

Specifications and Management Measures For:
Atlantic Mackerel (2016-2018, Including River Herring and Shad Cap);
Butterfish Mesh Rules; and
Longfin Squid Pre-Trip Notification System (PTNS)

Includes Environmental Assessment and
Initial Regulatory Flexibility Analysis

Prepared by the

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Submitted to NOAA: August 24, 2015

1.0 EXECUTIVE SUMMARY & TABLE OF CONTENTS

The Mid-Atlantic Fishery Management Council (Council) made several recommendations for specifications and management measures for the Atlantic **M**ackerel (“mackerel” hereafter), **S**quid¹, and **B**utterfish (collectively “MSB”) fisheries at its June 2015 meeting and herein submits them to the National Marine Fisheries Service (NMFS). The squid and butterfish fisheries are under multi-year specifications for 2015-2017 and while no changes to their catch specifications are considered, there are several minor management measure changes proposed for longfin squid² and butterfish. For mackerel, new multi-year specifications for 2016-2018 are proposed, along with the mackerel fishery’s river herring/shad (RH/S) cap for 2016-2018.

This document explains the potential actions and examines their potential impacts. The specification recommendations are consistent with the recommendations of the Council’s Scientific and Statistical Committee (SSC), which may be accessed at: <http://www.mafmc.org/ssc-meeting-documents/> (see May 2015 meeting summary). The SSC's acceptable biological catch (ABC) recommendations account for scientific uncertainty such that overfishing of managed stocks should be unlikely to occur. The preferred specifications described in this document also address management uncertainties and optimum yield considerations raised by the MSB Monitoring Committee (NMFS and Council staff) or otherwise brought to the Council's attention.

The proposed alternatives are expected to maintain positive benefits to the nation by maintaining the sustainability of the resources, achieving optimum yield, and should have no significant impacts on valued ecological components compared to the fishery as it was prosecuted in the previous year. Because none of the preferred alternatives are associated with significant impacts to the biological, social, economic, or physical environment, a "Finding of No Significant Impact" (FONSI) has been made and this document constitutes an Environmental Assessment (EA) to satisfy the impact analysis requirements of the National Environmental Policy Act (NEPA). A qualitative summary of the expected impacts related to all of the no action/status quo and preferred alternatives is provided in Table 1 (below).

In this document, catch quantities are the "*specifications*," commonly referred to as quotas. The longfin squid specifications are also divided up into trimesters, referred to as "*trimester quotas*" in this document. "*Management measures*" refer to other potential fishery controls such as closure thresholds, trips limits, and gear restrictions, which generally support the specifications and ensure that catch limits are not exceeded. A summary of the alternatives follows.

Alternative 1 – No Action, Which Would Maintain the Status Quo

Since the MSB fisheries have a rollover provision where the current measures remain in place until new measures are implemented, if no action is taken then the current specifications and management measures would remain in place. More detailed information on no action, i.e. the status quo, is presented in Section 5.

1 While squid refers to both longfin and *Illex* squid, only longfin squid are a subject of this action.

2 For longfin squid there was a scientific name change from *Loligo pealeii* to *Doryteuthis (Amerigo) pealeii*. To avoid confusion, this document will utilize the common name “longfin squid” wherever possible, but this squid is often referred to as "*Loligo*" by interested parties.

Alternative 2 – New 2016-2018 Mackerel Specifications (PREFERRED)

Currently the mackerel ABC is 40,165 mt and other catch limits and targets are based on that ABC. The SSC recommended a reduced ABC of 19,898 mt and this alternative would implement that ABC and associated measures. After accounting for Canadian catch, management uncertainty, and discards, the commercial quota (domestic annual harvest or DAH) would be lowered from 20,872 mt to 9,177 mt. The recreational annual catch target would be lowered from 1,397 mt to 614 mt. Other than the RH/S cap discussed below, no other management changes are proposed for mackerel.

Alternative 3 – New 2016-2018 River Herring and Shad (RH/S) Cap (PREFERRED)

Currently the RH/S cap starts at 89 mt and is potentially expandable to 155 mt if mackerel catches are greater than 10,000 mt. Related to the lower commercial mackerel quota proposed in this action (9,177 mt), this alternative would lower the RH/S cap to 82 mt.

Alternative 4 – Butterfish Mesh Requirement Adjustment (PREFERRED)

Currently a vessel must use 3-inch or greater mesh to possess more than 2,500 pounds of butterfish. This applies only to vessels with longfin squid-butterfish moratorium permits (the incidental trip limit is 600 pounds). This alternative would increase the trigger for when 3-inch mesh is required to 5,000 pounds. This alternative also clarifies that 5-inch (square or diamond) or greater strengtheners may be used outside the 3-inch mesh to avoid breaking nets during large hauls (industry reports they use these strengtheners already but the regulations are not clear that they are allowed).

Alternative 5 – Suspend the Longfin Squid Pre-Trip Notification System (PTNS) Requirement (PREFERRED)

Currently vessels with longfin squid-butterfish moratorium permits must use NMFS’ pre-trip notification system (PTNS) before making trips that can land more than 2,500 pounds of longfin squid (vessels with incidental permits are always limited to 2,500 pounds). New observer selection protocols have made this system unnecessary and potentially counterproductive, so this alternative would suspend the PTNS requirement for directed longfin squid fishing.

Table 1. Expected impacts of no action/status quo and preferred specifications

Status Quo and Preferred Alternatives	Valued Ecosystem Components/Environmental Dimensions				
	Managed Resource	Non-target Species	Human Communities	Protected Resources	Essential Fish Habitat
Alt 1- No action = Status Quo	mixed	low -	+	low -	low -
Alt 2 - Mackerel Specifications = 2014 ABC = 19,898mt; U.S. ABC = 11,009mt; DAH = 9,177mt; Rec Target = 614mt	low +	low +	low -	low +	low +
Alt 3 - RH/S Cap of 82mt	low +	low +	low -	low +	low +
Alt 4 - Butterfish Mesh Issues	0	0	low +	0	0
Alt 5 - Suspend Pre-Trip Notification for longfin squid	low +	low +	low +	0	0

("+" signifies a positive impact, "-" a negative impact, and "0" a neutral/similar impact compared to the year before. "low" indicates a likely small impact. Impacts for non-preferred alternatives are discussed in Section 7)

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2.0 LIST OF ACRONYMS, ABBREVIATIONS, ETC.

ABC	Acceptable Biological Catch
ACL	Annual Catch Limit
ACT	Annual Catch Target
ASMFC	Atlantic States Marine Fisheries Commission or Commission
ATGTRT	Atlantic Trawl Gear Take Reduction Team
B	Biomass
CFR	Code of Federal Regulations
CV	coefficient of variation
DAH	Domestic Annual Harvest
DAP	Domestic Annual Processing
DPS	Distinct Population Segment

EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
ESA	Endangered Species Act of 1973
F	Fishing Mortality Rate
FMP	Fishery Management Plan
FR	Federal Register
GB	Georges Bank
GOM	Gulf of Maine
IOY	Initial Optimum Yield
M	Natural Mortality Rate
MAFMC	Mid-Atlantic Fishery Management Council
MMPA	Marine Mammal Protection Act
MSA	Magnuson-Stevens Fishery Conservation and Management Act (as currently amended)
MSB	Atlantic Mackerel, Squid, Butterfish
MSY	Maximum Sustainable Yield
MT (or mt)	Metric Tons (1 mt equals about 2,204.62 pounds)
NE	Northeast
NEFSC	Northeast Fisheries Science Center
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service (NOAA Fisheries)
NOAA	National Oceanic and Atmospheric Administration
OFL	Overfishing Level
PBR	Potential Biological Removal
PTNS	Pre-Trip Notification System
RH/S	River herrings (blueback and alewife) and shads (American shad and hickory shad)
RSA	Research Set-Aside
SARC	Stock Assessment Review Committee
SAW	Stock Assessment Workshop
SNE	Southern New England
SSC	Scientific and Statistical Committee
TALFF	Total allowable level of foreign fishing
TRAC	Transboundary Resource Assessment Committee
US	United States
VTR	Vessel Trip Report

Note: "Mackerel" refers to "Atlantic mackerel" unless otherwise noted.

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4.0 THE ANNUAL SPECIFICATIONS PROCESS

4.1 Introduction

The Council manages the Atlantic mackerel, squid, and butterfish (MSB) fisheries with the Atlantic Mackerel, Squid, and Butterfish Fishery Management Plan (MSB FMP), pursuant to the Magnuson-Stevens Fishery Conservation and Management Act of 1976 (MSA) as currently amended. The MSB FMP requires the Council to set annual or multi-year specifications according to national standards specified in the MSA and has the following objectives: Enhance the probability of successful recruitment; Promote the growth of the commercial fishery; provide freedom and flexibility to all harvesters; provide marine recreational fishing opportunities; increase understanding of the conditions of the stocks and fisheries; and minimize harvesting conflicts. Related to these objectives, the Council has instituted a variety of management changes over the years in addition to annual specifications, which are summarized at <http://www.mafmc.org/msb/>.

These specifications are for 2016-2018 for mackerel (and its river herring/shad cap) and for an indeterminate amount of time for the other management measures.

The specifications process begins with recommendations from the Council's Scientific and Statistical Committee (SSC) for acceptable biological catches (ABC) that account for scientific uncertainty regarding stock status and productivity such that overfishing is unlikely. Annual catch limits are set equal to the ABCs, and if annual catch limits are exceeded paybacks will be required for mackerel and butterfish. The squids are exempted from paybacks due to their short lifecycle, but existing management measures are still designed to avoid overages - see <http://www.greateratlantic.fisheries.noaa.gov/regs/info.html> for a summary of existing regulations by fishery. To avoid ABC overages for mackerel and butterfish, the Council recommends annual catch targets (ACTs) that provide a buffer for management uncertainties and other considerations (e.g. optimum yield) not otherwise addressed. Proactive accountability measures (like in-season closures and closure buffers) help ensure that catch targets are not substantially exceeded for mackerel and butterfish, and that the ABCs are not exceeded for longfin squid and *Illex* squid.

The Council's SSC met May 13-14, 2015 in Baltimore, MD and recommended the ABCs for MSB species. The butterfish and squid ABCs were reviewed and re-endorsed since they are in multi-year specifications. The MSB Monitoring Committee met on May 21, 2015 to review the SSC's ABC recommendations and consider recommending additional measures to account for management uncertainty and other operational issues. The Council considered the SSC's and Monitoring Committee's recommendations, Council staff input, as well as public comments and testimony for specifications for all four species at its June 2015 meeting in Virginia Beach, VA. Both the SSC and the Council also considered input from the Council's MSB Advisory Panel in the form of fishery-performance reports constructed by the Advisory Panel (see May 2015 meeting materials at: <http://www.mafmc.org/ssc-meeting-documents/>). The Council also considered input from its RH/S Advisory Panel for the RH/S Cap.

This document serves as the submission to NMFS of the Council's recommendations for MSB specifications and management measures, and contains related analyses supporting the recommendations. The analysis of the proposed measures' environmental impacts (and their significance) is discussed in accordance with the National Environmental Policy Act (NEPA) and National Oceanic and Atmospheric Administration Order 216-6 formatting requirements for an Environmental Assessment. The proposed alternatives are expected to produce positive benefits to the nation by maintaining the sustainability of the resources and should have no significant impacts on valued ecological components compared to the fishery as it was prosecuted under the previous year's specifications. Because none of the preferred alternatives are associated with significant impacts to the biological, social or economic, or physical environment, a "Finding of No Significant Impact" (FONSI) has been made and this document constitutes an Environmental Assessment (EA) to satisfy the impact analysis requirements of NEPA.

4.2 Purpose and Need of the Action

The first purpose of this action is to set specifications for the mackerel fishery, including the RH/S cap for the mackerel fishery. This action is needed to prevent overfishing and achieve optimum yield in the MSB fisheries, while controlling the incidental (non-target) catch of RH/S. Per the MSA, optimum yield is defined as the amount of fish that will provide the greatest overall benefit to the nation based on the maximum sustainable yield as reduced by relevant economic, social, and/or ecological factors. The MSA also requires that bycatch be minimized to the extent practicable and provides the authority to conserve non-target species such as RH/S. The second purpose of this action is to consider minor modifications to butterfish and longfin squid regulations as requested by fishery participants. Related to this second purpose, this action is needed to determine if discards can be reduced without impacts to juvenile butterfish and to eliminate an outdated trip notification system.

5.0 WHAT ALTERNATIVES ARE CONSIDERED IN THIS DOCUMENT?

Introduction

No action or *the no action alternative* is equivalent to the current ("status quo") specifications³ because the current regulations contain a "roll-over" provision. This provision specifies that if NMFS fails to publish annual specifications before the start of the new fishing year, then the previous year's specifications remain in effect. The preferred alternatives were recommended by the Council after considering the recommendations of its SSC, recommendations from the MSB Monitoring Committee (Council and NMFS technical staff), input from the MSB Advisory Panel, input from the RH/S Advisory Panel, and public testimony and comment given the requirements of the MSA and the MSB FMP. Several alternatives are analyzed to facilitate consideration of a reasonable range of alternatives

³ Note on research set-asides (RSA): The RSA program has been suspended by the Council pending further review of its overall utility, so it is unlikely that any RSA quota will be utilized.

(per NEPA) and their impacts on the stocks and other valued ecosystem components, including socio-economic impacts on fishing communities. Below, first the no action alternative and then the preferred action alternatives are described.

5.1 Alternative 1: No Action, Which Would Maintain the Status Quo

Since the MSB fisheries have a rollover provision, if no action is taken then all the current specifications and management measures remain in place. The current MSB fisheries regulations are available at <http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&SID=1e9802ffddb05d0243d9c657fade956c&rgn=div5&view=text&node=50:12.0.1.1.5&idno=50#sp50.12.648.b>. NMFS has also created an overview document, available at <http://www.greateratlantic.fisheries.noaa.gov/regs/info.html>, but for the purposes of this document, no action has a specific meaning in relation to each of the action alternatives, as described below.

Mackerel Specifications **No Action** (i.e. the status quo)

Based on the SSC's recommendation (see May 2014 Meeting Summary at <http://www.mafmc.org/ssc> for details), the Council recommended and NMFS implemented a mackerel ABC of 40,165 mt for 2015. After Canadian catch, management uncertainty (10% buffer), and U.S. discards were accounted for, this translated into a commercial landings quota (called domestic annual harvest or DAH) of 20,872 mt and a recreational catch target of 1,397 mt (see table below).

Table 2. Summary 2015 Mackerel Specifications

2015 Mackerel Specifications (all numbers are in metric tons)	
Specification	Mackerel
Overfishing Limit (OFL)	Unknown
Total Acceptable Biological Catch (ABC) from SSC	40,165
U.S. ABC = Annual Catch Limit (ACL) (Canadian catch deducted)	25,039
Recreational Allocation (6.2% of ACL)	1,552
Recreational Annual Catch Target (10% less than allocation to account for management uncertainty)	1,397
Commercial Allocation (93.8% of ACL)	23,487
Commercial Annual Catch Target (10% less than allocation to account for management uncertainty)	21,138
Landings or "Domestic Annual Harvest" (1.26% less than Annual Catch Target to account for expected discards)	20,872

RH/S Cap **No Action** (i.e. the status quo)

For 2015 the Council recommended and NMFS implemented a RH/S cap that is set at 89 mt initially, but if mackerel landings surpass 10,000 mt then the cap would increase to 155 mt, as long as the initial cap had not been surpassed (i.e. once the cap closes the fishery it will stay closed for the remainder of the year). 89 mt was the median of extrapolated catch by vessels landing over 20,000 pounds of mackerel over 2005-2012. 155 mt was the median if the RH/S ratio from each year 2005-2012 is

applied to the 2015 mackerel landings quota (20,872 mt). The two-phase system was proposed by the Council so that the incentive for the mackerel fishery to avoid RH/S remains strong if mackerel catches are lower or higher. A 155 mt RH/S cap should allow the fishery to catch its proposed mackerel quota (20,872 mt) in 2015 if the ratio of RH/S catch to total catch is relatively low compared to 2005-2012 (based on observed trips that land greater than 20,000 pounds of mackerel).

The Council was concerned that if mackerel catches are relatively low, then the incentive to avoid RH/S may be reduced because even if the ratio of RH/S catch is relatively high, with low mackerel landings the cap would still be calculated to be low. Thus the Council included the provision that the cap starts out lower, at 89 mt (was the median of actual RH/S catches by the mackerel fishery 2005-2012) so that there is still a strong incentive to avoid RH/S catches even at low levels of mackerel catch. Once cap trips were estimated to have caught 95% of then-in-effect RH/S cap (89 mt or 155 mt), then the directed mackerel fishery would be closed and a 20,000 pound mackerel trip limit would be instituted for the remainder of the year.

Butterfish Mesh No Action (i.e. the status quo)

Vessels possessing 2,500 pounds (1.13 mt) or more of butterfish harvested in or from the EEZ may only fish with nets having a minimum codend mesh of 3 inches diamond mesh, inside stretch measure, applied throughout the codend for at least 100 continuous meshes forward of the terminus of the net, or for codends with less than 100 meshes, the minimum mesh size codend shall be a minimum of one-third of the net, measured from the end of the codend to the headrope.

With no action there would also continue to be some ambiguity whether strengtheners are allowed. Currently the regulations state: *(c) Mesh obstruction or constriction. The owner or operator of a fishing vessel shall not use any mesh construction, mesh configuration, or other means that effectively decreases the mesh size below the minimum mesh size, except that a liner may be used to close the opening created by the rings in the aftermost portion of the net, provided the liner extends no more than 10 meshes forward of the aftermost portion of the net. The inside webbing of the codend shall be the same circumference or less than the outside webbing (strengtheners). In addition, the inside webbing shall not be more than 2 ft (61 cm) longer than the outside webbing.* It is not clear whether the current usage of 5 inch strengtheners would constitute a violation of this regulation.

Pre-Trip Notifications System (PTNS) No Action (i.e. the status quo)

A vessel issued a longfin squid/butterfish moratorium permit, must, for the purposes of observer deployment, have a representative provide notice to NMFS of the vessel name, vessel permit number, contact name for coordination of observer deployment, telephone number or email address for contact; and the date, time, port of departure, and approximate trip duration, at least 48 hours, but no more than 10 days, prior to beginning any fishing trip. If such a vessel has not provided the notification it cannot retain more than 2,500 pounds of longfin squid. A vessel that has provided appropriate notification to NMFS may only embark on a directed longfin squid trip without an observer if a vessel representative has been notified by NMFS that the vessel has received a waiver of the observer requirement for that trip. NMFS notifies vessel representatives whether the vessel must carry an observer, or if a waiver has been granted for the specified trip within 24 hours of the vessel's notification.

5.2 Alternative 2: New 2016-2018 Mackerel Specifications (PREFERRED)

Note: Like recent years, the quota available to Joint Venture Processing (JVP) is zero and the quota available for foreign fishing (the total allowable level of foreign fishing or TALFF), is also zero since the U.S. fishery has the capacity to fully harvest the quota if mackerel are available (as shown in Amendment 11's capacity analyses).

Alternative 2 (see table below) is a preferred alternative because it utilizes the current SSC ABC recommendation, and conforms to the MSB FMP in terms of how specifications are set for the commercial and recreational fisheries. It is based on the SSC-recommended ABC of 19,898 mt, which resulted from the SSC's review of a management strategy evaluation conducted for the Council under contract (Wiedenmann 2015 - available at http://www.mafmc.org/s/Mackerel_ABC_reportOpt-k89s.pdf). The SSC concluded that the mackerel stock is in a depleted state relative to historical levels of abundance and that the foundation used previously to establish ABC (which assumed a sustainable catch in the period 1978-2013) was no longer valid. The SSC used 50% of median catch to calculate the ABC because the management strategy evaluation results suggested this method came closest to meeting, while not exceeding, the acceptable probability of overfishing from the Council's risk policy. The median value of the long term mackerel catch series (1978-2014) for mackerel is 39,797 mt. Accordingly, the SSC recommended an ABC of half that, 19,898 mt for 2016-2018 (see <http://www.mafmc.org/s/May-2015-SSC-Report.pdf> for additional details). An alternative higher than the status quo was not evaluated because it would not be allowed by the MSA.

To get the portion of the total ABC available for the U.S. ABC, the expected Canadian catch must be accounted for and deducted. Last year the Council recommended using the Canadian quota (10,000 mt for 2014) plus assumed discards (126 mt) plus 5,000 mt for possible unreported catch for a total Canadian deduction of 15,126 mt. During the SSC's 2015 discussions they did not think it was appropriate to use the 5,000 mt assumed unreported catch in calculations (the 5,000 mt was a rough estimate based on previous discussions between Council staff and the now-retired Canadian mackerel assessment lead, Francois Gregoire). The MSB Monitoring Committee took the lead of the SSC in not using the 5,000 mt number, but as an acknowledgement that there is some uncertainty about Canadian catch, the MSB Monitoring Committee recommended deducting 8,889 mt for Canadian catch, which is the Canadian quota plus the same ratio that the Council has used for management uncertainty for the U.S. fishery (90% of 8,889 mt = 8,000 mt). This results in a proposed U.S ABC of 11,009 mt, and the FMP sets the Annual Catch Limit (ACL) equal to the ABC. The commercial allocation is 93.8% of the ACL, and after management uncertainty (10%) and discards (1.26%) are accounted for the commercial quota/landings limit, known as domestic annual harvest (DAH) would be 9,177 mt.

The recreational allocation is a fixed percentage in the FMP and based on the ACL is proposed to be 683 mt for 2016-2018. The MSB Monitoring Committee noted that recreational catch harvest estimates have been above 683 mt in 7 of the last 10 years (2005-2014). In the years that harvest was above 683 mt, the average overage was 276 mt. The MSB Monitoring Committee investigated where mackerel harvest was coming from, and it has been predominantly Massachusetts-Maine from May-October and mostly (88% in 2014 and 90% 2013) in state waters. Therefore any federal regulations would likely have minimal impact. Given the overall structure of the specifications and recent landings it appears unlikely that a substantial enough overage would occur that triggered paybacks (pound for pound if the overall ACL is exceeded since the stock status is unknown), but the MSB Monitoring Committee flagged that this issue warrants close monitoring (adjusting the

allocation/accounting for recreational catch would require a framework action). The Council followed this same approach in its recommendations in this preferred alternative.

