously stated, 361 for-hire affiliate firms generated revenues from recreational fishing for various species during 2018-2020. All of those business affiliates are categorized as small businesses. It is not possible to derive what proportion of the overall revenues for these for-hire firms came from fishing activities for an individual species. Nevertheless, given the popularity of bluefish as a recreational species in the Mid-Atlantic and New England, revenues generated from this species is likely very important for many of these firms at certain times of the year. The three-year average (2018-2020) combined gross receipts (all for-hire fishing activity combined) for these small entities was $49,916,903, ranging from less than $10,000 for 105 entities (lowest value $46) to over $1,000,000 for 8 entities (highest value $3.6 million).

It is difficult to predict with certainty how the bluefish RHL will affect demand for party/charter boat trips compared to 2019 and 2020, which will in part be driven by the 3 and 5-fish bag limits for shore/private and for-hire anglers, respectively. These management measures may continue to result in anglers transferring effort away from a species with more restrictive measures towards those with more liberal measures, resulting in little change in overall fishing effort or demand for party/charter trips where multiple species can be caught together.

8.11. Regulatory Impact Review/E.O. 12866

Executive Order 12866 requires a Regulatory Impact Review in order to enhance planning and coordination with respect to new and existing regulations. This Executive Order requires the Office of Management and Budget to review regulatory programs that are considered to be "significant."

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:

- Have an annual effect on the economy of $100 million or more,
- Adversely affect in a material way the economy, a sector of the economy, productivity, jobs, the environment, public health or safety, or State, local, or tribal governments or communities,
- Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency,
- Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof, or

- Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

As shown in section 0, the collective sum of the commercial ex-vessel value bluefish is much less than $100 million per year. Assuming average 2018-2020 price per pound for bluefish (i.e., $0.90, adjusted to 2020 values), and assuming the commercial quotas in 2021 is fully landed, the maximum ex-vessel value could be $2.49 million in 2021. These estimates reflect the recent fishery performance despite the 64% decrease in commercial quota from 2019 to 2020 and 2021 because the commercial sector has been significantly under harvesting in recent years (section 6.4.1).

Data on for-hire revenues by species are not available. As previously stated, the NEFSC affiliate database suggests the three-year average (2018-2020) combined gross receipts (all for-hire fishing activity combined) for these small entities was $49,916,903, ranging from less than $10,000 for 105 entities (lowest value $46) to over $1,000,000 for 8 entities (highest value $3.6 million). The contribution of bluefish to these revenues is unknown. Although bluefish are important recreational species, it is unlikely that they accounted for most of the $49,916,903 in for-hire revenues for the potentially impacted for-hire affiliates.

Based on this information, it is extremely unlikely that the preferred alternatives would have an annual impact on the economy of $100 million or more.

This action is consistent with previous actions by the Council and NMFS, and there is no known conflict with other agencies. There are no known impacts on any entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof. There are no known conflicts with other legal mandates, the President's priorities, or the principles set forth in Executive Order 12866. The preferred alternatives are largely based on measures previously implemented for other Council managed species and are not precedent-setting or novel.

When considering the economic impacts of the alternatives under the Regulatory Flexibility Act and Executive Order 12866, consideration should also be given to those non-preferred alternatives which would result in higher net benefits or lower costs to small entities while still achieving the stated objective of the action. See section 7 for a discussion on the impacts related to the non-preferred alternatives.

8.12. Conflict with Other Federal Rules

This action does not duplicate, overlap, or conflict with other Federal rules.

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10. LIST OF AGENCIES AND PERSONS CONSULTED

In preparing this document, the Council consulted with NMFS, the New England and South Atlantic Fishery Management Councils, USFWS, and the states of Maine through North Carolina through their membership on the Mid-Atlantic and New England Fishery Management Councils. The advice of NMFS GARFO personnel was sought to ensure compliance with NMFS formatting requirements.

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11. APPENDIX A

To assess the economic impacts of the various rebuilding alternatives as well as estimation of revenues under various landing scenarios, ex-vessel bluefish prices require estimation. In lieu of well-developed market supply and demand models, an inverse-demand based price model is used to estimate ex-vessel bluefish prices. Though price and quantity demanded are jointly determined such that Gauss Markov assumptions of exogeneity are violated, here, we assume harvest is weakly exogenous to ex-vessel price given the quota allocations and seasonal constraints which cause fishermen to maximize catch in order to maximize profits (Gordon 2020). This specification implies that the decision to fish is independent of ex-vessel prices. This assumption, as well as ex-vessel price models, are not uncommon in fishery economics literature. [46]

The Generalized Least Squares bluefish price model is given as:

$$(\log)\text{Ex-vessel Price}_t = \alpha + \beta_1 (\log)\text{Landings}_t + \text{AR}_t \qquad \text{(Equation A)}$$

where the dependent variable is the natural logarithm of average annual ex-vessel bluefish price [47] ($/lb.) and the dependent variable is the natural log of total annual bluefish landings, t is time (i.e., years) and AR is an autoregressive error term. The dependent and independent variables are logged because the relationship between ex-vessel prices and landings is not expected to be strictly linear such that the slope of the regression is not assumed to be constant. The logged GLS model was

[46] Gordon (2020), Bloznelis (2018) and Tai (2017) offer thorough reviews of various price models and their respective methods.