Table 3. Preferred Mackerel Specifications

2016-2018 (all numbers are in metric tons)	
Specification	Mackerel
Overfishing Limit (OFL)	Unknown
Total Acceptable Biological Catch (ABC) from SSC	19,898
Canadian Deduction (Quota and 10% Management Uncertainty)	8,889
U.S. ABC = Annual Catch Limit (ACL) (Canadian catch deducted)	11,009
Recreational Allocation (6.2% of ACL)	683
Recreational Annual Catch Target (10% less than allocation to account for management uncertainty)	614
Commercial Allocation (93.8% of ACL)	10,327
Commercial Annual Catch Target (10% less than allocation to account for management uncertainty)	9,294
Landings or "Domestic Annual Harvest" (1.26% less than Annual Catch Target to account for expected discards)	9,177

5.3 Alternative 3: New 2016-2018 River Herring and Shad (RH/S) Cap (PREFERRED)

Recall from the no action discussion above that the current RH/S cap is 89 mt if the commercial mackerel catch is less than 10,000 mt in order to maintain a high incentive to avoid RH/S at low mackerel catches. Since the commercial mackerel catch is proposed to be below 10,000 mt – 9,177 mt at most (see table immediately above), the Council determined that a commensurate reduction for the RH/S cap was warranted. Reducing the RH/S cap by the same percentage as 9,177 mt is less than 10,000 mt, resulted in the recommended RH/S cap of 82 mt. The Council chose to recommend this reduced cap because it will maintain the incentive for the fishery to avoid RH/S at lower mackerel catch levels, and as long as the fishery maintains a relatively low RH/S encounter rate it should still be able to catch the 9,177 mt commercial mackerel quota (DAH). The median of the annual 2005-2012 RH/S catch ratios expanded up to 9,177 mt of mackerel landings was 70 mt, which means that as long the fishery can avoid RH/S as well as it did in half of the years from 2005-2012 then it should be able to land the full mackerel quota of 9,177 mt.

5.4 Alternative 4: Butterfish Mesh Requirement Adjustment (PREFERRED)

The 3-inch mesh requirement is designed to allow escapement of juvenile butterfish during directed butterfish fishing. For vessels with a longfin squid/butterfish moratorium permit, fishing with nets that have a smaller mesh size than 3 inches, they are allowed to retain up to 2,500 pounds of butterfish. This preferred alternative would increase the possession limit to 5,000 pounds of butterfish for vessels using mesh smaller than 3 inches. The Council received input from fishery participants that this change would allow them to keep more incidentally-caught butterfish when squid fishing with mesh smaller than 3 inches. Analysis of dealer data indicates that in 2014 (the first year of substantial directed butterfish fishing), trips landing more than 10,000 pounds of butterfish landed approximately 77% of the 2014 butterfish landings and trips greater than 100,000 pounds landed approximately 69% of the 2014 butterfish landings. This suggests that increasing the 3-inch mesh threshold to 5,000 pounds will still mean that most directed butterfish fishing will have to utilize 3-inch or greater mesh. However, the MSB Monitoring Committee found that one year of data was insufficient to fully characterize butterfish discarding patterns in the longfin squid fishery in the context of the developing butterfish fishery. In addition, the size composition of butterfish discards from the much smaller codend mesh size of the longfin squid fishery would need to be considered. Consequently, the MSB Monitoring Committee agreed that additional analyses (e.g., including observer data and more than a single year of data) would be necessary to determine whether increasing the 3 in. mesh threshold might have negative impacts on juvenile butterfish. Given A) data suggests that the majority of directed butterfish fishing would take place on trips above 100,000 pounds and not be impacted by moderately raising the threshold and B) the MSB Monitoring Committee's concerns regarding such an increase, the Council decided to only recommend a small increase (relative to the size of directed butterfish trips) up to 5,000 pounds. Future analysis of observer data can track whether this small change alters butterfish discard patterns.

This alternative also clarifies that 5-inch (square or diamond) or greater mesh size strengtheners may be used outside the 3-inch mesh to avoid breaking nets during large hauls (industry reports they use these strengtheners already but the regulations are not clear that they are allowed).

5.5 Alternative 5: Suspend the Longfin Squid Pre-Trip Notification System (PTNS) Requirement (PREFERRED)

This preferred alternative would suspend (indefinitely) the longfin squid Pre-Trip Notification System (PTNS) requirement for vessels with longfin squid moratorium permits that want to retain more than 2,500 pounds of longfin squid. The requirement was implemented via Amendment 10 to improve the selection process of vessels being observed for purposes of monitoring the longfin squid fishery's butterfish cap. However, the new Standardized Bycatch Reporting Methodology has meant that observers must adhere to a region/gear intercept selection procedure so NMFS can no longer use the PTNS system to select vessels. In addition, vessels have been using the waivers from PTNS to refuse observers at the dock. While NMFS has recently clarified that such refusals are not legal, given that the notification requirement no longer serves a conservation purpose (and may be impeding conservation related to observer refusals), and causes logistical problems for fishery participants (they cannot quickly sail if they hear about a good concentration of fish or suddenly have good weather), the Council has recommended that the PTNS requirement for the longfin squid fishery be suspended. This action has been endorsed by the MSB Monitoring Committee and the NMFS Observer Program.

5.6 Considered but Rejected Alternatives

Generally a range of alternatives is analyzed for each measure being considered for modification via the MSB specifications process. In this case that would mean a range of mackerel specifications, a range of river herring and shad caps, and a range of butterfish incidental catch limits in the squid fishery. For reasons discussed below, in this specifications process additional alternatives were considered but rejected and not further analyzed, and the no action and preferred alternatives were judged to constitute sufficient ranges for primary consideration.

Additional Mackerel Specifications

The MSA specifies that Councils may not select catch limits that exceed the advice of their SSCs, and the 19,898 mt preferred ABC follows the recommendation of the Council's SSC: An ABC of 19,898 mt was determined by the Council's SSC to constitute the best available science for avoiding overfishing until a new assessment is completed. Given the preferred ABC represents a drop of slightly more than 50% and is the recommendation of the SSC, an even lower ABC was considered but rejected and not further analyzed. Higher ABCs would have too high a risk of overfishing, and lower ABCs would be inconsistent with the FMP by interfering with meeting optimal yield from the mackerel fishery, so such alternatives were considered but rejected. In addition, mackerel specifications that were substantially lower than the preferred could essentially constitute a shutdown of fishing, and this action is designed to manage fishing, not shut it down.

Additional River Herring and Shad (RH/S) Caps

The policy goal of the Council with the RH/S cap is to maintain pressure on the mackerel fishery to avoid RH/S. The current RH/S cap for mackerel landings under 10,000 mt is 89 mt, and the new landings quota for mackerel (DAH) is proposed to be 9,177 mt. Given the policy goal of the Council, slightly lowering the RH/S cap given mackerel landings will not exceed 9,177 mt (i.e. will be less than 10,000 mt) is the only logical option given the lack of biological productivity information for RH/S. Higher or lower amounts than 82 mt would not match the policy goal of the Council for this discretionary measure. Higher RH/S caps would not sufficiently address incidental catch of these ecologically important species and lower RH/S caps would interfere with meeting optimal yield from the mackerel fishery, so such alternatives were considered but rejected. In addition, RH/S specifications that were substantially lower than the preferred could essentially constitute a shutdown of fishing, and this action is designed to manage fishing, not shut it down.

Additional Butterfish Incidental Catch Trip Limits

While industry requested a larger increase to this limit, a larger increase would require analysis that was beyond the scope of the annual specifications process in terms of determining potential impacts to butterfish. The Council could consider additional changes to this trip limit through a framework action or perform additional analysis before the next annual specifications process, but within the time requirements of this annual specifications process the only reasonable alternative to analyze was the preferred modest increase that would be very unlikely to cause any negative impacts for butterfish. Higher small mesh (less than 3-inch) butterfish trip limits might lead to excessive mortality on juveniles while lower trip limits would interfere with meeting optimal yield from the butterfish fishery and potentially cause more discarding, so such alternatives were considered but rejected.

6.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT AND FISHERIES

This section identifies and describes the *valued ecosystem components* (Beanlands and Duinker 1984) that comprise the affected environment and may be affected by the alternatives proposed in this document. The valued ecosystem components are identified and described here as a means of establishing the context for the impact analysis that will be presented in Section 7's "Analysis of Impacts." The significance of the various impacts of the proposed alternatives on the valued ecosystem components are also assessed from a cumulative effects perspective at the end of Section 7. The valued ecosystem components are:

1. Managed resources (Atlantic mackerel, longfin squid and *Illex* squid, and butterflyfish)
2. Habitat including EFH for the managed resources and non-target species
3. Endangered and other protected resources
4. Other non-target species
5. Human communities

Overviews of the managed species and of the physical environment are described first, to establish the context for the valued ecosystem components. Impacts of the alternatives on the physical environment are addressed through analysis of impacts on habitat, as most of the impacted physical environment comprises EFH for various species.

6.1 Description of the Managed Resources

Mackerel

Atlantic mackerel is a semi-pelagic/semi-demersal (may be found near the bottom or higher in the water column) schooling fish species primarily distributed between Labrador (Newfoundland, Canada) and North Carolina. Additional life history information is detailed in the Essential Fish Habitat (EFH) document for the species, located at: <http://www.nefsc.noaa.gov/nefsc/habitat/efh/>.

The status of Atlantic mackerel is unknown with respect to being overfished or not, and unknown with respect to experiencing overfishing or not. Recent results from the NEFSC Spring Trawl survey (the spring survey catches the most mackerel) are highly variable but the 2014 value was the lowest since 1983. The survey indices are graphed in the "NEFSC Biological Update" that is created as part of the SSC's ABC-setting process, and are available at: <http://www.mafmc.org/ssc-meeting-documents/> (see May 2015 Meeting Materials).

Butterfish

Atlantic butterfish is a semi-pelagic/semi-demersal schooling fish species primarily distributed between Nova Scotia, Canada and Florida. Since the rationale for not considering a wider range of possession limits for butterfish for mesh less than 3 inches is a concern about catching/discarding too many small butterfish, some additional life history information on butterfish is provided, all taken from the butterfish source EFH document.

Butterfish, are most abundant from the Gulf of Maine to Cape Hatteras and are fast-growing, short-lived, pelagic fishes that form loose schools. They winter near the edge of the continental shelf in the Middle Atlantic Bight and migrate inshore in the spring into southern New England and Gulf of Maine waters. During the summer, butterfish occur over the entire mid-Atlantic shelf from sheltered bays and estuaries out to about 200 m. In late fall, butterfish move southward and offshore in response to falling water temperatures.

Butterfish are short-lived and grow rapidly; few individuals live beyond 3 years and most are sexually mature at 1-2 years of age. The maximum age reported is 6 years. Juvenile butterfish range from 16 mm to about 120 mm. During their first year, they grow to 76-127 mm, or about half their adult size. Early-spawned individuals are 76-102 mm in the fall; late-spawned individuals are 51-76 mm in the fall and 76-127 mm the following spring. Adult butterfish range from about 120 mm to 305mm with an average length of 150-230 mm. Approximately half of 120 mm fish are mature for butterfish collected on the northeast shelf (1986-1989), which corresponds to an age of about 1 year.

Additional life history information is detailed in the EFH document for the species, located at: <http://www.nefsc.noaa.gov/nefsc/habitat/efh/>.

The status of butterfish is not overfished (above target biomass) with no overfishing occurring according to a recently accepted assessment (NEFSC 2014). The assessment summary is available at: <http://nefsc.noaa.gov/publications/crd/crd1403/>.

Longfin Squid

Longfin squid is a semi-pelagic/semi-demersal schooling cephalopod species primarily distributed between Georges Bank and Cape Hatteras, NC. Additional life history information is detailed in the EFH document for the species, located at: <http://www.nefsc.noaa.gov/nefsc/habitat/efh/>.

Based on a new biomass reference point from a 2010 SAW-SARC assessment, the longfin squid stock was not overfished in 2009, but overfishing status was not determined because no overfishing threshold was recommended (though the assessment did describe the stock as “lightly exploited”). The assessment documents are available at: <http://www.nefsc.noaa.gov/saw/reports.html>. Recent results from the NEFSC Trawl surveys are highly variable, and are graphed in the “NEFSC Biological Update” that is created as part of the SSC ABC-setting process. These are available at: <http://www.mafmc.org/ssc-meeting-documents/> (see May 2014 Meeting Materials).

Illex Squid

Illex squid is a semi-pelagic/semi-demersal schooling cephalopod species distributed between Newfoundland and the Florida Straits. Additional life history information is detailed in the EFH document for the species, located at: <http://www.nefsc.noaa.gov/nefsc/habitat/efh/>.

The status of *Illex* is unknown with respect to being overfished or not, and unknown with respect to experiencing overfishing or not. Recent results from the NEFSC Trawl surveys are highly variable, and are graphed in the “NEFSC Biological Update” that is created as part of the SSC ABC-setting process. These are available at: <http://www.mafmc.org/ssc-meeting-documents/> (see May 2014 Meeting Materials).

Since none of the alternatives in this document affect the *Illex* squid fishery (*Illex* is in multi-year specifications for 2015-2017), no further information on *Illex* squid or the *Illex* squid fishery is provided, but additional information can be found in the EA for the 2015-2017 *Illex* specifications, available at:

<http://www.greateratlantic.fisheries.noaa.gov/regs/2015/March/15smbspecs20152017fr.html>.

6.2 Physical Environment

Climate, physiographic, and hydrographic differences separate the Atlantic Ocean from Maine to Florida into the New England-Middle Atlantic Area and the South Atlantic Area (division/mixing at Cape Hatteras, NC). The MSB fisheries are prosecuted in the New England-Middle Atlantic Area. The inshore New England-Middle Atlantic area is fairly uniform physically and is influenced by many large coastal rivers and estuarine areas. The continental shelf (characterized by water less than 650 ft. in depth) extends seaward approximately 120 miles off Cape Cod, narrows gradually to 70 miles off New Jersey, and is 20 miles wide at Cape Hatteras. Surface circulation is generally southwesterly on the continental shelf during all seasons of the year, although this may be interrupted by coastal indrafting and some reversal of flow at the northern and southern extremities of the area. Water temperatures range from less than 33 °F from the New York Bight north in the winter to over 80 °F off Cape Hatteras in summer.

Within the New England-Middle Atlantic Area, the principal area within which the MSB fisheries are prosecuted, is the Northeast Shelf Ecosystem which includes the area from the Gulf of Maine to Cape Hatteras, extending from the coast seaward to the edge of the continental shelf, including the slope sea offshore to the Gulf Stream. A number of distinct subsystems comprise the region. The Gulf of Maine is an enclosed coastal sea, characterized by relatively cold waters and deep basins, with 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 fast-moving currents. The Mid-Atlantic Bight is comprised of the sandy, relatively flat, gently sloping continental shelf from southern New England to Cape Hatteras, NC. Detailed information on the affected physical and biological environments inhabited by the managed resources is available in Stevenson et al. (2006).

Ecosystem Considerations

The Council has engaged its SSC to help the Council:

- Develop ecosystem level goals, objectives, and policies;
- Incorporate ecosystem structure and function in FMPs to account for ecological sustainability;
- Anticipate and/or respond to shifts in ecological conditions and/or processes; and
- Consider evolving current FMPs into regional ecosystem-based plans.

The Council is currently developing ecosystem policies with its SSC. In the meantime, this section provides background on the broad ecosystem in which the Atlantic Mackerel, Squid, and Butterfish fisheries generally take place. This section is generally adapted from the “Ecosystem Status Report for the Northeast U.S. Continental Shelf Large Marine Ecosystem” (Ecosystem Assessment Program 2011 - <http://www.nefsc.noaa.gov/publications/crd/crd1207/crd1207.pdf>). The Council's SSC may also take ecosystem factors into account when setting ABCs.

The Northeast U.S. Continental Shelf Large Marine Ecosystem is a dynamic, highly productive, and intensively studied system providing a broad spectrum of ecosystem goods and services. This region, encompassing the continental shelf area between Cape Hatteras and the Gulf of Maine, spans approximately 250,000 km² and supports some of the highest revenue fisheries in the U.S. The system historically underwent profound changes due to very heavy exploitation by distant-water and domestic fishing fleets. Further, the region is experiencing changes in climate and physical forcing that have contributed to large-scale alteration in ecosystem structure and function. Projections indicate continued future climate change related to both short and medium terms cyclic trends as well as non-cyclic climate change. NMFS most recently provided a Fall 2014 Ecosystem Status update, available at <http://www.nefsc.noaa.gov/ecosys/advisory/current/> with the following summary:

-Sea surface temperature (SST) in the Northeast Shelf Large Marine Ecosystem during the first half of 2014 continued to be moderate compared to the record high temperatures that occurred in 2012; however, temperatures remain above the long-term mean based on both contemporary satellite remote-sensing data and ship-board measurements.

-This moderating effect in temperature was not uniform over the ecosystem. The northern ecoregions of the Gulf of Maine and Georges Bank remained relatively warm whereas the Middle Atlantic Bight has cooled to a greater extent.

-Spring survey hydrocast data indicate that surface and bottom temperatures remain above average over most of the region, although temperatures are moderated relative to the past few years. There is some evidence of cooling in the central Middle Atlantic Bight.

-The spring bloom on Georges Bank was of average size and timing, which was in contrast to the Gulf of Maine spring bloom, which was poorly developed and below detection limits.

-Spring thermal transition dates for 2014 continue to be among the earliest dates recorded over the past three decades.

-Projections for spring and fall thermal transition dates over the next 75 years suggest a shift in timing of 3-4 weeks, resulting in an approximate 2-month increase in summer length.

-The distribution of fish and invertebrate species sampled by the NEFSC bottom trawl survey have changed; utilizing data through the spring 2014 survey, species distributions both along- and across-shelf show mixed distribution movements over time.

Also see <http://nefsc.noaa.gov/ecosys/> for a variety of ecosystem considerations being investigated by the NMFS Northeast Fisheries Science Center.

Since mackerel and the squids at least partially feed on small pelagics or their larvae at some life stage, and all MSB species are preyed upon by a wide variety of finfish at some life stage, mean catches of several fish groups in the NEFSC bottom trawl surveys are provided in the figure below. The 2009 Ecosystem Assessment Program (<http://www.nefsc.noaa.gov/publications/crd/crd0911/crd0911.pdf>) also noted that consumption of finfish by marine mammals has had a substantially increasing trend.

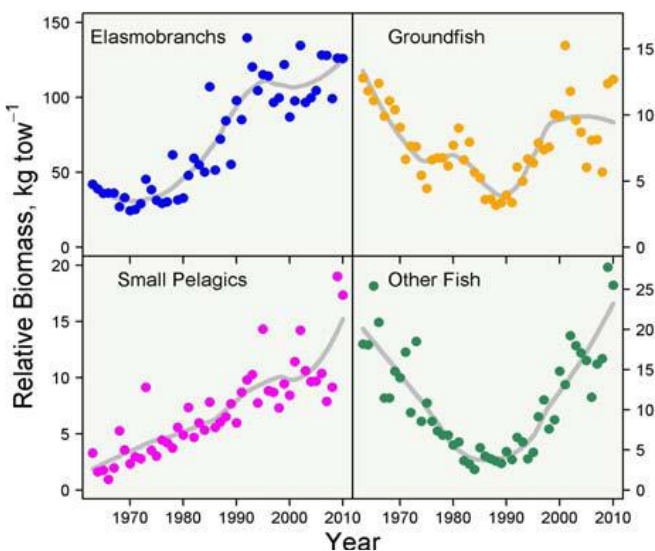


Figure 1. Mean catch per tow of various species caught in NEFSC bottom trawl surveys

6.3 Habitat, Including Essential Fish Habitat (EFH)

Pursuant to the Magnuson-Stevens Act / EFH Provisions (50 CFR Part 600.815 (a)(1)), an FMP must describe EFH by life history stage for each of the managed species in the plan. This information was updated via Amendment 11 to the MSB FMP. EFH for the four species managed under this FMP is described using fundamental information on habitat requirements by life history stage that is summarized in a series of EFH source documents produced by NMFS and available at: <http://www.nefsc.noaa.gov/nefsc/habitat/efh/>. The updated EFH designations (text and maps) are available at <http://www.habitat.noaa.gov/protection/efh/efhmapper/>. In general, EFH for the MSB species is the water column itself, and the species have temperature and prey preferences/needs that determine the habitat suitability of any particular area/depth, thus fishing activity has minimal impacts. Longfin squid also use hard bottom, submerged vegetation, other natural or artificial structure, and sand or mud to attach/anchor eggs, but there are no known preferences for different types of substrates or indications that fishing activity may negatively impact longfin squid egg EFH.

There are other lifestages of federally-managed species that have designated EFH that may be susceptible to adverse impacts from bottom trawls used in SMB fisheries, depending on the geographic distribution of their essential habitats in relation to the footprint of SMB bottom trawl fishing activity. EFH for all the federally-managed species in the region that could potentially be affected by SMB bottom trawling activity is described in the following table (see Stevenson et al 2004):

Table 4. EFH descriptions for species vulnerable to trawl gear

Species	Life Stage	Geographic Area of EFH	Depth (meters)	Bottom Type
American plaice	juvenile	GOM, including estuaries from Passamaquoddy Bay to Saco Bay, ME and from Massachusetts Bay to Cape Cod Bay	45 - 150	Fine grained sediments, sand, or gravel
American plaice	adult	GOM, including estuaries from Passamaquoddy Bay to Saco Bay, ME and from Massachusetts Bay to Cape Cod Bay	45 - 175	Fine grained sediments, sand, or gravel
Atlantic cod	juvenile	GOM, GB, eastern portion of continental shelf off SNE, these estuaries: Passamaquoddy Bay to Saco Bay, Massachusetts Bay, Boston Harbor, Cape Cod Bay, Buzzards Bay	25 - 75	Cobble or gravel
Atlantic cod	adult	GOM, GB, eastern portion of continental shelf off SNE, these estuaries: Passamaquoddy Bay to Saco Bay, Massachusetts Bay, Boston Harbor, Cape Cod Bay, Buzzards Bay	10 - 150	Rocks, pebbles, or gravel
Atl halibut	juvenile	GOM and GB	20 - 60	Sand, gravel, or clay
Atl halibut	adult	GOM and GB	100 - 700	Sand, gravel, or clay
Barndoor skate	juvenile/ adult	Eastern GOM, GB, SNE, Mid-Atlantic Bight to Hudson Canyon	10-750, most < 150	Mud, gravel, and sand
Black sea bass	juvenile	GOM to Cape Hatteras, NC, including estuaries from Buzzards Bay to Long Island Sound, Gardiners Bay, Barnegat Bay to Chesapeake Bay, Tangier/ Pocomoke Sound, and James River	1 - 38	Rough bottom, shellfish/ eelgrass beds, manmade structures, offshore clam beds, and shell patches
Black sea bass	adult	GOM to Cape Hatteras, NC, including Buzzards Bay, Narragansett Bay, Gardiners Bay, Great South Bay, Barnegat Bay to Chesapeake Bay, and James River	20 - 50	Structured habitats (natural and manmade), sand and shell substrates preferred
Clearnose skate	juvenile/ adult	GOM, along continental shelf to Cape Hatteras, NC, including the estuaries from Hudson River/Raritan Bay south to the Chesapeake Bay mainstem	0 – 500, most < 111	Soft bottom and rocky or gravelly bottom
Haddock	juvenile	GB, GOM, and Mid-Atlantic south to Delaware Bay	35 - 100	Pebble and gravel
Haddock	adult	GB, eastern side of Nantucket Shoals, and throughout GOM	40 - 150	Broken ground, pebbles, smooth hard sand, and smooth areas between rocky patches
Little skate	juvenile/ adult	GB through Mid-Atlantic Bight to Cape Hatteras, NC; includes estuaries from Buzzards Bay south to mainstem Chesapeake Bay	0-137, most 73 - 91	Sandy or gravelly substrate or mud
Ocean pout	eggs	GOM, GB, SNE, and Mid-Atlantic south to Delaware Bay, including the following estuaries: Passamaquoddy Bay to Saco Bay, Massachusetts Bay and Cape Cod Bay	<50	Generally sheltered nests in hard bottom in holes or crevices
Ocean pout	juvenile	GOM, GB, SNE, Mid-Atlantic south to Delaware Bay and the following estuaries: Passamaquoddy Bay to Saco Bay, Massachusetts Bay, and Cape Cod Bay	< 50	Close proximity to hard bottom nesting areas
Ocean pout	adult	GOM, GB, SNE, Mid-Atlantic south to Delaware Bay and the following estuaries: Passamaquoddy Bay to Saco Bay, MA Bay, Boston Harbor, and Cape Cod Bay	< 80	Smooth bottom near rocks or algae
Pollock	adult	GOME, GB, SNE, and Mid-Atlantic south to New Jersey and the following estuaries: Passamaquoddy Bay, Damariscotta R., MA Bay, Cape Cod Bay, Long Island Sound	15 – 365	Hard bottom habitats including artificial reefs
Red hake	juvenile	GOM, GB, continental shelf off SNE, and Mid-Atlantic south to Cape Hatteras, including the following estuaries: Passamaquoddy Bay to Saco Bay, Great Bay, MA Bay to Cape Cod Bay; Buzzards Bay to CT River, Hudson River, Raritan Bay, and Chesapeake Bay	< 100	Shell fragments, including areas with an abundance of live scallops

Species	Life Stage	Geographic Area of EFH	Depth (meters)	Bottom Type
Red hake	adult	GOM, GB, continental shelf off SNE, Mid-Atlantic south to Cape Hatteras, these estuaries: Passamaquoddy Bay to Saco Bay, Great Bay, MA Bay to Cape Cod Bay; Buzzards Bay to CT River, Hudson River, Raritan Bay, Delaware Bay, and Chesapeake Bay	10 - 130	In sand and mud, in depressions
Redfish	juvenile	GOM, southern edge of GB	25 - 400	Silt, mud, or hard bottom
Redfish	adult	GOM, southern edge of GB	50 - 350	Silt, mud, or hard bottom
Rosette skate	juvenile/adult	Nantucket shoals and southern edge of GB to Cape Hatteras, NC	33-530, most 74-274	Soft substrate, including sand/mud bottoms
Scup	juvenile/adult	GOM to Cape Hatteras, NC, including the following estuaries: MA Bay, Cape Cod Bay to Long Island Sound, Gardiners Bay to Delaware inland bays, and Chesapeake Bay	0-38 for juv 2-185 for adult	Demersal waters north of Cape Hatteras and inshore estuaries (various substrate types)
Silver hake	juvenile	GOM, GB, continental shelf off SNE, Mid-Atlantic south to Cape Hatteras and the following estuaries: Passamaquoddy Bay to Casco Bay, ME, MA Bay to Cape Cod Bay	20 – 270	All substrate types
Summer Flounder	juvenile/adult	GOM to Florida – estuarine and over continental shelf to shelf break	0-250	Demersal/estuarine waters, varied substrates. Mostly inshore in summer and offshore in winter.
Smooth skate	juvenile/adult	Offshore banks of GOM	31–874, most 110-457	Soft mud (silt and clay), sand, broken shells, gravel and pebbles
Thorny skate	juvenile/adult	GOM and GB	18-2000, most 111-366	Sand, gravel, broken shell, pebbles, and soft mud
Tilefish	juvenile/adult	Outer continental shelf and slope from the U.S./Canadian boundary to the Virginia/North Carolina boundary	100 - 300	Burrows in clay (some may be semi-hardened into rock)
White hake	juvenile	GOM, southern edge of GB, SNE to Mid-Atlantic and the following estuaries: Passamaquoddy Bay, ME to Great Bay, NH, Massachusetts Bay to Cape Cod Bay	5 - 225	Seagrass beds, mud, or fine grained sand
Winter flounder	adult	GB, inshore areas of GOM, SNE, Mid- Atlantic south to Delaware Bay and the estuaries from Passamaquoddy Bay, ME to Chincoteague Bay, VA	1 - 100	Mud, sand, and gravel
Winter skate	juvenile/adult	Cape Cod Bay, GB, SNE shelf through Mid-Atlantic Bight to North Carolina; includes the estuaries from Buzzards Bay south to the Chesapeake Bay mainstem	0 - 371, most < 111	Sand and gravel or mud
Witch flounder	juvenile	GOM, outer continental shelf from GB south to Cape Hatteras	50 - 450 to 1500	Fine grained substrate
Witch flounder	adult	GOME, outer continental shelf from GB south to Chesapeake Bay	25 - 300	Fine grained substrate
Yellowtail flounder	adult	GB, GOM, SNE and Mid-Atlantic south to Delaware Bay and these estuaries: Sheepscot River and Casco Bay, ME, MA Bay to Cape Cod Bay	20 - 50	Sand or sand and mud

Fishery Impact Considerations

Actions implemented that affect species with overlapping EFH were assessed in Amendment 9 to the MSB FMP in 2008 (<http://www.mafmc.org/fmp/history/smb-hist.htm>). Amendment 9 summarized Stevenson et al. 2004's findings on bottom-trawling's habitat impacts as:

“In studies examining the effect of bottom otter trawling on a variety of substrate types, it was demonstrated that the physical effects of trawl doors contacting the bottom produced furrows and some shifts in surface sediment composition, although there is a large variation in the duration of these impacts. Typically the more dynamic environment and

less structured bottom composition, the shorter the duration of impact. This type of fishing was demonstrated to have some effects on composition and biomass of benthic species in the effected areas, but the directionality and duration of these effects varied by study and substrate types.”

When the mackerel fishery has been active in recent years, mackerel are primarily caught by mid-water trawls which only occasionally impact the bottom (see NMFS 2005), but longfin squid, *Illex* squid, and butterfish are primarily caught with mobile bottom-tending gear that does contact the bottom. Industry contacts report that MSB effort is generally over sand/mud bottoms that will not damage nets and that “hangs” or areas with structure have been mapped over the years and are avoided. Amendment 9 included an analysis of the adverse impacts of the MSB fisheries on EFH (per section 303(a)(7) of the MSA). In Amendment 9 the Council determined that bottom trawls used in MSB fisheries do have the potential to adversely affect EFH for some federally-managed fisheries in the region and closed portions of two offshore canyons (Lydonia and Oceanographer) to squid trawling. Subsequent closures were implemented in these and two other canyons (Veatch and Norfolk) to protect tilefish EFH by prohibiting all bottom trawling activity.

Because there have been no significant changes to the manner in which the MSB fisheries are prosecuted, and because none of the alternatives being considered in this document should adversely affect EFH (see section 7.0), no additional alternatives to minimize adverse effects on EFH are considered as part of this management action. The Council has also taken action for protections for deep-sea corals on the outer continental shelf and slope via Amendment 16 to the MSB FMP (rulemaking pending).

6.4 ESA Listed Species and MMPA Protected Species

There are numerous species of fish, marine mammals, and sea turtles which inhabit the environment within the management unit of this FMP that are afforded protection under the Endangered Species Act (ESA) of 1973 (i.e., for those designated as threatened or endangered) and/or the Marine Mammal Protection Act (MMPA) of 1972 (see Table 5). For additional information on the species provided in Table 5 (e.g., life history, distribution, stock status), please visit: <http://www.greateratlantic.fisheries.noaa.gov/Protected/> and <http://www.nmfs.noaa.gov/pr/sars/region.htm>.

A subset of the species identified in the table below are known to have the potential to interact with gear types used to prosecute the MSB fisheries (primarily mid-water trawls and bottom trawls). In the following section, available information on gear interactions with a given species (or species group) will be provided.

Table 5. Species Protected Under the ESA and/or MMPA that May Occur in the Affected Environment of the MSB FMP

Species	Status	Potentially affected by this action?
Cetaceans		
North Atlantic right whale (<i>Eubalaena glacialis</i>)	Endangered	No
Humpback whale (<i>Megaptera novaeangliae</i>)	Endangered	No
Fin whale (<i>Balaenoptera physalus</i>)	Endangered	No
Sei whale (<i>Balaenoptera borealis</i>)	Endangered	No
Blue whale (<i>Balaenoptera musculus</i>)	Endangered	No
Sperm whale (<i>Physeter macrocephalus</i>)	Endangered	No
Pygmy sperm whale (<i>Kogia breviceps</i>)	Protected	No
Dwarf sperm whale (<i>Kogia sima</i>)	Protected	No
Minke whale (<i>Balaenoptera acutorostrata</i>)	Protected	Yes
Pilot whale (<i>Globicephala spp.</i>) ¹	Protected	Yes
Risso's dolphin (<i>Grampus griseus</i>)	Protected	Yes
Atlantic white-sided dolphin (<i>Lagenorhynchus acutus</i>)	Protected	Yes
Short Beaked Common dolphin (<i>Delphinus delphis</i>) ²	Protected	Yes
Atlantic Spotted dolphin (<i>Stenella frontalis</i>)	Protected	No
Striped dolphin (<i>Stenella coeruleoalba</i>)	Protected	No
Beaked whales (<i>Ziphius</i> and <i>Mesoplodon spp.</i>) ³	Protected	No
Bottlenose dolphin (<i>Tursiops truncatus</i>) ⁴	Protected	Yes
Harbor porpoise (<i>Phocoena phocoena</i>)	Protected	Yes
Sea Turtles		
Leatherback sea turtle (<i>Dermochelys coriacea</i>)	Endangered	Yes
Kemp's ridley sea turtle (<i>Lepidochelys kempii</i>)	Endangered	Yes
Green sea turtle (<i>Chelonia mydas</i>)	Endangered ⁵	Yes
Loggerhead sea turtle (<i>Caretta caretta</i>), Northwest Atlantic DPS	Threatened	Yes
Hawksbill sea turtle (<i>Eretmochelys imbricate</i>)	Endangered	No
Fish		
Shortnose sturgeon (<i>Acipenser brevirostrum</i>)	Endangered	No
Atlantic salmon (<i>Salmo salar</i>)	Endangered	Yes
Atlantic sturgeon (<i>Acipenser oxyrinchus</i>)		

Species	Status	Potentially affected by this action?
<i>Gulf of Maine DPS</i>	Threatened	Yes
<i>New York Bight DPS, Chesapeake Bay DPS, Carolina DPS & South Atlantic DPS</i>	Endangered	Yes
Cusk (<i>Brosme brosme</i>)	Candidate	Yes
Pinnipeds		
Harbor seal (<i>Phoca vitulina</i>)	Protected	Yes
Gray seal (<i>Halichoerus grypus</i>)	Protected	Yes
Harp seal (<i>Phoca groenlandicus</i>)	Protected	No
Hooded seal (<i>Cystophora cristata</i>)	Protected	No
Critical Habitat		
North Atlantic Right Whale ⁶	ESA-listed	No
Northwest Atlantic DPS of Loggerhead Sea Turtle	ESA-listed	No
<i>Notes:</i>		
¹ There are 2 species of pilot whales: short finned (<i>G. melas melas</i>) and long finned (<i>G. macrorhynchus</i>). Due to the difficulties in identifying the species at sea, they are often just referred to as <i>Globicephala spp.</i>		
² Prior to 2008, this species was called "common dolphin."		
³ There are multiple species of beaked whales in the Northwest Atlantic. They include the cuvier's (<i>Ziphius cavirostris</i>), blainville's (<i>Mesoplodon densirostris</i>), gervais' (<i>Mesoplodon europaeus</i>), sowerbys' (<i>Mesoplodon bidens</i>), and trues' (<i>Mesoplodon mirus</i>) beaked whales. Species of <i>Mesoplodon</i> ; however, are difficult to identify at sea, and therefore, much of the available characterization for beaked whales is to the genus level only.		
⁴ This includes the Western North Atlantic Offshore, Northern Migratory Coastal, and Southern Migratory Coastal Stocks of Bottlenose Dolphins (see Waring <i>et al.</i> 2014 for further details).		
⁵ Green turtles are currently listed in U.S. waters as threatened except for the Florida breeding population which is listed as endangered. Due to the inability to distinguish between these populations away from the nesting beach, green turtles are considered endangered wherever they occur in U.S. waters. On March 23, 2015, a proposed rule was issued to remove the current range-wide listing and, in its place, list eight DPSs as threatened and three as endangered (80 FR 15272).		
⁶ Originally designated June 3, 1994 (59 FR 28805); Newly proposed February 20, 2015 (80 FR 9314).		

Please note that cusk, a NMFS "species of concern," and a "candidate species" under the ESA, occurs in the affected environment. Candidate species are those petitioned species that NMFS is actively considering for listing as endangered or threatened under the ESA and those species for which NMFS has initiated an ESA status review through an announcement in the *Federal Register*. Candidate species receive no substantive or procedural protection under the ESA; however, NMFS recommends that project proponents consider implementing conservation actions to limit the potential for adverse effects on candidate species from any proposed project. Please note, as cusk receive no substantive or

procedural protection under the ESA (due to its candidate species status), this species will not be discussed further in this document.

6.4.1 Interactions Between Commercial Trawl Gear and Protected Species

The fisheries of the MSB FMP are prosecuted primarily with mid-water trawls and bottom trawls. A subset of protected species of fish, marine mammals, and sea turtles (see Table 5) are known to be vulnerable to interactions with mid-water and/or bottom trawl gear. In the following sections, available information on protected species interactions with these gear types will be provided. Please note, these sections are not a comprehensive review of all fishing gear types known to interact with a given species; emphasis is only being placed on those gear types primarily used to prosecute the MSB fisheries.

6.4.1.1 Marine Mammals

Cetaceans and pinnipeds are found throughout the waters of the Northwest Atlantic. As they feed, travel, and breed in many of the same ocean areas utilized for commercial fishing, they are at risk of becoming entangled or bycaught in various types of fishing gear with interactions resulting in serious injury or mortality to the animal. Although not necessarily attributed to the MSB FMP specifically, depending on the species, marine mammals have been observed to be seriously injured or killed in mid-water and/or bottom trawl gear.

Pursuant to the MMPA, NMFS publishes a List of Fisheries (LOF) annually, classifying U.S. commercial fisheries into one of three categories based on the relative frequency of incidental serious injuries and/or mortalities of marine mammals in each fishery.⁴ The MSB FMP is categorized within the LOF; specifically, based on gear type used to prosecute the FMP, Category II fisheries can be found in this FMP. The table below provides information on cetacean and pinniped species observed seriously injured and/or killed by these Category II fisheries from 2007-2011 (see Waring *et al.* 2014). Additional information on marine mammal stocks can be found at <http://www.nmfs.noaa.gov/pr/sars/>.

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⁴ The most recent LOF was issued August 25, 2014; 79 FR 50589.

Table 6. Cetacean and pinniped species observed seriously injured and/or killed by Category II fisheries in the affected environment of the MSB FMP. A (*) indicates those species driving the fisheries classification.

Category II			
Fishery/Gear Type	Species Observed Injured/Killed	Observed in 2007-2011	Mean Annual Mortality¹
Mid-Atlantic Mid-Water Trawl (Including Pair Trawl)	Risso's dolphin	Y	0.2
	White-sided dolphin (*)	Y	6
	Short-beaked common dolphin	Y	0.6
	Long and short-finned pilot whales	Y	2.4
	Gray seal	Y	0.2
Northeast Mid-Water Trawl (Including Pair Trawl)	White-sided dolphin	N	N/A
	Long and short-finned pilot whales (*)	Y	4
	Harbor seal	Y	0.7
Northeast Bottom Trawl	Harp seal	Y	0.4
	Harbor seal	Y	0.8
	Gray seal	Y	9.2
	Long and short-finned pilot whales	Y	10
	Short-beaked common dolphin	Y	19
	White-sided dolphin (*)	Y	73
	Harbor porpoise	Y	4.5
	Bottlenose dolphin (offshore)	Y	20
	Minke whale	Y	1.8
Risso's dolphin	Y	2.5	
Mid-Atlantic Bottom Trawl	White-sided dolphin	Y	4
	Long and short-finned pilot whales (*)	Y	26
	Short-beaked common dolphin (*)	Y	96
	Risso's dolphin (*)	Y	42
	Bottlenose dolphin (offshore)	Y	20
	Harbor seal	Y	0.2

¹ Based on observer data from 2007-2011, estimates of serious injury and estimates of mortality are provided for every year of observation in Waring *et al.* 2014. Estimated "combined mortality" per year of observation is also provided in Waring *et al.* 2014; this is equal to the "estimated serious injury" + "estimated mortality" for every year observed. The "mean annual mortality" is the average of each "estimated combined mortality" value over the 5 year period of observation (Waring *et al.* 2014).

Sources: Waring *et al.* 2014; August 25, 2014, List of Fisheries (79 FR 50589).

Based in the information in Tables 5 and 6, minke whales are the only species of large whales that have been observed seriously injured and killed in trawl gear. In regards to bottom trawl gear, the frequency of interactions have declined since 2006 (estimated annual mortality=3.7 whales), with zero observed interactions in 2010 and 2011, and the annual average estimated mortality and serious injury from the Northeast bottom trawl fishery from 2007 to 2011 equaling 1.8 whales (Waring *et al.* 2014). Since 2003, there has also been only one observed minke whale incidentally taken in mid-water trawl gear; this incidence was observed in 2013 (NMFS NEFSC FSB 2014).

As provided in Tables 5 and 6, there are also multiple species of small cetacean (bottlenose, common, risso's, and white-sided dolphins; short-and long finned pilot whales; harbor porpoise) and pinnipeds (gray, harbor, and harp seals) that have been observed seriously injured or killed in fisheries using mid-water and/or bottom trawl gear. For further information on these interactions, see Waring *et al.* 2014.

Atlantic Trawl Gear Take Reduction Strategy (ATGTRS)

In 2006, the Atlantic Trawl Gear Take Reduction Team (ATGTRT) was convened to address the incidental mortality and serious injury of long-finned pilot whales (*Globicephala melas*), shortfinned pilot whales (*Globicephala macrorhynchus*), common dolphins (*Delphinus delphis*), and white sided dolphins (*Lagenorhynchus acutus*) incidental to bottom and mid-water trawl fisheries operating in both the Northeast and Mid-Atlantic regions. Because none of the marine mammal stocks of concern to the ATGTRT are classified as a “strategic stock,” nor do they currently interact with a Category I fishery, it was determined at the time that development of a take reduction plan was not necessary.⁵

In lieu of a take reduction plan, the ATGTRT agreed to develop an ATGTRS. The ATGTRS identifies informational and research tasks, as well as education and outreach needs the ATGTRT believes are necessary, to provide the basis for decreasing mortalities and serious injuries of marine mammals to insignificant levels approaching zero mortality and serious injury rates. The ATGTRS also identifies several potential voluntary measures that can be adopted by certain trawl fishing sectors to potentially reduce the incidental capture of marine mammals. For additional details on the ATGTRS, please visit: <http://www.greateratlantic.fisheries.noaa.gov/Protected/mmp/atgtrp/>

6.4.1.2 Sea Turtles

Sea turtles have been incidentally injured or killed in various gear types (e.g., gillnets, trawls, hook and line gear, dredge); however, of the gear types that could be possibly used in the MSB FMP, bottom trawl gear poses the greatest risk to sea turtles and therefore, will be the focus of the following discussion.⁶ In addition, although sea turtle interactions with trawl gear have been observed in waters

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

6 Although sea turtles have the potential to interact with mid-water trawl gear, the risk of an interaction is likely to be low (i.e., since 1993, only 5 sea turtles (leatherbacks) have been observed seriously injured or killed in mid-water trawl gear; primary species being landed was tuna; NMFS NEFSC FSB 2014).

from the GOM to the Mid-Atlantic, most of the observed interactions have occurred in the Mid-Atlantic. As few sea turtle interactions have been observed in the GOM and GB regions of the Northwest Atlantic, there is insufficient data available to conduct a robust model-based analysis on sea turtle interactions with trawl or gillnet gear in these regions and therefore, produce a bycatch estimate for these regions. As a result, the following bycatch estimates are based on observed sea turtle interactions in bottom trawl gear in the Mid-Atlantic.