[47] Prices were adjusted to 2020 constant dollars using the Annual, Seasonally Adjusted, Gross Domestic Implicit Price Deflator (2012=100) https://fred.stlouisfed.org/series/GDPDEF.

implemented in place of a logged OLS model as the error term is suggested to be serially correlated over time with a Durbin-Watson d statistic of 0.72. After the implementation of the Prais–Winsten GLS estimator, the Durbin-Watson statistic was transformed to 1.67. It should be noted that additional models were taken into consideration after autocorrelation was detected, including a Cochrane-Orcutt AR(1) regression, linear autoregressive integrated moving-average (ARIMA) specified models with AR(2-5), an OLS regression with the inclusion of a lagged ex-vessel price, and a separate OLS regression with a lagged landings variable. Given the dependence of the lagged OLS regression on the previous year's price, the lack of significance on the AR(n) coefficients when the lag is greater than one[48], along with the consideration of RMSE's, the Prais-Winsten GLS with an AR(1) error term was chosen. The Prais-Winsten was selected over the Cochrane-Orcutt given a lower RMSE and a Durbin-Watson statistic closer to 2. The Prais-Winsten GLS model parameters and results are shown in Table 42.

Table 42: Prais-Winsten Generalized Least Squares (GLS) logged ex-vessel bluefish price model results.

Variable	Coefficient	Standard Error	t	P>t	95% Confidence Interval	
Ln Landings	-0.543	0.0951	-5.71	0	-0.74	-0.35
Constant	7.753	1.435	5.40	0	4.78	10.73
ρ	0.688		**Durbin-Watson Statistic (original)**			0.72
R-squared	0.68		**Durbin-Watson Statistic (transformed)**			1.67
Number of Obs.	24		**Root Mean Square Error**			0.08

Both price and landings data were retrieved from the Commercial Fisheries Database (CFDERS) from 1996 to 2019. About 68% of the variability in logged average ex-vessel bluefish prices are explained by logged total annual landings. Modeling the inverse relationship between prices and landings aids in more precisely estimating revenues given various expected landing quantities. The logged price variables are retransformed using Duan's smearing method to avoid inciting heteroskedastic errors. Average realized ex-vessel prices and estimated prices by year are shown in Figure 24. Average annual predicted ex-vessel prices range from $0.55 to $0.98 per lb with an average price of $0.66/lb. Average realized prices range from $0.46 to $1.03/lb and average $0.66/lb across the time series.

[48] $\alpha = 0.01$

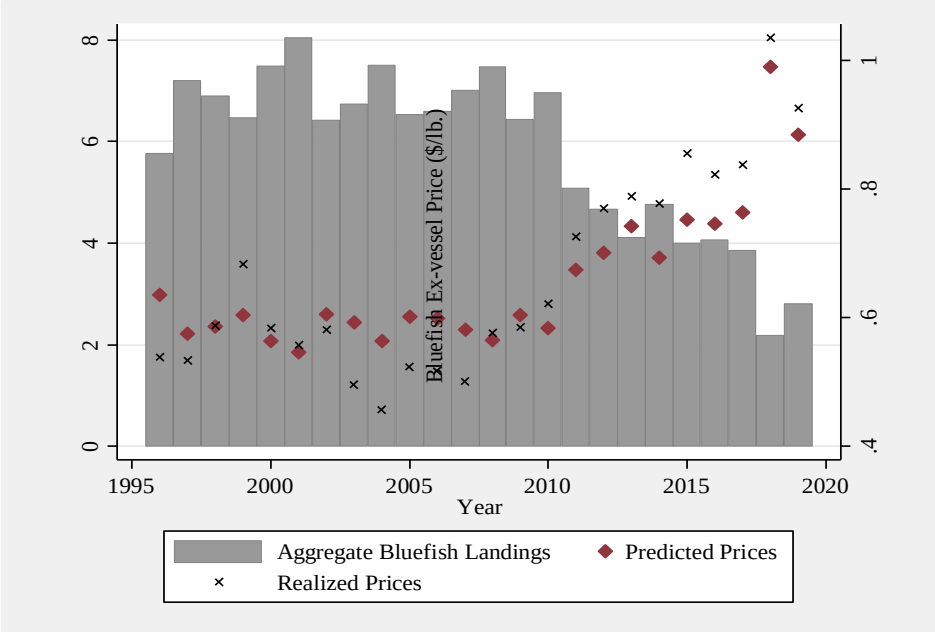

Figure 24: Realized and predicted ex-vessel bluefish prices and realized commercial bluefish landings by year (1996-2019).