In a study done by Warden (2011a), it was estimated that from 2005-2008, the average annual loggerhead interactions in bottom trawl gear in the Mid-Atlantic (i.e., south of Cape Cod, Massachusetts, to approximately the North Carolina/South Carolina border) was 292 (CV=0.13, 95% CI=221-369), with an additional 61 loggerheads (CV=0.17, 95% CI=41-83) interacting with trawls, but being released through a Turtle Excluder Device.⁷ Of the 292 average annual observable loggerhead interactions, approximately 44 of those were adult equivalents (Warden 2011a).⁸ This estimate is a decrease from the average annual loggerhead bycatch in bottom otter trawls during 1996-2004, which Murray (2008) estimated to be 616 sea turtles (CV=0.23, 95% CI over the nine-year period: 367-890). This decrease is likely due to decreased fishing effort in high-interaction areas (Warden 2011a). Warden (2011b), using species landed, also estimated total loggerhead interactions attributable to managed species. The average annual number of loggerhead interactions (estimated observable and unobservable but quantifiable) attributed to the overall MSB FMP were 25 sea turtles; however, considering each species landed under the MSP FMP individually, zero loggerhead interactions were attributed to the landing of mackerel. Since 2008, NMFS NEFSC FSB has documented 18 loggerhead sea turtles in bottom trawl gear on trips where the top landed species were Atlantic longfin squid (16) and butterfish (3) (NMFS NEFSC FSB 2014). In addition, green, Kemp's ridley, and leatherback sea turtles have been documented in bottom trawl gear in areas that overlap with the MSB FMP; seven of these (2 leatherbacks, 1 green, and 4 unknown species), were captured on trips where the top landed species was Atlantic longfin squid (NMFS NEFSC FSB 2014).

Although sea turtles have the potential to interact with multiple gear types, such as trawl gear, the risk of an interaction is affected by multiple factors, including where and when fishing effort is focused, the type of gear being used, environmental conditions, and sea turtle occurrence and distribution. Murray and Orphanides (2013) recently evaluated fishery-independent and dependent data to identify environmental conditions associated with turtle presence and the subsequent risk of a bycatch encounter if fishing effort is present; it was concluded that fishery independent encounter rates were a function of latitude, sea surface temperature (SST), depth, and salinity. When the model was fit to fishery dependent data (gillnet, bottom trawl, and scallop dredge), Murray and Orphanides (2013) found a decreasing trend in encounter rates as latitude increases; an increasing trend as SST increases; a bimodal relationship between encounter rates and salinity; and higher encounter rates in depths between 25 and 50 m. Based on the above 2005-2008 data obtained on loggerhead interactions in bottom trawl gear, Warden (2011a) also found that latitude, depth and SST were associated with the interaction rate, with the rates being highest south of 37° N in waters < 50 meters deep and SST > 15°C (Table 7).

⁷ Warden (2011a) defines the mid-Atlantic as waters north to Massachusetts. See the respective paper for a more complete description of the area.

⁸ Adult equivalence considers the reproductive value of the animal (Warden 2011, Murray 2013), providing a "common currency" of expected reproductive output from the affected animals (Wallace *et al.* 2008), and is an important metric for understanding population level impacts (Haas 2010).

Table 7. Mid-Atlantic trawl bycatch rates (Warden 2011a)

Latitude Zone	Depth, SST	Loggerheads/Day Fished
<37 °N	<=50 m, <=15° C	0.4
	<=50 m, >=15° C	2.06
	>50 m, <= 15° C	0.07
	>50 m, >15° C	0.09
37 - 39 °N	<=50 m, <=15° C	0.04
	<=50 m, >=15° C	0.18
	>50 m, <= 15° C	0.01
	>50 m, >15° C	0.07
>39 °N	<=50 m, <=15° C	<0.01
	<=50 m, >=15° C	0.03
	>50 m, <= 15° C	<0.01
	>50 m, >15° C	0.01

6.4.1.3 Atlantic Sturgeon

There are three documents, covering three time periods, that use data collected by the Northeast Fisheries Observer Program to describe bycatch of Atlantic sturgeon: Stein *et al.* (2004b) for 1989-2000; ASMFC (2007) for 2001-2006; and Miller and Shepard (2011) for 2006-2010; None of these provide estimates of Atlantic sturgeon bycatch by DPS. Information provided in all three documents indicate that sturgeon bycatch occurs in gillnet and trawl gear, with the most recent document estimating, based on fishery observer data and VTR data from 2006-2010, that annual bycatch of Atlantic sturgeon was 1,342 and 1,239, respectively (Miller and Shepard 2011). Specifically, Miller and Shepard (2011) observed Atlantic sturgeon interactions in trawl gear with small (< 5.5 inches) and large (\geq 5.5 inches) mesh sizes, as well as gillnet gear with small (< 5.5 inches), large (5.5 to 8 inches), and extra-large mesh (>8 inches) sizes. Although Atlantic sturgeon were observed to interact with trawl and gillnet gear with various mesh sizes, based on observer data, Miller and Shepard (2011) concluded that gillnet gear, in general, posed a greater risk of mortality to Atlantic sturgeon than did trawl gear. Estimated mortality rates in gillnet gear were 20.0%, while those in otter trawl gear were 5.0% (Miller and Shepard 2011). Similar conclusions were reached in Stein *et al.* 2004b and ASMFC 2007 reports, in which both studies also concluded, after review of observer data from 1989-2000 and 2001-2006, that observed mortality is much higher in gillnet gear than in trawl gear.

Although Atlantic sturgeon deaths have rarely been reported in bottom otter trawl gear (ASMFC 2007), it is important to recognize that effects of an interaction may occur long after the interaction. Based on physiological data obtained from Atlantic sturgeon captured in otter trawls, Beardsall *et al.* (2013) suggests that factors such as longer tow times (i.e., > 60 minutes), prolonged handling of sturgeon (> 10 minutes on deck), and the type of trawl gear/equipment used, may increase the risk of physiological disruption or impairment (e.g., elevated cortisol levels, immune suppression, impaired osmoregulation, exhaustion) to Atlantic sturgeon captured in otter trawls and therefore, may result in an increased risk of post-release mortality. The authors also note that post-release exhaustion, even after a 60 minute trawl capture, results in behavioral disruption to Atlantic sturgeon and caution that repeated bycatch events may compound post-release behavioral effects to Atlantic sturgeon which in turn, may affect essential life functions of Atlantic sturgeon (e.g., predator avoidance, foraging, migration to foraging or spawning sites) and therefore, Atlantic sturgeon survival (Beardsall *et al.*

2013). Although the study conducted by Beardsall *et al.* (2013) provides some initial insight into the post-release effects to Atlantic sturgeon captured in trawl gear, additional studies are needed to clearly identify the “after” effects of a trawl interaction. As it remains uncertain what the overall impacts to Atlantic sturgeon survival are from trawl interactions, trawls should not be completely discounted as a form of gear that poses a mortality risk to Atlantic sturgeon.

6.4.1.4 Atlantic Salmon

There have been a low number of observed Atlantic salmon interactions with fisheries and various gear types. According to the Biological Opinion issued by NMFS Greater Atlantic Regional Fisheries Office on December 16, 2013, NMFS Northeast Fisheries Science Center’s (NEFSC) Northeast Fisheries Observer and At-Sea Monitoring Programs documented a total of 15 individual salmon incidentally caught on over 60,000 observed commercial fishing trips from 1989 through August 2013 (NMFS 2013;Kocik *et al.* 2014). Specifically, Atlantic salmon were observed bycaught in gillnet (11/15) and bottom otter trawl gear (4/15), with 10 of the incidentally caught salmon listed as “discarded” and five reported as mortalities (Kocik (NEFSC), pers. comm (February 11, 2013) in NMFS 2013). The genetic identity of these captured salmon is unknown; however, the NMFS 2013 Biological Opinion considers all 15 fish to be part of the GOM Distinct Population Segment, although some may have originated from the Connecticut River restocking program (i.e., those caught south of Cape Cod, Massachusetts).

The above information, specifically the very low number of observed Atlantic salmon interactions in gillnet and trawl gear reported in the Northeast Fisheries Observer Program’s database (which includes At-Sea Monitoring data), suggests that interactions with Atlantic salmon are rare events (NMFS 2013; Kocik *et al.* 2014); however, it is important to recognize that observer program coverage is not 100 percent. As a result, it is likely that some additional interactions with Atlantic salmon have occurred, but have not been observed or reported.

6.5 Other Non-Target Species in MSB Fisheries

Butterfish

A list of species taken incidentally and discarded in the butterfish fishery has not been calculated because very limited directed fishing for butterfish has occurred recently and few directed trips have been observed. It is also very difficult to identify a recent directed butterfish trip in the observer database and double counting with other fisheries would likely occur due to the recent incidental nature of the fishery. Prior specifications identified red hake, silver hake, spiny dogfish, scup, unclassified skates, fourspot flounder, longfin squid, mackerel, and little skate as primary bycatch and/or discard species in the butterfish fishery. Beginning in 2013-2014 a limited directed fishery for butterfish was re-established and these species could be impacted. However, in previous years when the butterfish fishery operated there was no minimum mesh and attitudes about discarding were different. It is expected that the 3-inch minimum mesh incorporated as part of the reestablishment of the butterfish fishery will minimize bycatch (further reducing the applicability of previous analyses), and observer data from trips targeting butterfish will be examined in the future to describe non-target interactions and to determine if additional bycatch minimization measures are needed. For non-target

species that are managed under their own FMP, incidental catch/discards are also considered as part of the management of that fishery.

Mackerel

Various species are caught incidentally by the mackerel fishery. For non-target species that are managed under their own FMP, incidental catch/discards are also considered as part of the management of that fishery. These species will be impacted to some degree by the prosecution of the mackerel fishery. This EA is using the analysis conducted last year for the mackerel specifications because the 2014 mackerel fishery was of similar scope as 2013 and it is not expected that there would be any substantial changes to this analysis. In addition, this analysis is approximate in nature so 2011-2013 data are sufficiently illustrative.

The primary database used to assess discarding is the NMFS Observer Program database, which includes data from trips that had trained observers onboard to document discards. One critical aspect of using this database to describe discards is to correctly define the trips that constitute a given directed fishery. Presumably some criteria of what captains initially intend to target, how they may adjust targeting over the course of a trip, and what they actually catch would be ideal. Thus to begin this process, staff first reviewed 2011-2013 trips in the dealer weighout database to see if a certain trip definition could account for most mackerel landed. Since the mackerel fishery has changed substantially in recent years, a more recent, three-year time period was examined. The result of this review resulted in the following definition for mackerel trips using landings: All trips that had at least 50% mackerel by weight and all trips over 100,000 pounds of mackerel regardless of the ratio of other species. This definition results in capturing 90% of all mackerel landings in the dealer weighout database 2011-2013. The other trips with lower mackerel landings landed a variety of species, mostly Atlantic herring, silver hake, longfin squid, and scup. The set of trips in the observer database with the same mackerel criteria included 4 on average for each year 2011-2013 (the mackerel fishery has not been very active in recent years). These trips made 49 hauls of which 94% were observed. Hauls may be unobserved for a variety of reasons, for example transfer to another vessel without an observer, observer not on station, haul slipped (dumped) in the water, etc.

Information on catch and discards is provided for observed hauls in the table below. Since there were so few observed trips, extrapolations are not made but the total observed values are provided. Also, given that the amounts of mackerel and Atlantic herring caught on these trips is about the same, and that both were mostly retained, it is not clear if these trips were primarily targeting mackerel or Atl. herring. Fishermen and processors on the Council's MSB Advisory Panel have also reported that mackerel caught in recent years have mostly been caught incidental to Atl. herring fishing rather than during focused mackerel fishing because of the lack of fishable mackerel concentrations.

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Table 8. Incidental Catch and Discards in the Mackerel Fishery.

NE Fisheries Science Center Common Name	Pounds Observed Caught	Pounds Observed Discarded	Of all discards observed, percent that comes from given species	Percent of given species that was discarded
MACKEREL, ATLANTIC	3,505,435	79	1%	0%
HERRING, ATLANTIC	3,279,282	337	3%	0%
HERRING, BLUEBACK	28,135	79	1%	0%
ALEWIFE	25,952	1,068	9%	4%
BUTTERFISH	7,596	0	0%	0%
DOGFISH, SPINY	4,992	4,992	44%	100%
FISH, NK	3,885	3,885	34%	100%
SQUID, ATL LONG-FIN	1,193	0	0%	0%
SHAD, AMERICAN	704	4	0%	1%
HAKE, SILVER	693	4	0%	1%
BASS, STRIPED	574	574	5%	100%
SQUID, SHORT-FIN	198	0	0%	0%
SKATE, LITTLE	197	197	2%	100%
SCUP	170	0	0%	0%
OCEAN POUT	149	149	1%	100%
HAKE, RED (LING)	74	54	0%	73%
HADDOCK	60	0	0%	0%
SKATE, WINTER (BIG),	11	0	0%	0%
HERRING, NK	10	10	0%	100%
SKATE, WINTER (BIG)	4	4	0%	100%

The primary non-target species of current concern for mackerel, and for which there are relevant management measures proposed in this action, are river herrings and shads so some additional information on river herrings and shads is provided below.

River Herring

In the most recent Atlantic States Marine Fisheries Commission river herring stock assessment (ASMFC 2012), of the 24 river herring stocks for which sufficient data are available to make a conclusion, 23 were depleted relative to historic levels and one was increasing. The status of 28 additional stocks could not be determined because the time-series of available data was too short. Estimates of coastwide abundance and fishing mortality could not be developed because of the lack of adequate data. The “depleted” determination was used instead of “overfished” because of the many factors that have contributed to the declining abundance of river herring, which include not just directed and incidental fishing, but likely also habitat issues (including dam passage, water quality, and water quantity), predation, and climate change. There are no coastwide reference points.

As part of a recent river herring status review under the Endangered Species Act, NMFS completed an extinction risk analysis (http://www.greateratlantic.fisheries.noaa.gov/protected/pcp/soc/river_herring.html). This analysis investigated trends in river herring relative abundance for each species range-wide as well as for each identified stock complex. This analysis found that "the abundance of alewife range-wide significantly increased over time (mid 1970s-2012), but the increase in blueback herring abundance was not significant (page 7 and Figures 8 and 9 of the referenced document). These range-wide analyses incorporated data from fishery independent surveys with the widest geographic extent, specifically the Northeast Fisheries Science Center spring and fall bottom trawl surveys and Canada’s Department of Fisheries and Oceans (DFO) Scotian Shelf survey. Stock-specific analyses incorporated run count data

and stock-specific fishery-independent surveys. Stock-specific analyses indicated that the abundance of the Canadian alewife stock complex was significantly increasing, the abundance of the mid-Atlantic blueback herring stock complex was significantly decreasing, and all other analyzed stock complexes were not significantly increasing or decreasing in abundance. The status review concluded that the species did not currently warrant listing under the ESA.

NMFS and the ASMFC are engaged in a proactive conservation strategy for river herring and the Council is also involved in the endeavor. This strategy is described at <http://www.greateratlantic.fisheries.noaa.gov/protected/riverherring/tewg/index.html>, and will bring a variety of management partners and stakeholders together to address river herring threats and plan conservation and data gathering activities.

Shad

The most recent American shad stock assessment report (ASMFC 2007) identified that American shad stocks are highly depressed from historical levels. Of the 24 stocks of American shad for which sufficient information was available, 11 were depleted relative to historic levels, 2 were increasing, and 11 were stable (but still below historic levels). The status of 8 additional stocks could not be determined because the time-series of data was too short or analyses indicated conflicting trends. Taken in total, American shad stocks do not appear to be recovering. The assessment concluded that current restoration actions need to be reviewed and new ones need to be identified and applied. These include fishing rates, dam passage, stocking, and habitat restoration. There are no coastwide reference points for American shad. There is no stock assessment available for hickory shad.

River Herring and Shad Catches in the Mackerel Fishery

Amendment 14 analyzed catch of river herrings and shads (RH/S) extensively, and a FEIS is available at <http://www.greateratlantic.fisheries.noaa.gov/regs/2013/August/13smbamend14prfeis.pdf>. The analysis described in Appendix 2 of Amendment 14's EIS found that Mid-Atlantic mid-water trawl fishing in Quarter 1, which is largely but not completely mackerel fishing, accounted for about 35% of total ocean river herring catch and about 12% of total ocean shad catch from 2005-2010 (about 160.6 metric tons of river herring and 7.6 tons of shad). While it is not clear what impact that level of catch might have on RH/S stocks, these average annual amounts translate to close to 2 million fish (mostly river herring) if a five fish per pound conversion is used (the offshore fishery is likely to encounter juveniles). While there has not been much of a mackerel fishery in recent years, if the mackerel fishery redevelops the RH/S cap, which is proposed to be modified in this action, will limit RH/S catch in the mackerel fishery.

Longfin Squid

Various species are caught incidentally by the longfin squid fishery and will be impacted to some degree by the prosecution of the fishery. Non-target interactions in the longfin squid fishery are also relatively high compared to the other MSB fisheries. For non-target species that are managed under their own FMP, incidental catch/discards are also considered as part of the management of that fishery. This EA is using the analysis conducted last year for the longfin squid specifications because the 2014 longfin squid fishery was of similar scope as 2013 and it is not expected that there would be any substantial changes to this analysis. In addition, this analysis is approximate in nature so 2011-2013 data are sufficiently illustrative, and the changes proposed for the longfin squid fishery (elimination of

PTNS) should have a minimal impact on the overall conduct of the longfin squid fishery.

The primary database used to assess discarding is the NMFS Observer Program database, which includes data from trips that had trained observers onboard to document discards. One critical aspect of using this database to describe discards is to correctly define the trips that constitute a given directed fishery. Presumably some criteria of what captains initially intend to target, how they may adjust targeting over the course of a trip, and what they actually catch would be ideal. Thus to begin this process, staff first reviewed 2011-2013 trips in the dealer weighout database to see if a certain trip definition could account for most longfin squid landed. Since fisheries evolve over time, and the implementation of the butterfish cap (2011) has likely changed behavior, a relatively recent, three-year time period was examined.

The result of this review resulted in the following definition for longfin squid trips using landings: All trips that had at least 50% longfin squid by weight for retained species. This definition results in capturing 86% of all longfin squid landings in the dealer weighout database 2011-2013. This definition was applied to the observer database to examine discards in the longfin squid fishery. The resulting set of trips in the observer database included 123 on average for each year 2011-2013. These trips made 4,243 hauls of which 92% were observed. Hauls may be unobserved for a variety of reasons, for example transfer to another vessel without an observer, observer not on station, haul slipped (dumped) in the water before observing, etc.

The observed longfin squid caught on these trips accounted for approximately 6% of the total longfin squid caught (this is the overall coverage rate based on weight). While a very rough estimate, especially given the low observer coverage in small mesh fisheries and non-accounting for spatial and temporal trends, one can use the information in the table immediately following and the fact that about 11,301 mt of longfin squid were caught annually 2011-2013 to generally and roughly estimate annual incidental catch for the species in the table. This is the last column in the table and while this information is provided, readers are strongly cautioned that while this is a reasonable approach for a quick, rough, and relative estimate given the available data, it is highly imprecise and does not follow the protocol used for official discard estimates. A wide variety of species are caught in the longfin squid fishery, and only those estimated to be caught at a level more than 25,000 pounds per year are included (captures 98% of all discards). Note also that even the estimates that can be calculated would only really be valid for the 86% of landings captured by the chosen directed trip definition. It is even more difficult to assess the other 14% because to some degree the longfin squid is being caught incidental to other fisheries in those cases. Nonetheless, the longfin squid-to-other-species ratios were scaled up to the 100% of longfin squid catch to keep calculations relatively simple.

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Table 9. Incidental Catch and Discards in the Longfin Squid Fishery.

NE Fisheries Science Center Common Name	Pounds Observed Caught	Pounds Observed Discarded	Of all discards observed, percent that comes from given species	Percent of given species that was discarded	For every metric ton of Loligo caught, pounds of given species caught.	D:K Ratio (species discarded to longfin kept)	Rough Annual Catch (pounds) based on 3-year (2011-2013) average of longfin catch (11,301 mt)
SQUID, ATL LONG-FIN	4,593,827	90,486	4%	2%	2,205	0.02	24,914,185
SQUID, SHORT-FIN	494,796	208,777	9%	42%	237	0.05	2,683,481
BUTTERFISH	417,791	382,180	16%	91%	200	0.08	2,265,849
DOG FISH, SPINY	323,418	318,468	14%	98%	155	0.07	1,754,029
HAKE, SILVER	320,395	202,460	9%	63%	154	0.04	1,737,631
HAKE, SPOTTED	210,376	205,976	9%	98%	101	0.05	1,140,955
SKATE, LITTLE	140,843	138,712	6%	98%	68	0.03	763,849
SCUP	135,927	79,859	3%	59%	65	0.02	737,187
DOG FISH, SMOOTH	67,320	53,794	2%	80%	32	0.01	365,103
FLOUNDER, SUMMER	67,230	32,711	1%	49%	32	0.01	364,614
BLUEFISH	65,415	21,985	1%	34%	31	0.00	354,770
SKATE, WINTER (BIG)	60,215	58,179	3%	97%	29	0.01	326,570
CRAB, LADY	54,522	54,522	2%	100%	26	0.01	295,696
HERRING, ATLANTIC	49,776	6,101	0%	12%	24	0.00	269,958
SEAWEED, NK	46,325	46,325	2%	100%	22	0.01	251,241
HAKE, RED (LING)	42,880	40,254	2%	94%	21	0.01	232,553
SEA ROBIN, NORTHERN	40,665	40,446	2%	99%	20	0.01	220,540
DORY, BUCKLER	39,798	17,102	1%	43%	19	0.00	215,840
FLOUNDER, FOURSPOT	34,616	34,613	1%	100%	17	0.01	187,735
SEA BASS, BLACK	26,132	18,046	1%	69%	13	0.00	141,722
FLOUNDER, WINTER	23,027	22,688	1%	99%	11	0.01	124,884
BASS, STRIPED	22,989	22,510	1%	98%	11	0.00	124,677
SKATE, NK	19,551	19,551	1%	100%	9	0.00	106,034
MONKFISH	18,523	8,696	0%	47%	9	0.00	100,459
MACKEREL, CHUB	17,879	12,334	1%	69%	9	0.00	96,963
SEA ROBIN, STRIPED	15,358	14,998	1%	98%	7	0.00	83,293
SCALLOP, SEA	13,089	11,070	0%	85%	6	0.00	70,986
SKATE, CLEARNOSE	12,653	12,642	1%	100%	6	0.00	68,620
MACKEREL, ATLANTIC	10,316	5,829	0%	57%	5	0.00	55,945
SHAD, AMERICAN	10,056	8,796	0%	87%	5	0.00	54,536
SKATE, ROSETTE	9,887	9,887	0%	100%	5	0.00	53,621
HADDOCK	9,605	9,597	0%	100%	5	0.00	52,092
FLOUNDER, SAND DAB	8,001	7,969	0%	100%	4	0.00	43,394
LOBSTER, AMERICAN	7,981	5,384	0%	67%	4	0.00	43,284
SQUID, NK	7,188	1,471	0%	20%	3	0.00	38,984
SPOT	7,037	6,882	0%	98%	3	0.00	38,167
SKATE, LITTLE/WINTER,	6,653	6,653	0%	100%	3	0.00	36,082
RAY, BULLNOSE	6,569	6,569	0%	100%	3	0.00	35,624
SQUID EGGS, ATL	5,903	5,903	0%	100%	3	0.00	32,012
DOG FISH, CHAIN	5,136	5,136	0%	100%	2	0.00	27,853
SKATE, BARNDOR	4,722	4,722	0%	100%	2	0.00	25,608
CRAB, JONAH	4,684	4,462	0%	95%	2	0.00	25,403

6.6 Human Communities and Economic Environment

6.6.1 Fishery Descriptions

This section describes the socio-economic importance of the MSB fisheries. Recent Amendments to the MSB FMP contain additional information, especially demographic information on ports that land MSB species. See Amendments 11 and 14 at <http://www.mafmc.org/msb/> for more information or visit NMFS' communities page at: http://www.nefsc.noaa.gov/read/socialsci/community_profiles/.

For each species with alternatives in this document (mackerel, butterfish, and longfin squid), this section describes the following: history of landings, prices, total revenues, specification performance for the last 10 years, 2014 data for permitted and active vessels by state, 2014 vessel dependence on each managed species as a proportion of total ex-vessel sales, 2012-2014 landings by state, 2012-2014 landings by month, 2012-2014 landings by gear, 2012-2014 landings in key ports, 2012-2014 numbers of active dealers, and 2012-2014 vessel trip report catches by key statistical area. There is also a market overview section for mackerel per the FMP as well as sections for recreational mackerel and longfin squid catch (butterfish are not caught in substantial amounts by recreational fishermen). If less than either 3 vessels or 3 dealers were active for a given species in a given port, or if there is other concern about data confidentiality, some information may be withheld or limited in order to maintain the confidentiality of fishery participants' proprietary business data.

The Council employed a new procedure for gathering information from its Squid-Mackerel-Butterfish Advisory Panel during the 2012 specifications setting process, which it continued for these specifications. The MSB Advisory Panel created a "Fishery Performance Report" for each species based on the advisors' personal and professional experiences as well as reactions to an "informational document" for each species created by Council staff. The Informational Documents and Fishery Performance Reports may be found here <http://www.mafmc.org/ssc-meeting-documents/>. These documents, while not NMFS or peer-reviewed, and also containing some preliminary information, were constructed using the same basic analytical techniques as this document and may be of interest to readers looking for additional descriptive fishery information.

The data in this document was downloaded in May 2015 and edits to the database may lead to different values being produced from data downloaded after May 2015, but substantial changes would not be expected.

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6.6.2 Atlantic mackerel (mackerel)

Historical Commercial Fishery – History of Landings

The modern northwest mackerel fishery began with the arrival of the European distant-water fleets in the early 1960's. Total international commercial landings (Northwest Atlantic Fisheries Organization Subareas 2-6,) peaked at 437,000 mt in 1973 and then declined sharply to 77,000 by 1977 (Overholtz 1989). The MSA established control of the portion of the mackerel fishery occurring in US waters (Northwest Atlantic Fisheries Organization Subareas 5-6) under the auspices of the Council. Reported foreign landings in US waters declined from an unregulated level of 385,000 mt in 1972 to less than 400 mt from 1978-1980 under the MSA (the foreign mackerel fishery was restricted by NOAA Foreign Fishing regulations to certain areas or "windows." Under the MSB FMP foreign mackerel catches were permitted to increase gradually to 15,000 mt in 1984 and then to a peak of almost 43,000 mt in 1988 before being phased out again.

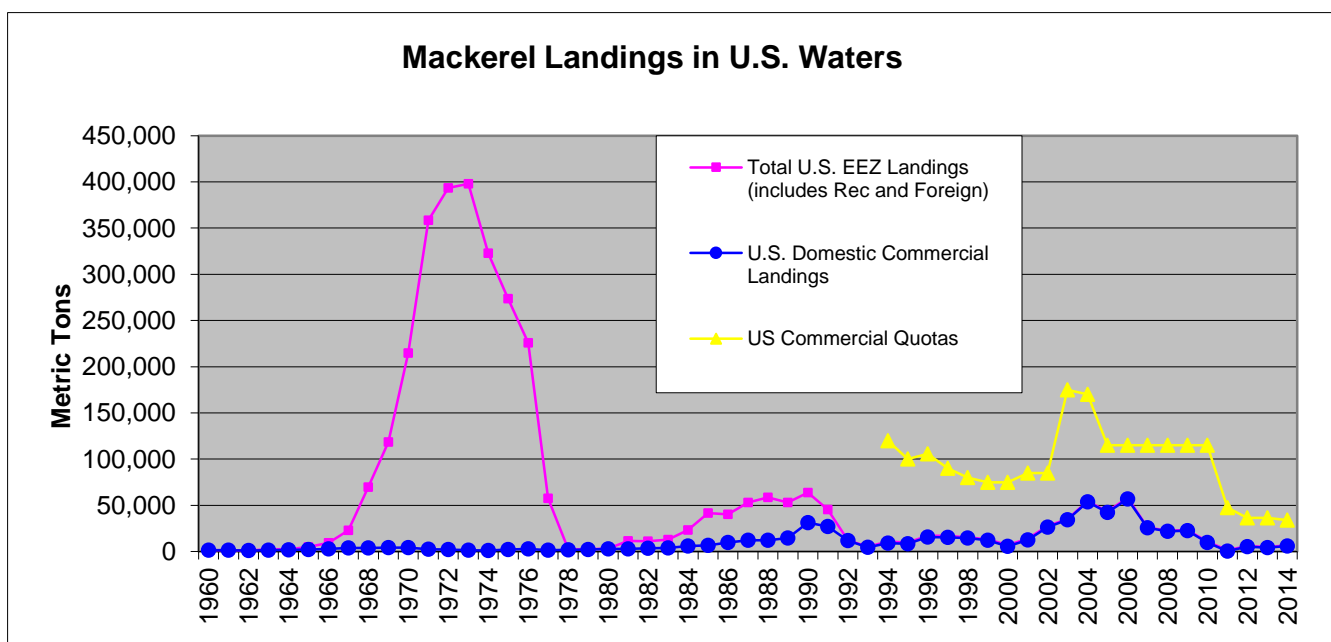


Figure 2. Historical Atl. Mackerel Landings in the U.S. EEZ.

US commercial landings of mackerel increased steadily from roughly 3,000 mt in the early 1980's to greater than 31,000 mt by 1990. US mackerel landings declined to relatively low levels 1992-2000 before increasing in the early 2000's. The most recent years have seen a significant drop-off in harvest. The mackerel fishery usually catches most of its mackerel by May 1 so while incomplete, available 2015 data suggests that around 3,500-4,500 mt will be landed in 2015.

Nominally ex-vessel price has generally varied between about \$200-\$700 per mt but when inflation is taken into account there was erosion in the ex-vessel per-pound value of mackerel from 1982-2010. 2011 and 2012 prices increased substantially (near \$700/mt), which is likely at least partially related to the low levels of mackerel landed. 2014 ex-vessel prices were about \$491/mt. Total ex-vessel value tracks both price and the quantity of fish landed (see Fishery Information Document at <http://www.mafmc.org/ssc-meetings/2013/april-may> for details). 2014 landings totaled 5,490 mt and generated \$2.9 million in ex-vessel revenues.

Fishery Performance

Weekly dealer data triggers in-season management actions that institute relatively low trip limits when 90% of the commercial DAH is landed. The table below lists the performance of the mackerel fishery (commercial and recreational together) compared to the effective quota for the last 10 years. There have been no quota overages over this period, but the fisheries have not approached the quotas. Since 2012 any ABC overages must be repaid pound for pound. Discard information is not available since 2011, but it does not appear that mackerel would have approached anywhere near the ABC since discards are usually quite low according to the most recent assessment (TRAC 2010).

Table 10. Mackerel Quota Performance. (mt)

Year	Harvest (mt) (Commercial and Recreational)	Quota (mt) (Rec+Com)	Percent of Quota Landed
2005	43,275	115,000	38%
2006	58,352	115,000	51%
2007	26,142	115,000	23%
2008	22,498	115,000	20%
2009	23,235	115,000	20%
2010	10,739	115,000	9%
2011	1,478	47,395	3%
2012	6,015	36,264	17%
2013	5,029	36,264	14%
2014	6,726	33,821	20%

Source: Unpublished NMFS dealer reports and MRIP data

Participation in the fishery was low in 2014 related to the low availability of mackerel. The tables and figures below and on the following pages describe vessel participation, vessel dependency, distribution of landings by state/month/gear/port, dealer participation, and the general at-sea location of recent mackerel landings/catches.

Table 11. 2014 Data for Permitted and Active Vessels

Principal Port State (from permit data)	1,000,000 or more pounds	100,000- 1,000,000 pounds	50,000- 100,000 pounds	10,000- 50,000 pounds
All States	6	5	1	14

Source: Unpublished NMFS dealer reports and permit data. Data confidentiality rules do not allow state by state breakdowns.

The mackerel fishery became a limited access fishery in 2013 except for open-access incidental catch permits. The current numbers of permits are approximately 31 Tier 1 permits, 24 Tier 2 permits, and 80 Tier 3 permits. When the directed fishery is open, there are no trip limits for Tier 1, Tier 2 has a 135,000 pound trip limit and Tier 3 has a 100,000 pound trip limit. Tier 3's trip limit is reduced to 20,000 pounds if it catches 7% of the commercial quota. Open access incidental permits have a 20,000 pound per trip limit. Only a few vessels accounted for most mackerel landings in 2014 (see table above).

Table 12. 2014 Vessel Dependence on Mackerel (revenue-based)*Source: Unpublished NMFS dealer reports – not at state level due to data confidentiality issues*

Dependence on Mackerel	Number of Vessels in Each Dependency Category
1%-5%	10
5%-25%	12
25%-50%	3
More than 50%	1

*Need to have had at least \$5,000 in mackerel revenues.

Table 13. Recent Landings by State (mt)*Source: Unpublished NMFS dealer reports*

YEAR	CT	MA	ME	NJ	NY	RI	Other
2012	4	1,874	19	915	25	2,493	2
2013	9	3,302	465	21	9	324	5
2014	9	4,924	622	13	57	245	71

Table 14. Recent Landings by Month (mt)

YEAR	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2012	668	3,576	948	19	48	4	5	1	35	18	5	4
2013	109	2,075	1,149	148	26	9	29	28	21	23	33	485
2014	109	2,560	936	67	21	13	29	33	42	61	1,958	111

*Source: Unpublished NMFS dealer reports***Table 15. Recent Landings by Gear (mt)**

YEAR	Gill Nets	Bottom Trawl	Single Mid-Water Trawl	Pair Mid-Water Trawl	Trap/Pots/Pound Nets/Weir	Other/Unknown
2012	4	3,059	576	1,488	24	181
2013	6	749	166	2,338	15	861
2014	33	1,126	1,299	1,484	16	1,981

Source: Unpublished NMFS dealer reports

Because of data confidentiality issues, details for port revenues from mackerel cannot be provided. Ports that had at least \$100,000 in ex-vessel revenues from mackerel over 2012-2014 (combined) included (from more mackerel dollars to less): North Kingstown, RI; Gloucester, MA; New Bedford, MA; Portland, ME, Cape May, NJ; Marshfield, MA; Provincetown, MA; and Point Judith, RI. (*Source: Unpublished NMFS dealer reports.*)

Table 16. Recent Numbers of Active Dealers

	Number of dealers buying at least \$10,000 Mackerel	Number of dealers buying at least \$100,000 Mackerel
2012	5	5
2013	16	4
2014	18	5

Source: Unpublished NMFS dealer reports

Data confidentiality concerns preclude listing mackerel catch by statistical area, but statistical areas with more than 1,000 mt of mackerel catch combined over 2012-2014 include (in descending order of catch amounts) 522, 612, 521, 616, and 514.

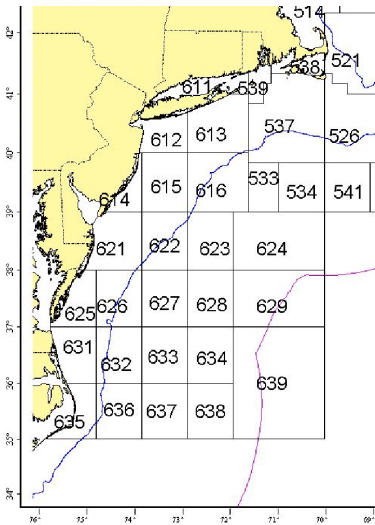


Figure 3. NMFS Statistical Areas

Current Market Overview for Mackerel and World Production (Required by FMP)

U.S. mackerel (western Atlantic) are a substitute for European mackerel (eastern Atlantic), which are caught in much larger quantities. It is unclear how demand for U.S. mackerel may be impacted by European catches, but the MSB advisory panel has indicated that the demand for mackerel is high enough to support catches near the quotas if the product is of high quality.

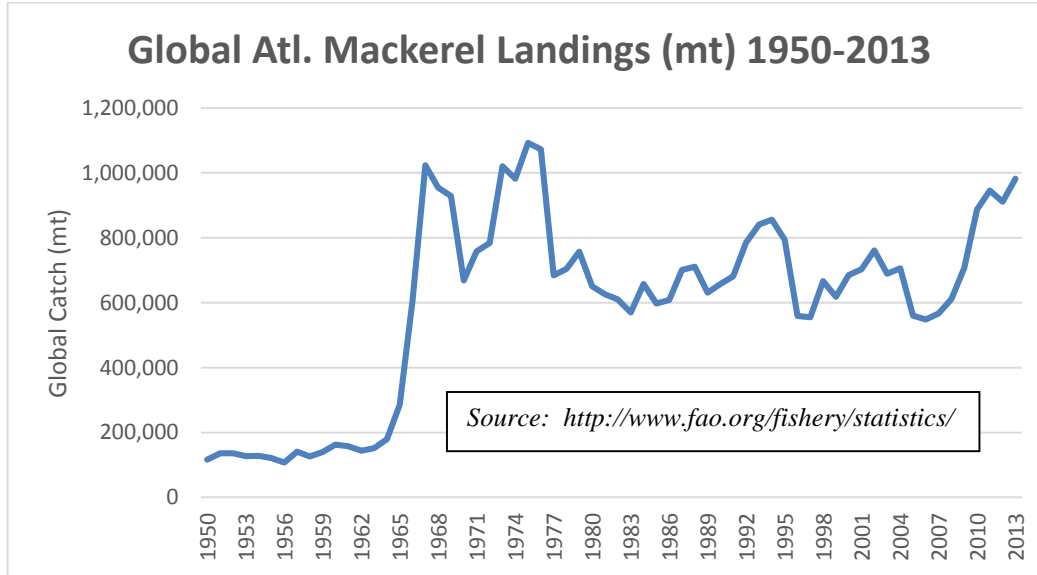


Figure 4. World production of Mackerel, 1950-2013.

Recreational Fishery

Mackerel can be seasonally important to the recreational fisheries of the Mid-Atlantic and New England regions. They may be available to recreational anglers in the Mid-Atlantic primarily during the winter and spring, depending on annual conditions. Mackerel are caught in New England in the summer and fall and are often targeted for purposes of collecting live bait, especially for large striped bass. 2005-2014 recreational landings of mackerel, as estimated from the Marine Recreational Information Program (“MRIP”), are given in the table below. In recent years (2013-2014) most landed mackerel are caught in the private/rental mode but some are caught in the party/charter and shore modes as well. Approximately 20% of all mackerel caught (by number) were released (2013-2014 combined). Compared to other recreationally-important species, estimates for mackerel recreational harvest have low precisions due to low encounter rates in surveys. Earlier years (1980s-1991) had higher landings (consistently in the 1,000-4,000 mt range) but most recent years have been below 1,000 mt.

Table 17. Recreational Harvest (rounded to nearest mt) of Mackerel, last 10 years.

Year	Harvest (MT)
2005	1,005
2006	1,491
2007	596
2008	755
2009	600
2010	845
2011	947
2012	683
2013	888
2014	792

Source: Personal communication from NMFS, Fisheries Statistics Division.

6.6.3 Atlantic butterfish

Historical Commercial Fishery

Atlantic butterfish were landed exclusively by US fishermen from the late 1800's (when formal record keeping began) until 1962 (Murawski and Waring 1979). Reported landings averaged about 3,000 mt from 1920-1962 (Waring 1975). Beginning in 1963, vessels from Japan, Poland and the Union of Soviet Socialist Republics began to exploit butterfish along the edge of the continental shelf during the late-autumn through early spring (Murawski and Waring 1979). Reported foreign catches of butterfish increased from 750 mt in 1965 to 15,000 mt in 1969, and then to about 32,000 mt in 1973. With the advent of extended jurisdiction in US waters, reported foreign catches declined sharply from 14,000 mt in 1976 to 2,000 mt in 1978. Foreign landings were completely phased out by 1987 (NEFSC 2014).

During the period 1965-1976, US Atlantic butterfish landings averaged 1,840 mt. From 1977-1987, average US landings doubled to 5,137 mt, with a historical peak of slightly less than 12,000 mt landed in 1984 (NEFSC 2014). Low abundance and reductions in Japanese demand for butterfish probably had a negative effect on butterfish landings in the 1990s-early 2000s but regulations kept butterfish catches low from 2005-2012. Quotas were increased somewhat in each year 2012-2014 and more substantially in 2015 based on a new assessment.

Current fishery participants report the highest demand for large butterfish with high fat content, though there is currently some demand for most sizes of butterfish (pers com Meghan Lapp, Seafreeze Ltd).

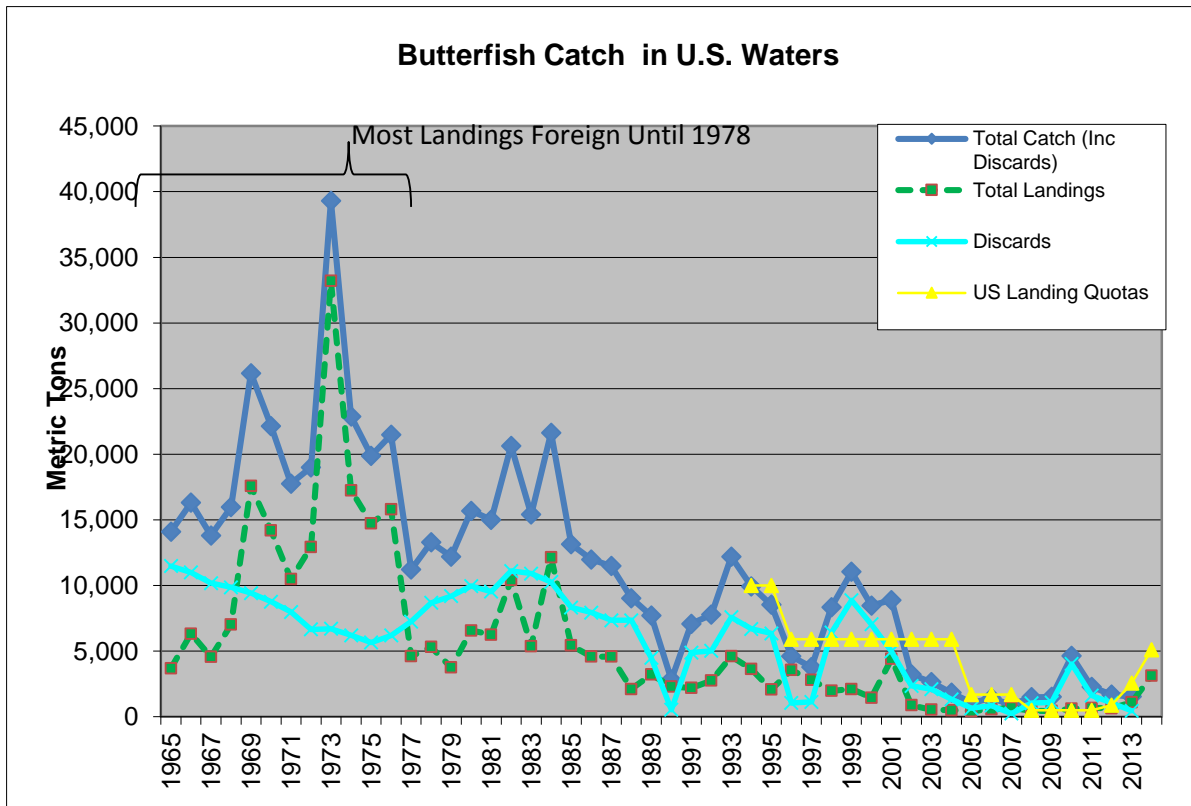


Figure 5. Historical Butterfish Landings in the U.S. EEZ

Price (nominal) has been in the \$1,400-\$1,700/mt range from 2006-2014 (\$1,462/mt in 2014) but in a long downward trend since 1986 when inflation is accounted for (see Fishery Information Document at <http://www.mafmc.org/ssc-meetings/2013/april-may> for details). 2014 landings totaled 3,122 mt and generated \$4.6 million in ex-vessel revenues.

Fishery Performance

The principle measure used to manage butterfish landings is monitoring via dealer weighout data that is submitted weekly. The dealer data triggers in-season management actions that institute lower trip limits once various thresholds are crossed. The table below lists the performance of the butterfish fishery compared to the effective quota for the last 10 years. There were quota overages in 2010 and 2011. The causes of these were likely the increased butterfish abundance in recent years leading to early closures, incomplete controls on state-permitted vessels, and the long time period of incidental post-closure landings. The current buffering, closure system, and larger quota should avoid similar overage issues, but if ABCs are lower in the future care will need to be exercised in order to avoid ABC overages.

Table 18. Butterfish Quota Performance (mt)

Year	Harvest (only commercial)	Quota	Percent of Quota Landed	ABC	Discards	Total Catch	Percent of ABC Caught
2005	428	1,681	25%		647	1,075	
2006	555	1,681	33%		856	1,411	
2007	673	1,681	40%		239	912	
2008	452	500	90%		1,029	1,481	
2009	435	500	87%	1,500	1,079	1,514	101%
2010	607	500	121%	1,500	4,017	4,624	308%
2011	664	500	133%	1,811	1,612	2,276	126%
2012	640	872	73%	4,200	1,040	1,680	40%
2013	1,091	2,570	42%	8,400	444	1,535	18%
2014	3,132	5,100	61%	9,100	NA	NA	NA

2009 was the first year that the SSC provided an ABC recommendation. 2011 was the first year of the butterfish cap, which directly controls most discards. Any ABC overages from 2012 on must be repaid pound for pound.

Source: Unpublished NMFS dealer reports

The tables and figures on the following pages describe vessel participation, vessel dependency, distribution of landings by state/month/gear/port, dealer participation, and the general at-sea location of most recent catches. In 2014 there were approximately 337 potentially active butterfish/longfin squid limited access or “moratorium” permits. Another 64 were not potentially active but have had their history documented under CPH or “Confirmation of Permit History.”

Table 19. 2014 Data (most recent) for Permitted and Active Vessels

Principal Port State (from permit data)	10,000 pounds or more	1,000-10,000 pounds
All States	53	79

Source: Unpublished NMFS dealer reports and permit data. Data confidentiality rules do not allow state by state breakdowns.

Table 20. 2014 Vessel Dependence on Butterfish (revenue-based)

Dependence on Butterfish	Number of Vessels in Each Dependency Category
1%-5%	60
5%-25%	12
25%-50%	2
More than 50%	0

Source: Unpublished NMFS dealer reports. (Not at State Level to Avoid Confidentiality Issues)

*Need to have had at least \$5,000 in butterfish revenues.

Table 21. Recent Landings by State (mt)

YEAR	CT	MA	NJ	NY	RI	Other
2012	51	80	34	207	249	18
2013	50	59	75	174	711	22
2014	46	94	58	261	2,653	11

Source: Unpublished NMFS dealer reports

Table 22. Recent Landings by Month (mt)

YEAR	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2012	26	43	68	43	70	58	58	56	51	66	64	36
2013	32	125	49	122	58	45	64	97	85	87	150	177
2014	311	805	348	129	101	61	54	60	232	662	127	233

Source: Unpublished NMFS dealer reports

Table 23. Recent Landings by Gear (mt)

YEAR	Bottom Trawl	Dredge	Unknown/Other
2012	456	20	163
2013	939	14	138
2014	2,847	9	266

Source: Unpublished NMFS dealer reports

Table 24. Recent Butterfish Ex-Vessel Revenues by Port for All Ports with at least \$100,000 butterfish ex-vessel sales totaled over last three years.

YEAR	NORTH_KIN GSTOWN, RI	POINT_JU DITH, RI	MONTAUK , NY	NEW_BED FORD, MA	HAMPTON _BAYS, NY	NEW_LON DON, CT	STONINGT ON, CT	AMAGANS ETT, NY
2012	Confidential	\$302,847	\$231,844	\$75,764	\$59,724	Confidential	Confidential	Confidential
2013		\$376,175	\$300,495	\$67,917	\$39,704			
2014		\$594,633	\$451,212	\$137,040	\$42,038			

Source: Unpublished NMFS dealer reports. CI = Confidential Data

Table 25. Recent Numbers of Active Dealers

	Number of dealers selling at least \$10,000 Butterfish	Number of dealers selling at least \$50,000 Butterfish
2012	13	6
2013	17	7
2014	11	12

Source: Unpublished NMFS dealer reports

Table 26. Recent Kept Catch in Statistical Areas with catch of at least 100mt butterfish total combined 2011-2013.

YEAR	_526	_537	_525	_613	_632	_539	_541	_616	_611	_636
2012	.	103	31	44	.	71	.	37	59	.
2013	146	274	70	37	22	80	.	49	63	62
2014	1,133	489	253	264	214	64	202	110	73	123

Source: Unpublished NMFS vessel trip reports

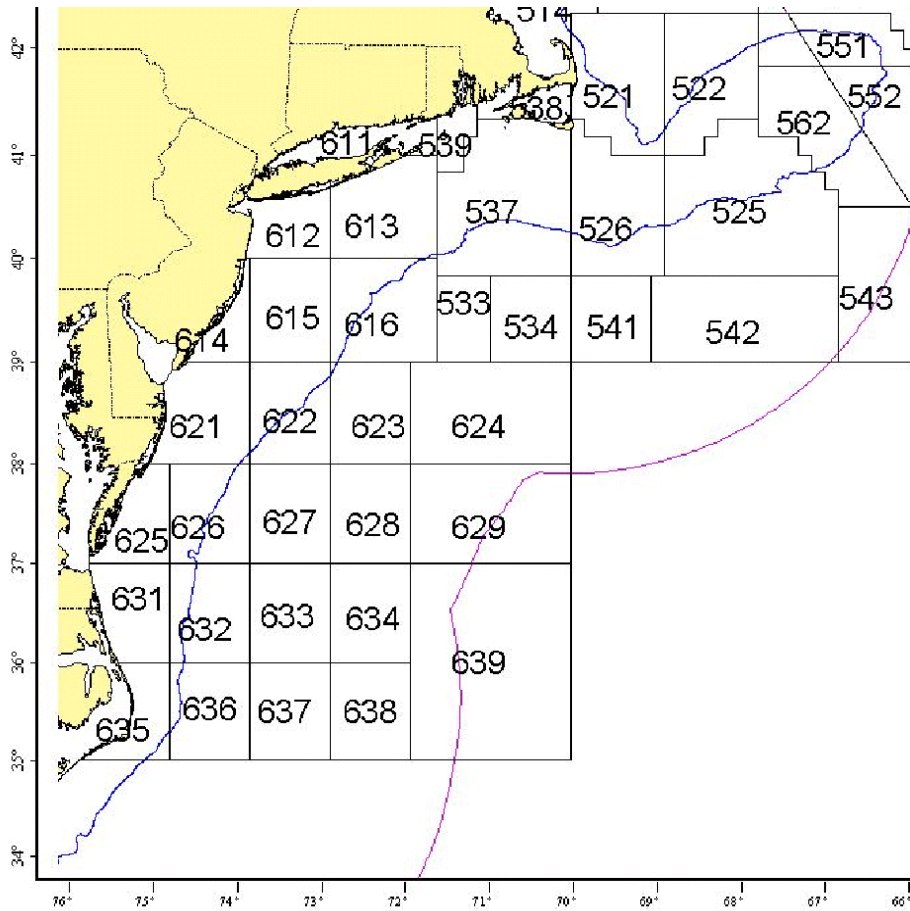


Figure 6. NMFS Statistical Areas.

6.6.4 Longfin Squid

Historical Commercial Fishery

US fishermen have been landing squid along east coast of the US since the 1880's (Kolator and Long 1978) but early fisheries were minor in scope. Focused effort began in 1968 by The Union of Soviet Socialist Republics and Japanese vessels. Reported foreign landings of longfin squid increased from 2,000 mt in 1964 to a peak of 36,500 mt in 1973. Foreign longfin squid landings averaged 29,000 mt for the period 1972-1975.

Foreign fishing for longfin squid began to be regulated with the advent of extended fishery jurisdiction in the US in 1977. Initially, US regulations restricted foreign vessels fishing for squid (and other species) to certain areas and times (the so-called foreign fishing "windows"), primarily to reduce spatial conflicts with domestic fixed gear fishermen and minimize bycatch of non-target species. Later, foreign allocations were reduced and then eliminated as the domestic fishery became established. The development and expansion of the US squid fishery occurred relatively slowly as the US industry did not develop the appropriate technology to catch and process squid in offshore waters until the 1980's.

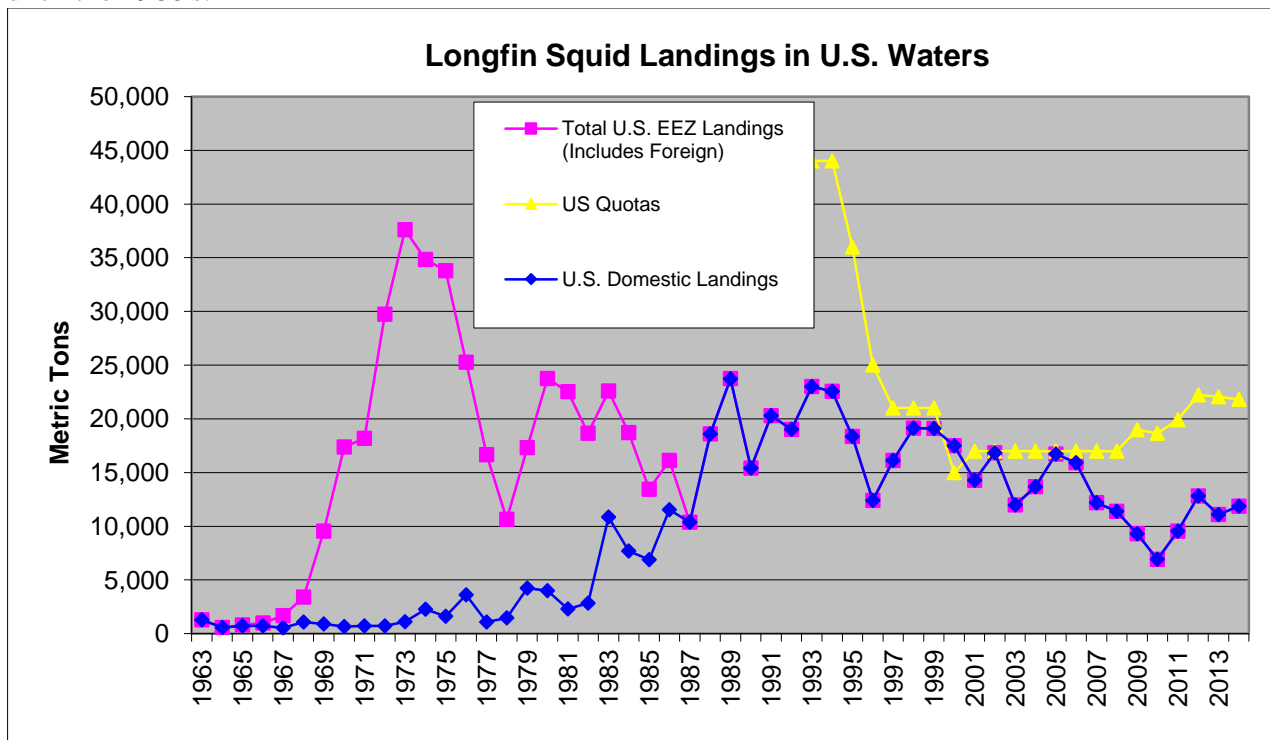


Figure 7. Historical Longfin Squid Landings in the U.S. EEZ.

Price has generally trended up from 1982 to now but there has been somewhat of a decline from 2011 to \$2,182/mt in 2014 (see Fishery Information Document at <http://www.mafmc.org/ssc-meetings/2013/april-may> for details). 2014 landings totaled 11,858 mt and generated \$25.9 million in ex-vessel revenues. In 2014 there were approximately 337 potentially active butterfish/longfin squid limited access or “moratorium” permits. Another 64 were not potentially active but have had their history documented under CPH or “Confirmation of Permit History.”

Fishery Performance

The principle measure used to manage longfin squid is Trimester quota monitoring via dealer data that is submitted weekly. The dealer data triggers in-season management actions that institute relatively low trip limits when 90% of the Trimester quotas are reached in Trimesters 1 and 2 and when 95% of the annual DAH is reached in Trimester 3. At the end of Trimester 1 and 2 the closure threshold increases to 95% as well to avoid short unnecessary closures. The percentages allocated to each Trimester are 43%, 17%, and 40%. Overages from Trimester 1 and 2 roll-over into Trimester 3, but it is more common to have underages. Underages from Trimester 1 roll into Trimester 3 if relatively small, but if underages are relatively large then ½ goes to Trimester 2 and ½ to Trimester 3. The most Trimester 2 can increase is 50% higher than the original Trimester 2 quota. Any underage in Trimester 2 rolls over into Trimester 3. The tables and figures on the subsequent pages describe quota performance, vessel participation, vessel dependency, distribution of landings by state/month/gear/port, dealer participation, and the general at-sea location of most recent catches.

The longfin squid DAH has been divided up into trimesters since 2007 while 2001-2006 had quarterly management. Each seasonal time period closes at a threshold of the seasonal allocation, which can result in seasonal closures. The seasonal closures that have occurred since 2002 are: **2002**: May 28-Jun30, Aug 16-Sep 30, Nov 2 -Dec 11, Dec 24-Dec31; **2003**: Mar 25-Mar 31; **2004**: Mar 5- Mar 31; **2005**: Feb 20-Mar 31, April 25-Jun 30, Dec 18-Dec 31; **2006**: Feb 13-Mar 31, April 21-April 26, May 23-June 30, Sept 2-Sept 30; **2007**: April 13-April 30; **2008**: July 17 - Aug 31; **2009**: Aug 6 - Aug 31; **2010**: No closures; **2011**: Aug 23 – Aug 31; **2012**: April 17 - April 30 (butterfish cap), July 10-August 31; **2013**: no closures; **2014**: Aug 11-Aug 31. There are occasional overages of the trimester quotas, but these are typically minor and should have overall minimal effects since any Trimester 1 and 2 overages are applied to Trimester 3.

Table 27. Longfin Squid DAH Performance (mt)

Year	Commercial Landings	Quota	Percent of Quota Landed
2005	16,720	17,000	98%
2006	15,916	17,000	94%
2007	12,179	17,000	72%
2008	11,396	17,000	67%
2009	9,307	19,000	49%
2010	6,912	18,667	37%
2011	9,554	19,906	48%
2012	12,817	22,220	58%
2013	11,097	22,049	50%
2014	11,858	21,810	54%

Source: Unpublished NMFS dealer reports

Table 28. 2014 Data for Permitted and Active Vessels

Principal Port State (from permit data)	500,000 or more pounds	100,000-500,000 pounds	50,000-100,000 pounds	10,000-50,000 pounds
All States	12	58	30	54

Source: Unpublished NMFS dealer reports and permit data. Data confidentiality rules do not allow state by state breakdowns.

Table 29. 2014 Vessel Dependence on Longfin Squid (revenue-based)

Dependence on Longfin	Number of Vessels in Each Dependency Category
1%-5%	20
5%-25%	70
25%-50%	49
More than 50%	26

Source: Unpublished NMFS dealer reports Not at State Level to Avoid Confidentiality Issues

*Need to have had at least \$5,000 in longfin squid revenues.

Table 30. Recent Landings by State (mt)

YEAR	CT	MA	NJ	NY	RI	Other
2012	688	1,335	1,893	3,556	5,302	42
2013	487	393	2,169	2,180	5,712	155
2014	589	1,093	1,254	2,167	6,655	100

Source: Unpublished NMFS dealer reports

Table 31. Recent Landings by Month (mt)

YEAR	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2012	342	348	672	1033	2058	2607	2395	876	766	1036	274	411
2013	438	75.6	176	61.4	109	313	827	1493	2735	2304	1635	931
2014	1009	593	1002	700	972	1700	1934	1015	1013	932	613	375

Source: Unpublished NMFS dealer reports

Table 32. Recent Landings by Gear (mt)

YEAR	Bottom Trawl	Midwater Trawl	Dredge	Trap/Pots/Pound/Weir	Other/Unknown
2012	10,480	99	131	47	2,060
2013	9,371	19	184	1	1,521
2014	9,211	0	244	2	2,401

Source: Unpublished NMFS dealer reports

Table 33. Recent Longfin Squid Ex-Vessel Revenues by Port for All Ports with at Least \$200,000 Longfin squid Ex-Vessel Sales Combined Over last three years

YEAR	POINT JUDITH, RI	MONTAUK, NY	CAPE MAY, NJ	HAMPTON BAYS, NY	NORTH KINGSTOWN, RI	NEW BEDFORD, MA	NEW LONDON, CT
2012	\$10,661,735	\$4,739,505	\$3,666,660	\$3,080,859	\$1,837,346	\$1,195,242	\$998,311
2013	\$9,842,162	\$3,268,002	\$4,348,453	\$2,237,947	\$3,251,086	\$848,885	\$725,914
2014	\$12,342,134	\$3,204,462	\$2,279,576	\$1,610,180	\$1,607,453	\$844,635	\$926,609
YEAR	BARNSTABLE, MA	STONINGTON, CT	POINT LOOKOUT, NY	Woods Hole, MA	SHINNECOCK, NY	BELFORD, NJ	POINT PLEASANT, NJ
2012	\$1,100,494	\$689,303	\$537,550	CI	CI	CI	CI
2013	\$71,755	\$403,915	\$161,679	CI	CI	CI	CI
2014	\$768,778	\$347,707	\$202,213	CI	CI	CI	CI
YEAR	HAMPTON, VA	FALMOUTH, MA	NEWPORT, RI	EAST LYME, CT	HYANNIS, MA		
2012	CI	CI	CI	CI	CI		
2013	CI	CI	CI	CI	CI		
2014	CI	CI	CI	CI	CI		

Source: Unpublished NMFS dealer reports CI – Confidential Information

Table 34. Recent Numbers of Active Dealers

	Number of dealers buying at least \$10,000 longfin	Number of dealers buying at least \$100,000 longfin	Number of dealers buying at least \$1,000,000 longfin
2012	20	25	8
2013	20	18	6
2014	23	21	6

Source: Unpublished NMFS dealer reports

Table 35. Recent Catch in Statistical areas with at least 1,000 mt of longfin squid caught total 2011-2013

YEAR	_537	_616	_613	_622	_612	_626	_538	_526
2012	2,529	1,419	1,704	1,244	1,765	385	722	12
2013	886	2,499	1,761	1,730	297	657	23	819
2014	2,996	1,763	1,226	1,048	834	276	505	243

Source: Unpublished VTR reports

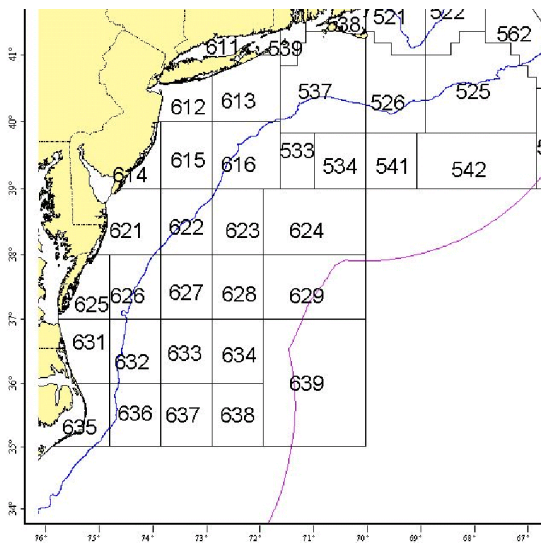


Figure 8. NMFS Statistical Areas

Butterfish Catch/Mortality Cap

The longfin squid fishery is subject to closure if it discards too much butterfish. Framework 7 modified the cap to be a discard cap versus catch cap but the effect remained unchanged - butterfish mortality in the longfin squid fishery should be controlled. Because of the butterfish cap, a constraint on total butterfish catch may limit production in the squid fishery, so butterfish takes on a “shadow value” in terms of the indirect impact on the longfin squid fishery. While the exact relationship between butterfish and longfin squid catches cannot be precisely determined ahead of time for any

given year, the “shadow value” of butterfish could be quite large; that is, the longfin squid fishery may recognize large increases in landings/revenues/profits from relatively small increases in the butterfish specifications (and vice-versa with decreases).

The cap also is important for butterfish management. Since ACL overages of butterfish have to be paid back in following years, the cap serves to help limit annual butterfish mortality to a given amount established by the SSC, which should both protect the butterfish stock and avoid negative impacts related to large paybacks if discarding was not monitored and controlled in each year in near real-time.

There were no cap closures in 2011. In 2012 there was a closure from April 17-30, although late-arriving data caused the closure rather than actual discards. There were no cap closures in 2013 or 2014. Additional details on the cap estimation may be found here:

<http://www.greateratlantic.fisheries.noaa.gov/nero/regs/frdoc/11/11SMB2011ButterfishSpecsRevisedCAP.pdf> and a report on the 2014 operation of the cap may be found here: <http://www.mafmc.org/ssc-meetings/2015/may-13-14>. The tracking of the current and recent cap years may be found here: http://www.greateratlantic.fisheries.noaa.gov/ro/fso/reports/reports_frame.htm. Reviews of the cap’s operation by the SSC have found that the cap appears to be operating as designed, i.e. tracking and limiting butterfish mortality in the longfin squid fishery.

Longfin Squid Recreational Fishery

While there is definitely a recreational fishery for longfin squid, catch amounts have not been estimated – MRIP does not collect information on invertebrates. Based on qualitative investigation by Council staff, recreational fishing primarily occurs in the following modes: fishing from shore on manmade structures with artificial lighting at night; private boat fishing, charter boat fishing, and party/head boat fishing. Once the new MRIP methodology is fully in place (2015) the Council may request that additional information on squid catches be collected by MRIP interviewers or the Council may investigate a separate survey. If individuals are looking for qualitative information on recreational squid fishing, the following site contains a variety of anecdotal information on recreational longfin squid fishing: <http://www.squidfish.net/forums/index.php?/forum/18-east-coast/>.

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7.0 WHAT ARE THE IMPACTS (Biological and Human Community) FROM THE ALTERNATIVES CONSIDERED IN THIS DOCUMENT?

The alternatives considered are fully described in section 5. Related to the specifications, the key determinant of biological impacts on the FMP's managed resources (mackerel, squid, and butterfish) is how much fish can be caught, i.e. the annual catch limits in the case of butterfish and mackerel and the ABCs for longfin and *Illex* squid (the squids are exempt from ACLs due to their short lifespan). In recent years the mackerel, squid, and butterfish fisheries have not caught their entire quotas. Thus even the no action/status quo potentially allows an expansion of catch. To the degree that extra effort is used to expand catch, impacts on non-target species, habitat, and protected resources could increase even under the no action. Conversely, for the same reasons that catch has been lower than the quotas, catch and effort, and related impacts, could decrease under the no action. This is especially true for the MSB species as they are subject to sometimes rapid fluctuations in abundance (how many fish are out there) and/or availability (how many fish are out there in places where the fishery can find and target them profitably). Rather than repeat this concept for every resource, this document acknowledges that under any of the proposed alternatives effort and related impacts could increase or decrease for reasons other than the specifications. Accordingly, the focus of analysis is on the relative upper limits or other constraints imposed (or removed) by the various alternatives considered in this action.

For habitat, protected resource, and non-target species impacts, the key determinant is not so much the catch itself but the amount and character of the related effort. A decrease in effort may result in positive impacts (+) as a result of fewer encounters and/or fewer habitat impacts from fishing gear, while an increase in effort may result in a negative impact (-). Similar effort likely results in neutral impacts (0). The table immediately below illustrates that the availability of the target species can drive effort as much as any quota change, and as effort changes so would impacts on habitat, protected resource, and non-target species. This is noted for the habitat, protected resource, and non-target species sections since the MSB fisheries often experience large swings in availability and therefore effort, independent of any regulatory changes. Since limits on catch do cap effort, catch limits are a factor related to effort but many other factors are at least somewhat beyond the control of the Council (such as fish abundance, availability of other opportunities, weather, climate, fish movements/availability, variable productivity, etc.).

The action alternatives could be selected all together or just some (or none). Therefore their impacts are additive in nature so the focus on the impact analysis relates to the status quo versus impacts between alternatives. A descriptive label is included for each alternative below when considering impacts, and a full description of alternatives is available in Section 5.

National Oceanic and Atmospheric Administration Administrative Order 216-6 (May 20, 1999) contains criteria for determining the significance of the impacts of a proposed action and it includes the possibility of introducing or spreading a nonindigenous species. This potential impact does not fit into the sections below so it is addressed in this introduction. There is no evidence or indication that these fisheries have ever resulted or would ever result in the introduction or spread of nonindigenous species.

Table 36. Changes in effort as a result of adjustments to quota and/or fish availability.

Change in quota	Fish abundance/availability		
	Decrease in availability	No change in availability	Increase in availability
Decrease in quota	<u>Fishing effort may decrease, increase, or stay the same depending on a combination of factors.</u>	<u>Effort likely to decrease or stay the same.</u> If per trip catch stays the same, the fishery will be closed earlier with fewer trips taken (reducing effort). However managers may reduce trip limits or adjust regulations that extend the fishing season (keeping effort the same).	<u>Effort likely to decrease or stay the same.</u> A lower quota plus higher catch per unit of effort (CPUE) from higher availability should decrease effort. However, managers may reduce trip limits or adjust regulations that extend the fishing season which may keep effort relatively even.
No change in quota	<u>Effort may increase or decrease.</u> While the quota has not changed, fishermen may try to take more trips to catch the same amount of fish (increasing effort) or may stop targeting a stock of fish if availability is low enough to decrease profitability (decreasing effort).	Fishing effort may remain the same given the quota has not changed and availability is expected to be similar.	<u>Effort should decrease.</u> While the quota has not changed, fishermen should be able to take fewer trips to catch the same amount of fish (decreasing effort).
Increase in quota	<u>Fishing effort likely to increase or stay the same.</u> A higher quota plus lower catch per unit of effort from lower availability should increase effort. However, managers may increase trip limits or adjust regulations to allow more efficient fishing (keeping effort the same).	<u>Effort likely to increase or stay the same.</u> If per trip catch stays the same, the fishery will be closed later with more trips taken (increasing effort). However managers may increase trip limits or adjust regulations to allow more efficient fishing (keeping effort the same).	<u>Fishing effort may decrease, increase, or stay the same depending on a combination of factors.</u>

7.1 Biological Impacts on Managed Species

The impacts from the alternatives are described separately for each of the managed species: mackerel (7.1.1), butterfish (7.1.2), longfin squid (7.1.3), and *Illex* squid (7.1.4). Any amount of fishing will lower the population of a fish stock, but in the context of fishery management, a negative impact would be something that causes a population to go below target levels, which are generally near the biomass that produces maximum sustainable yield.

7.1.1 Impacts on Mackerel

Alternative 1 – No Action/status quo.

Given the fishery has been operating within the catch restrictions set for it, the overall baseline impact on the mackerel stock from fishery operations is likely neutral to date – it is not believed that recent catches would be high enough to be impacting mackerel, and environmental conditions are believed to be the primary cause of the current scarcity of mackerel (Overholtz et al 2011). Under the no action, the mackerel ABC would remain at 40,165 mt and other MSB specifications would also remain the same, the RH/S cap would remain as a two phase 89 mt/155 mt cap, the butterfish trigger for needing to use 3-inch mesh would remain at 2,500 pounds, and the longfin squid Pre-Trip Notification System (PTNS) requirement would remain in effect. The only aspects of these that affect mackerel are the mackerel ABC/specifications and the RH/S cap. Not using the new SSC-recommended mackerel ABC and associated specifications could have a low negative effect on mackerel (negative because of the risk of overfishing and low because the mackerel fishery hasn't been catching much mackerel regardless of the specifications). Mackerel are indirectly impacted by the RH/S cap, and since the RH/S cap could limit mackerel catch even more than the mackerel specifications, any RH/S cap could have a low positive effect on the mackerel stock (positive from causing lower catches and low because the mackerel fishery hasn't been catching much mackerel and has remained well below the RH/S cap so far, so it may not be constraining).

Alternative 2 - (Preferred) – 2016-2018 mackerel specifications based on SSC recommendation (19,898 mt ABC)

Compared to the no action, the new proposed mackerel ABC and associated specifications should have a low positive effect on the mackerel stock (positive from causing lower catches and low because the mackerel fishery hasn't been catching much mackerel regardless of the specifications). Given the low positive impact relative to the status quo, the overall impact on the mackerel stock is likely still generally neutral.

Alternative 3 - (Preferred) – 82 mt 2016-2018 river herring and shad (RH/S) cap

Compared to the no action, the new lower proposed RH/S cap would have positive impacts for the mackerel stock but they would likely be low given the small change and that so far the RH/S cap has not been binding on the mackerel fishery. Given the low positive impact relative to the status quo, the overall impact on the mackerel stock is likely still generally neutral.

Alternative 4 - (Preferred) – 5,000 pound trigger for butterfish 3-inch mesh, and strengthen clarification

This should have no impact on mackerel since mackerel are managed via mackerel-specific regulations. Given the neutral impact relative to the status quo, the overall impact on the mackerel stock is likely still neutral.

Alternative 5 - (Preferred) – Suspend the longfin squid Pre-Trip Notification System (PTNS) requirement

This should have no impact on mackerel since mackerel are managed via mackerel-specific regulations. Given the neutral impact relative to the status quo, the overall impact on the mackerel stock is likely still neutral.

7.1.2 Impacts on Butterfish

Alternative 1 – No Action/status quo.

Given the fishery is operating within the catch restrictions set for it, the overall baseline impact on the butterfish stock from fishery operations is likely neutral - the most recent butterfish assessment found that butterfish is not overfished and has never been overfished (NEFSC 2010). Under the no action, the mackerel ABC would remain at 40,165 mt and other MSB specifications would also remain the same, the RH/S cap would remain as a two phase 89 mt/155 mt cap, the butterfish trigger for needing to use 3-inch mesh would remain at 2,500 pounds, and the longfin squid Pre-Trip Notification System (PTNS) requirement would remain in effect. The only aspects of these that affect butterfish are the 3-inch mesh trigger/strengthener and the PTNS alternatives. The 3-inch trigger is designed to ensure that directed butterfish fishing occurs with 3-inch mesh that should release a proportion of juvenile butterfish. This should have a positive impact on the butterfish stock. Using a strengthener may reduce the effective mesh size, but since landings and discards are monitored there should be negligible impacts. The PTNS system, while originally developed to assist deploying observers on longfin squid vessels for purposes of monitoring the butterfish cap, has since become a hindrance to observer deployment and likely has a low negative impact on the butterfish stock (because less data is being collected on butterfish discards - see section 5.5 for additional details).

Alternative 2 - (Preferred) – 2016-2018 mackerel specifications based on SSC recommendation (19,898 mt ABC)

This should have no impact on butterfish since butterfish are managed via butterfish-specific regulations. Given the neutral impact relative to the status quo, the overall impact on the butterfish stock is likely still neutral.

Alternative 3 - (Preferred) – 82 mt 2016-2018 river herring and shad (RH/S) cap

This should have no impact on butterfish since butterfish are managed via butterfish-specific regulations. Given the neutral impact relative to the status quo, the overall impact on the butterfish stock is likely still neutral.

Alternative 4 - (Preferred) – 5,000 pound trigger for butterfish 3-inch mesh, and strengthen clarification

Since butterfish landings and discards are tracked and monitored to ensure that total catch remains below the ABC (and it has in recent years), this alternative should have no impacts on the butterfish stock compared to the status quo. Furthermore, as described in Section 5.4, it is anticipated that directed butterfish fishing will primarily occur on trips landing well above 5,000 pounds, so a 3-inch mesh will still be required for most directed butterfish fishing (i.e. juvenile escapement during directed butterfish fishing should be similar as the status quo). Juvenile escapement during large-scale butterfish fishing should help more butterfish reach sexual maturity (50% of butterfish are mature at 12cm and 3-inch mesh should allow substantial escapement of 12cm and smaller butterfish (MAFMC 2010)). Given the neutral impact relative to the status quo, the overall impact on the butterfish stock is likely still neutral.

The strengthener clarification just makes is clear that the gear currently being reported as used is legal, so there should be no impacts relative to the status quo. Given the neutral impact relative to the status quo, the overall impact on the butterfish stock is likely still neutral.

Alternative 5 - (Preferred) – Suspend the longfin squid Pre-Trip Notification System (PTNS) requirement

Since removing the PTNS requirement may lead to better placement of observers, this alternative should have low positive impacts on the butterfish stock compared to the status quo (more data on butterfish discarding would be gathered). Given the low positive impact relative to the status quo, the overall impact on the butterfish stock is likely still generally neutral.

7.1.3 Impacts on Longfin Squid

Given the fishery is operating within the catch restrictions set for it, the overall baseline impact on the longfin squid stock from fishery operations is likely neutral - the most recent longfin squid assessment characterized this stock as lightly exploited (NEFSC 2011). None of the alternatives, including the no action, should directly impact the longfin squid stock. There are some indirect effects related to the PTNS requirement on the operation of the fishery, but since longfin squid are managed via longfin squid-specific regulations that should keep catch below their ABC regardless of any of the alternatives in this document, there should be no impacts on the longfin squid stock.

7.1.4 Impacts on *Illex* Squid

Given the fishery is operating within the catch restrictions set for it, the overall baseline impact on the *Illex* squid stock from fishery operations is likely neutral – while there is not a recent accepted assessment for *Illex*, the Council’s SSC concluded that catches at or below 26,000 metric tons should not negatively impact this stock (MAFMC 2014). The *Illex* squid fishery is sufficiently separate from the mackerel, longfin squid, and butterfish fisheries (the alternatives in this action could impact those fisheries) that one would not expect any impacts to the *Illex* stock from any of the no action or action alternatives. Even if there is incidental catch of *Illex* in these other fisheries (and there is some, especially in the longfin squid fishery in the summer and fall), because direct controls on the *Illex*

squid fishery and a set-aside for discards exist, *Illex* squid catches should stay below the *Illex* ABC regardless, so equally negligible impacts would be expected for *Illex* squid related to any alternatives (including the no action).

Managed Species Impacts Summary

The no action/status quo alternatives should continue to be protective of the MSB stocks except for mackerel, in which case the no action/status quo may allow too much mackerel catch. Most of the action alternatives considered in this document should have no or similar impacts on the managed species relative to how the fishery would be conducted with the no action alternatives except for Alternatives 2 and 3, which could have low positive impacts for mackerel because they could reduce catch compared to the status quo and Alternative 5, which should have low positive impacts for butterfish related to improved observer placement.

7.2 Habitat Impacts

As discussed in Table 36 at the start of Section 7, the availability of the targeted species may drive effort (and habitat impacts) as much as quotas and other regulations. Impacts on the habitat for the managed species (7.2.1) and other species (7.2.2) are addressed separately. The word “habitat” encompasses essential fish habitat (EFH) for the purposes of this analysis. The Council has already minimized to the extent practicable impacts to habitat from the MSB fisheries through closure of several canyon areas in MSB Amendment 9 (<http://www.mafmc.org/fmp/history/smb-hist.htm>) and Tilefish Amendment 1 (<http://www.mafmc.org/fmp/history/tilefish.htm>) (see Section 6.3). The Council has also approved protections for Deep Sea Corals via Amendment 16.

7.2.1 Impacts on Managed Species Habitat

Habitat for the managed species generally consists of the water column, which is not significantly impacted by fishing activity. The exception to the habitat location being the water column is longfin squid eggs, which are attached to sand, mud, or bottom structure (manmade or natural). However, as determined in Amendment 9, there is no indication that squid eggs are preferentially attached to substrates that are vulnerable to disturbance from fishing, so no impacts on habitat for longfin squid eggs are expected from any increase or decrease in fishing effort by bottom trawls. This means that the impacts for managed species’ habitat related to any of the status quo alternatives are neutral, as are the impacts of any of the action alternatives. This is the same finding as was included in Amendment 14.

7.2.2 Impacts on Other Federally Managed Species Habitat (see table 4)

Alternative 1 - No Action/status-quo

Under the no action, the mackerel ABC would remain at 40,165 mt and other MSB specifications would also remain the same, the RH/S cap would remain as a two phase 89 mt/155 mt cap, the butterfish trigger for needing to use 3-inch mesh would remain at 2,500 pounds, and the longfin squid

Pre-Trip Notification System (PTNS) requirement would remain in effect. The MSB fisheries use a mix of gear types, but the majority of effort is with bottom tending mobile gear. As described in section 6.3 above, bottom trawling can adversely impact some habitat types. However, since the Council has considered habitat impacts in the past and has already restricted MSB fishing to protect sensitive habitats (e.g. Tilefish habitat), the impact of no action is best characterized as overall low negative, similar to past years.

Alternative 2 - (Preferred) – 2016-2018 mackerel specifications based on SSC recommendation (19,898 mt ABC)

Compared to the no action, the new proposed mackerel ABC and associated specifications should have a low positive effect on habitat (positive from causing lower catches/effort and low because the mackerel fishery hasn't been catching much mackerel regardless of the specifications and also generally uses mid-water gear that should not impact the bottom). Given the low positive impact relative to the status quo, the overall impact on habitat is likely still low negative, but less so.

Alternative 3 - (Preferred) – 82 mt 2016-2018 river herring and shad (RH/S) cap

Compared to the no action, the new lower proposed RH/S cap should have low positive impacts for habitat (positive from causing lower catches/effort and low because the mackerel fishery hasn't been catching much mackerel regardless of the specifications and also generally uses mid-water gear that should not impact the bottom). Given the low positive impact relative to the status quo, the overall impact on habitat is likely still low negative, but less so.

Alternative 4 - (Preferred) – 5,000 pound trigger for butterfish 3-inch mesh, and strengthener clarification

It is not expected that this minor change would affect fishing effort enough to have an impact on habitat. Fishery participants have reported that this change will simply allow them to keep more butterfish while longfin squid fishing. Given the neutral impact relative to the status quo, the overall impact on habitat is likely still low negative.

Alternative 5 - (Preferred) – Suspend the longfin squid Pre-Trip Notification System (PTNS) requirement

It is not expected that this minor change would affect fishing effort enough to have an impact on habitat. The only change that is expected is that vessels will not have to plan notifications and wait for responses from the observer program, which will be a convenience to fishermen but should not change overall fishing effort. Given the neutral impact relative to the status quo, the overall impact on habitat is likely still low negative.

Habitat Impacts Summary

Status quo MSB fishing does impact habitat, but impacts have been minimized to the extent practicable by other actions. The mackerel specification and RH/S alternatives considered in this document are likely to have neutral or low positive impacts on habitat by reducing effort by bottom-tending gear. The butterfish and longfin squid alternatives are not likely to have a discernable impact on effort and therefore are not likely to have a discernable impact on habitat compared to no action. Overall the impact on habitat of the fisheries is likely to remain low negative.

7.3 Impacts on Protected Resources

Note: As discussed in Table 36, the availability of the targeted species may drive effort (and impacts on protected resources) as much as quotas and other regulations.

Alternative 1 - No Action/status-quo

Under the no action, the mackerel ABC would remain at 40,165 mt and other MSB specifications would also remain the same, the RH/S cap would remain as a two phase 89 mt/155 mt cap, the butterfish trigger for needing to use 3-inch mesh would remain at 2,500 pounds, and the longfin squid Pre-Trip Notification System (PTNS) requirement would remain in effect. The MSB fisheries use a mix of gear types, some of which may have protected species interactions as described in section 6.4. Non-ESA and ESA no-action impacts are further discussed below.

No-action Non-ESA Listed Species Impacts

The MSB FMP fisheries do overlap with the distribution of non-ESA listed species of marine mammals (cetaceans and pinnipeds). As a result, marine mammal (non-ESA listed species) interactions with bottom or mid-water trawl gear are possible (see section 6.4); however, ascertaining the risk of an interaction and the resultant potential impacts of the No Action on cetaceans and pinnipeds (marine mammals) are difficult and somewhat uncertain, as quantitative analysis has not been performed. However, we have considered, to the best of our ability, available information on marine mammal interactions with commercial fisheries, of which, the MSB FMP is a component (Waring *et al.* 2014). Aside from harbor porpoise and several stocks of bottlenose dolphin, there has been no indication that takes of non-ESA listed species of marine mammals in commercial fisheries has gone above and beyond levels which would result in the inability of each species population to sustain itself over the last 5 years (Waring *et al.* 2014). Specifically, aside from harbor porpoise and several stocks of bottlenose dolphin, potential biological removal (PBR) has not been exceeded for any of the non-ESA listed marine mammal species identified in section 6.4 (Waring *et al.* 2014). Although harbor porpoise and several stocks of bottlenose dolphin have experienced levels of take that have resulted in the exceedance of each species PBR, take reduction plans have been implemented to reduce bycatch in the fisheries affecting these species (Harbor Porpoise Take Reduction Plan (HPTRP), effective January 1, 1999 (63 FR 71041); Bottlenose Dolphin Take Reduction Plan (BDTRP), effective April 26, 2006 (71 FR 24776)). These plans are still in place and are continuing to assist in decreasing bycatch levels for these species. Although the information presented is a collective representation of commercial fisheries interactions with non-ESA listed species of marine mammals, and does not address the effects of the

MSB FMP specifically, the information does demonstrate that to date, operation of the MSB FMP, or any other fishery, has not resulted in a collective level of take that threatens the continued existence of non-ESA listed marine mammal populations.

Based on this information, and the fact that there is continual monitoring of non-ESA listed marine mammal species bycatch, and that voluntary measures exist that reduce serious injury and mortality to marine mammal species incidentally caught in trawl fisheries (see the Atlantic Trawl Gear Take Reduction Strategy, section 6.4.1.1), it is not expected that the No Action will introduce any new risks or additional takes to non-ESA listed marine mammal species that have not already been considered by NMFS to date and therefore, is not expected to affect the continued existence of non-ESA listed species of marine mammals. For these reasons, no action is expected to have low negative impacts on non-ESA listed species of marine mammals, similar to past years.

No-action ESA Listed Species Impacts

The MSB FMP fisheries do overlap with ESA listed species distribution. As a result, ESA listed species interactions with bottom or mid-water trawl gear are possible (see section 6.4); however, ascertaining the risk of an interaction and the resultant potential impacts of the No Action on ESA-listed species are difficult and somewhat uncertain, as quantitative analysis has not been performed. However, we have considered, to the best of our ability, how the fishery has operated in regards to listed species since 2013, when NMFS issued a Biological Opinion (Opinion) on the operation of seven commercial fisheries, including the MSB FMP (NMFS 2013). Specifically, we have focused on available information on ESA-listed species interactions with commercial fisheries, of which, the MSB FMP is a component (NMFS 2013; see section 6.4). The Opinion issued on December 16, 2013, included an incidental take statement authorizing the take of specific numbers of ESA listed species of sea turtles, Atlantic salmon, and Atlantic sturgeon. The MSB FMP is currently covered by the incidental take statement authorized in NMFS 2013 Opinion.

The 2013 biological opinion concluded that the MSB fisheries may affect, but not jeopardize the continued existence of any ESA listed species. The No Action will retain status quo operating conditions in the MSB FMP and therefore, changes in fishing effort or behavior would not be expected. As a result, the No Action is not expected to result in the introduction of any new risks or additional takes to ESA listed species that have not already been considered and authorized by NMFS to date (NMFS 2013). Further, the MSB FMP has not resulted in the exceedance of NMFS authorized take of any ESA listed species from 2013 to the present. Thus as concluded in the NMFS 2013 Opinion, No Action / the Status Quo is not expected to result in levels of take that would jeopardize the continued existence of ESA listed species. For these reasons, the no action is expected to have low negative impacts on ESA-listed species, similar to past years.

Alternative 2 - (Preferred) – 2016-2018 mackerel specifications based on SSC recommendation (19,898 mt ABC)

Compared to the no action, the new proposed mackerel ABC and associated specifications should have a low positive effect on protected resources (positive from causing lower catches/effort and low because the mackerel fishery hasn't been catching much mackerel regardless of the specifications). Given the low positive impact relative to the status quo, the overall impact on protected resources is

likely still low negative, but less so.

Alternative 3 - (Preferred) – 82 mt 2016-2018 river herring and shad (RH/S) cap

Compared to the no action, the new lower proposed RH/S cap should have low positive impacts for protected resources (positive from causing lower catches/effort and low because the mackerel fishery hasn't been catching much mackerel regardless of the specifications). Given the low positive impact relative to the status quo, the overall impact on protected resources is likely still low negative, but less so.

Alternative 4 - (Preferred) – 5,000 pound trigger for butterfish 3-inch mesh, and strengthener clarification

It is not expected that this minor change would affect fishing effort enough to have an impact on protected resources. Fishery participants have reported that this change will simply allow them to keep more butterfish while longfin squid fishing. Given the neutral impact relative to the status quo, the overall impact on protected resources is likely still low negative.

Alternative 5 - (Preferred) – Suspend the longfin squid Pre-Trip Notification System (PTNS) requirement

It is not expected that this minor change would affect fishing effort enough to have an impact on protected resources. The only change that is expected is that vessels will not have to notify and/or wait for responses from the observer program, which will be a convenience to fishermen but should not change overall fishing effort. Protected resources could indirectly benefit if eliminating PTNS has the intended effect of leading to increased observer coverage, which could lead to better information on protected resource interactions in the longfin squid fishery. Given the neutral impact relative to the status quo, the overall impact on protected resources is likely still low negative.

7.4 Socioeconomic Impacts

Note: As discussed in Table 36 and accompanying text, the availability of the targeted species may drive effort (and catch and revenues) as much as quotas and other regulations.

Alternative 1 - No Action/status-quo

Under the no action, the mackerel ABC would remain at 40,165 mt and other MSB specifications would also remain the same, the RH/S cap would remain as a two phase 89 mt/155 mt cap, the butterfish trigger for needing to use 3-inch mesh would remain at 2,500 pounds, and the longfin squid Pre-Trip Notification System (PTNS) requirement would remain in effect. Due to the year to year variation in catch and effort in the mackerel fishery, it is difficult to quantify human community impacts but the current fishery supports a number of vessels, as described in Section 6.6, and provides a variety of jobs related directly to fishing and also in associated support services. Thus the overall socioeconomic impacts from the status quo should be positive.

Alternative 2 - (Preferred) – 2016-2018 mackerel specifications based on SSC recommendation (19,898 mt ABC)

Mackerel catches, and therefore revenues, have been very low in recent years. All landings since 2011 have been lower than the proposed reduced mackerel specification so it appears likely that the preferred mackerel specifications will not be constraining, and would not lead to revenue losses compared to recent years. However, compared to the no action, Alternative 2's specifications result in a landings quota that is 11,695 mt less than the status quo. Thus while not necessarily expected to reduce revenues from recent years, at 2014 prices (\$491/mt), compared to the no action/status quo there would be the potential for \$5.7 million in foregone revenues. Thus for this proposed alternative human community impacts (short term) are low negative compared to the no action. If constraining catch led to stock improvements there could be positive long term impacts. Given the low negative short term impact relative to the status quo, the overall socioeconomic impact is likely still positive.

Alternative 3 - (Preferred) – 82 mt 2016-2018 river herring and shad (RH/S) cap

Consistent with the findings in Amendment 14, lower RH/S caps may lead to potentially reduced revenues for fishery participants if the mackerel fishery is closed, but if the caps assist recovery of RH/S, then lower caps might result in additional long term benefits related to commercial revenues, recreational opportunities, ecosystem services, cultural values for RH/S, and/or other non-market existence values (i.e. value gained by the public related to the knowledge that these species are being conserved successfully). Based on the operation of the cap in 2014 and first half of 2015 (the first years of the cap), as long as the fishery can maintain relatively low RH/S catch rates, the proposed lower cap should not negatively impact fishery participants. However, a few large RH/S bycatch events could potentially shut down the fishery early. At 2014 prices (\$491/mt), the proposed mackerel quota (9,177 mt) could potentially generate about \$4.5 million. While the performance of the cap in 2014-2015 suggests the fishery can operate with very low RH/S catch rates, consistent with Amendment 14's analysis, if RH/S catch rates happen to be relatively high then most of the mackerel catch, and associated revenues could be forgone. However compared to the no action the proposed alternative is a small decrease so overall impacts compared to no action should be low negative in the short term and potentially low positive in the long term if RH/S stocks improve as a result of this action. Given the low negative short term impact relative to the status quo, the overall socioeconomic impact is likely still positive.

Alternative 4 - (Preferred) – 5,000 pound trigger for butterfish 3-inch mesh, and strengthen clarification

Fishery participants have indicated that they would like the option of retaining more butterfish while longfin squid fishing with small mesh (less than 3-inch). This alternative modestly increases the amount of butterfish that can be retained when using small mesh gear. Most directed butterfish fishing is likely to take place on a scale of greater than 100,000 pounds per trip and would be unaffected by this proposed measure. Theoretically, if a vessel retained an extra 2,500 pound of butterfish, at 2014 prices that could add about \$1,658 in ex-vessel revenues per trip. Assuming that the overall quota was not caught, this would be a positive impact for fishermen. If the overall quota was caught then the additional small-scale landings would lead to reduce directed fishing, but this appears unlikely in the near future. Analysis of limited observer data suggests that most butterfish discards in 2014 (the first year of moderate amount of directed butterfish fishing) were the result of market reasons, so it is not evident that increasing the trigger will lead to much additional retention, so any benefit is likely low

positive compared to the status quo. Given the low positive impact relative to the status quo, the overall socioeconomic impact is likely still positive.

Alternative 5 - (Preferred) – Suspend the longfin squid Pre-Trip Notification System (PTNS) requirement

Since implementation, fishermen have reported that the PTNS requirement is an administrative burden because they have to notify 48 hours in advance of a trip and they don't always know when they will have a weather window or area/time of high longfin squid availability. Not being able to sail when desired may also reduce their catch efficiency if squid move or weather deteriorates. By relieving the current administrative burden, this proposed alternative would have a low positive socioeconomic impact compared to no action. Given the low positive impact relative to the status quo, the overall socioeconomic impact is likely still positive.

Socioeconomic Impacts Summary

The lower mackerel specifications and lower river herring/shad caps have the potential to cause reductions in mackerel revenues compared to the no action/status quo specifications if mackerel are available to the fishery. Potential gains made from improved stock abundances may theoretically offset these reductions to some degree in the long run. Changing the proposed butterfish and squid measures would likely have a low positive impacts compared to the status quo. Given the low negative and positive impacts relative to the status quo, the overall socioeconomic impact is likely still positive.

7.5 Impacts on non-Target Fish Species

Alternative 1 - No Action/status-quo

Under the no action, the mackerel ABC would remain at 40,165 mt and other MSB specifications would also remain the same, the RH/S cap would remain as a two phase 89 mt/155 mt cap, the butterfish trigger for needing to use 3-inch mesh would remain at 2,500 pounds, and the longfin squid Pre-Trip Notification System (PTNS) requirement would remain in effect. Various species are caught incidentally by the MSB fisheries and will be impacted to some degree by the ongoing prosecution of the MSB fisheries even under the no action alternative. Recent non-target species interactions in the MSB fisheries are summarized in Section 6.5 and represent the no action/status quo impacts, which are best characterized as overall low negative since previous actions (e.g. Amendments 10 and 14 to the MSB FMP) have reduced discards and non-target catch to the extent practicable, similar to past years. For non-target species that are managed under their own FMP, incidental catch/discards are also considered as part of the management of that fishery. Also, as discussed in Table 36, the availability of the targeted species may drive effort (and non-target fish species impacts) as much as quotas and other regulations.

Alternative 2 - (Preferred) – 2016-2018 mackerel specifications based on SSC recommendation (19,898 mt ABC)

Restricting catch could lower effort, so compared to the no action alternative, the proposed specifications should be more protective of non-target species and have positive impacts. However, since mackerel catches have been below the proposed commercial harvest quota, the benefit is likely to be low (i.e. the specifications may not be constraining) compared to no action. Given the low positive impact relative to the status quo, the overall impact on non-target fish species is likely still low negative, but less so.

Alternative 3 - (Preferred) – 82 mt 2016-2018 river herring and shad (RH/S) cap

The RH/S cap could close the mackerel fishery early, but the mackerel fishery appears able to operate within the proposed cap. Restricting catch with a lower cap could lower effort if the RH/S cap closes the mackerel fishery, so the proposed cap should be more protective of non-target species (especially RH/S) and have positive impacts. However, since mackerel catches have been low in recent years, the benefit is likely to be low (i.e. the specifications may not be constraining) compared to no action. Given the low positive impact relative to the status quo, the overall impact on non-target fish species is likely still low negative, but less so.

Alternative 4 - (Preferred) – 5,000 pound trigger for butterfish 3-inch mesh, and strengthener clarification

This alternative could reduce regulatory discarding by increasing the amount of butterfish that can be retained while squid fishing with small mesh. However, analysis of limited observer data suggests that most butterfish discards in 2014 (the first year of a moderate amount of directed butterfish fishing) were the result of market reasons, so it is not evident that increasing the trigger will lead to much additional retention, so the impact is likely best characterized as neutral related to butterfish as a non-target species. Overall effort is not likely to be sufficiently changed to cause a discernable impact on non-target species. The strengthener clarification should not cause any change from the no action because fishermen report they already use strengtheners. Given the neutral impact relative to the status quo, the overall impact on non-target fish species is likely still low negative.

Alternative 5 - (Preferred) – Suspend the longfin squid Pre-Trip Notification System (PTNS) requirement

This proposed measure is expected primarily to relieve administrative burdens on fishermen. In addition, vessels have been using the waivers from PTNS to refuse observers at the dock. While NMFS has recently clarified that such refusals are not legal, PTNS may actually be impeding conservation related to the observer refusal issue. Eliminating this issue could indirectly positively impact non-target species by facilitating increased observer coverage of the longfin squid fishery, and that observer data could be used to reduce negative impacts on non-target species in the longfin squid fishery in the future. Thus compared to no action the impact of this measure should be low positive. Given the low positive impact relative to the status quo, the overall impact on non-target fish species is likely still low negative, but less so.

on-Target Species Impacts Summary

Reductions in the mackerel specifications and/or the RH/S cap may result in less mackerel effort but there hasn't been much mackerel effort in general in recent years so positive impacts for non-targets should be low. The butterfly mesh issues alternative should not substantially impact effort (and therefore non-target species), and the PTNS alternative may lead to better data on non-target interactions in the future. Given the low positive impacts relative to the status quo, the overall impact on non-target fish species is likely still low negative, but less so.

7.6 Cumulative Impacts of Preferred Alternatives on Identified Valued Ecosystem Components

The proposed specifications are considered the most reasonable actions to achieve the FMP's conservation objectives while optimizing the outcomes for fishing communities given the conservation objectives, as per the objectives of the FMP, which are summarized in Section 4. The expected impacts of each alternative have been analyzed earlier in this section and are summarized in Table 1 in the Executive Summary for the no action/status quo and preferred alternatives.

Definition of Cumulative Effects

A cumulative impact analysis is required by the Council on Environmental Quality's regulation for implementation of NEPA. Cumulative effects are defined under NEPA as "The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other action (40 CFR section 1508.7)."

The cumulative impacts of past, present, and future Federal fishery management actions (including the specification recommendations in this document) should generally be positive. The mandates of the MSA as currently amended and of the NEPA require that management actions be taken only after consideration of impacts to the biological, physical, economic, and social dimensions of the human environment. Therefore, it is expected that under the current and proposed management regime, the long term cumulative impacts will contribute toward improving the human environment.

Temporal Scope

The temporal scope of this analysis is primarily focused on actions that have taken place since 1976, when these fisheries began to be managed under the MSA. For endangered and other protected species, the context is largely focused on the 1980s and 1990s, when NMFS began generating stock assessments for marine mammals and turtles that inhabit waters of the U.S. EEZ. In terms of future actions, the analysis considers the period between the expected effective date of these specifications (January 1, 2016) and Dec 31, 2020, a period of five years. The temporal scope of this analysis does not extend beyond 2020 because the FMP and the issues facing these fisheries may change in ways that can't be effectively predicted.

Geographic Scope

The geographic scope of the analysis of impacts to fish species and habitat for this action is the range of the fisheries in the Western Atlantic Ocean, as described in the Affected Environment and Environmental Consequences sections of the document. For endangered and protected species the geographic range is the total range of each species. The geographic range for socioeconomic impacts is defined as those fishing communities bordering the range of the fisheries for mackerel, longfin squid, *Illex* squid, and butterfish which occur primarily from the U.S.- Canada border to Cape Hatteras, NC, although the management unit includes all the coastal states from Maine to Florida.

Summary of the Past, Present and Reasonably Foreseeable Future Actions

The earliest management actions implemented under this FMP involved the sequential phasing out of foreign fishing for these species in US waters and the development of a domestic fishing fleet. All MSB species are considered to be fully utilized by the US domestic fishery to the extent that sufficient availability would allow full harvest of the DAH/landings quota. More recent actions have focused on reducing bycatch and habitat impacts.

Past actions which had a major impact on the fishery included: the implementation of a limited access program in Amendment 5 to control capacity in the squid and butterfish fisheries; revision of overfishing definitions in Amendment 6; modification of vessel upgrade rules in Amendment 7; and implementation of overfishing and rebuilding control rules and other measures in Amendment 8. Amendment 9 allowed multi-year specifications, extended the moratorium on entry into the *Illex* fishery without a sunset provision; adopted biological reference points recommended by the SARC 34 (2002) for longfin squid; designated EFH for longfin squid eggs, and prohibited bottom trawling by MSB-permitted vessels in Lydonia and Oceanographer Canyons. Amendment 10's measures included increasing the longfin squid minimum mesh to 2 1/8 inches in Trimesters 1 and 3 and implementing a butterfish mortality cap in the longfin squid fishery. Amendment 11 implemented mackerel limited access, a recreational-commercial mackerel allocation, and EFH updates. Amendment 12 implemented a Standardized Bycatch Reporting Methodology that has since been vacated by court order and has been revisited through Amendment 15. Amendment 13 to the MSB FMP implemented Annual Catch Limit and Accountability Measures. Amendment 14 increased and improved reporting and monitoring (vessel, dealer, and observer) of the mackerel and longfin squid fisheries and implemented a catch cap for river herrings and shads in the mackerel fishery since 2014. Monitoring improvements include minimization of unobserved catch, observer facilitation and assistance, weekly vessel trip reporting, additional trip notification, and electronic vessel monitoring systems and reporting. Framework 9 followed-up on Amendment 14's measures to specifically improve observer operations by minimizing slippage (unobserved discards) and NMFS has implemented a new Standardized Bycatch Reporting Methodology in Amendment 15 to address observer assignment deficiencies identified in a previous lawsuit (however a new lawsuit on this revised Standardized Bycatch Reporting Methodology has been filed).

Past annual specifications have limited catches to avoid overfishing. Annual specifications actions in future years should maintain the benefits as described above. Other relevant actions expected to be implemented before 2020 include Amendment 16, which will protect deep water corals, an omnibus Amendment to increase observer coverage through industry funding, and an amendment to consider reducing latent capacity in the squid fisheries. The Council is also developing an Amendment to conserve currently-unmanaged forage species, and action on that Amendment is expected in 2016.

Regarding protected resources, a take reduction strategy for long-finned pilot whales (*Globicephala melas*), short-finned pilot whales (*Globicephala macrorhynchus*), white-sided dolphins (*Lagenorhynchus acutus*), and common dolphins (*Delphinus delphis*) has been developed and is described in Section 6.

Overall all of these past fishery actions have served to reduce effort or the impacts of effort through access limitations, upgrade restrictions, area and gear restrictions, EFH designations, monitoring, and accountability. These reductions have likely benefitted the managed species, habitat, protected resources, and non-target species. By ensuring the continued productivity of the managed resources, the human communities that benefit from catching the managed resources have also benefited in the long term; though at times quota reductions may have caused short-term economic dislocations (especially in the case of butterfish).

In addition to the direct effects on the environment from fishing, the cumulative effects to the physical and biological dimensions of the environment may also come from non-fishing activities (e.g. climate change, point source and non-point source pollution, shipping, dredging, storm events, etc.). Non-fishing activities, in this sense, relate to habitat loss from human interaction and alteration or natural disturbances. These activities are widespread and can have localized impacts to habitat such as accretion of sediments from at-sea disposal areas, oil and mineral resource exploration, aquaculture, construction of at-sea wind farms, bulk transportation of petrochemicals and significant storm events. In addition to guidelines mandated by the MSA, NMFS reviews some of these types of effects during the review process 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 authority. The jurisdiction of these activities is in "waters of the United States" and includes both riverine and marine habitats.

Cumulative Effects Analysis

The cumulative impacts of this FMP were last fully addressed in final form by the EIS for Amendment 14 (<http://www.greateratlantic.fisheries.noaa.gov/regs/2013/August/12smba14pr.html>). All four species in the management unit are managed primarily via annual specifications to control fishing mortality so the operation of the fishery is generally reviewed annually. As noted above, the cumulative impact of this FMP and annual specification process has been positive after passage of the Magnuson-Stevens Act and since its implementation for both the resources and communities that depend on them. The elimination of foreign fishing, implementation of limited access, and control of fishing effort through annual specifications have had a positive impact on target and non-target species since the current domestic fishery is being prosecuted at lower levels of fishing effort compared to the historical foreign fishery. The foreign fishery was also known to take substantial numbers of marine mammals including common dolphin, white sided dolphin, and pilot whales.

The Council continues to manage these resources in accordance with the National Standards required under the Magnuson-Stevens Act. First and foremost, the Council has strived to meet the obligations of National Standard 1 by adopting and implementing conservation and management measures that prevent overfishing, while achieving, on a continuing basis, the optimum yield for the four species and the United States fishing industry. The Council uses the best scientific information available (National Standard 2) and manages these resources throughout their range (National Standard 3). The

management measures do not discriminate between residents of different states (National Standard 4), and they do not have economic allocation as its sole purpose (National Standard 5). The measures account for variations in fisheries (National Standard 6), avoid unnecessary duplication (National Standard 7), they take into account fishing communities (National Standard 8), address bycatch in these fisheries (National Standard 9), and promote safety at sea (National Standard 10). By continuing to meet the National Standards requirements of the Magnuson-Stevens Act through future FMP amendments and actions, the Council should insure that cumulative impacts of these actions will remain positive. The cumulative effects of the proposed specifications will be examined for the following five valued economic components: target/managed species, habitat, protected species, communities, and non-target species.

7.6.1. Target Fisheries and Managed Resources

First and foremost, the Council has met the obligations of National Standard 1 by adopting and implementing conservation and management measures that have prevented overfishing, while achieving, on a continuing basis, the optimum yield for the four species. Mackerel were overfished prior to US management under the Magnuson-Stevens Act and then were subsequently rebuilt under the FMP and ensuing Amendments. While the current stock status based on a 2010 TRAC assessment is unknown, the stock is likely in better shape compared to if no management had taken place. Longfin squid were considered overfished in 2000, but remedial action by the Council in subsequent years (i.e., reduced specifications) resulted in stock rebuilding to the point that the species is no longer considered overfished. *Illex* has never been designated as overfished since passage of the Sustainable Fisheries Act. In the case of butterfish, the fishery has been designated as fully rebuilt with a stock status above its target.

The most obvious and immediate impact on the stocks managed under this FMP occurs as a result of fishing mortality. The Council manages federally permitted vessels which fish for these four species throughout their range in both Federal and state waters. Fishing mortality from all fishing activities that catch these species is controlled and accounted for by the specifications and incorporated into stock assessments.

In addition to mortality on these stocks due to fishing, there are other indirect effects from non-fishing anthropogenic activities in the Atlantic Ocean (e.g. climate change, point source and non-point source pollution, shipping, dredging, etc.), but these are generally not quantifiable at present for pelagic and semi-pelagic species like MSB other than noting that climate change is likely to affect at least the distribution of these species (e.g. Overholtz et al 2011). Nonetheless, since these species occur over wide areas of the mid and north Atlantic Ocean and inhabit both inshore and offshore pelagic waters, it is unlikely that any indirect anthropogenic activity currently impacts these populations substantially, especially in comparison to the direct effects on these populations as a result of fishing.

The measures proposed as preferred alternatives were developed to achieve the primary goal of the FMP and Sustainable Fisheries Act which is to prevent overfishing. They are also intended to provide for the greatest overall benefit to the nation (i.e., achieve optimum yield). These measures in conjunction with previous actions and any future actions should continue to allow the Council to continue to manage these resources such that the objectives of the MSA continue to be met and therefore no significant cumulative effects to the target fisheries are expected.

7.6.2 Essential Fish Habitat (EFH)

The 2002 final rule for EFH requires that FMPs minimize to the extent practicable adverse effects on EFH caused by fishing (section 600.815 (a) (2)). Pursuant to the final EFH regulations (50 CFR 600.815(a)(2)), FMPs must contain an evaluation of the potential adverse effects of fishing on EFH designated under the FMP, including effects of each fishing activity regulated under the FMP or other Federal FMPs. The evaluation should consider the effects of each fishing activity on each type of habitat found within EFH. FMPs must describe each fishing activity, review and discuss all available relevant information (such as information regarding the intensity, extent, and frequency of any adverse effect on EFH: the type of habitat within EFH that may be affected adversely; and the habitat functions that may be disturbed), and provide conclusions regarding whether and how each fishing activity adversely affects EFH. The evaluation should also consider the cumulative effects of multiple fishing activities on EFH.

The mackerel fishery primarily uses mid-water trawls. Bottom otter trawls are the principal gear used in the squid and butterfish fisheries. In general, bottom tending mobile gears have the potential to reduce habitat complexity and change benthic communities. Available research indicates that the effects of mobile gear are cumulative and are a function of the frequency and intensity with which an area is fished, the complexity of the benthic habitat (structure), the energy of the environment (high energy and variable or low energy and stable), and the ecology of the community (long-lived versus short lived). The extent of an adverse impact on habitat requires high resolution data on the location of fishing effort by gear and the location of specific seafloor habitats.

Stevenson *et al.* (2004) performed an evaluation of the potential impacts of otter trawls, and susceptible species and life stages are described in Section 6.3. The Council analyzed MSB gear impacts on EFH in Amendment 9, which also included measures which address gear impacts on EFH. To reduce MSB gear impacts on EFH, Amendment 9 prohibited bottom trawling by MSB-permitted vessels in Lydonia and Oceanographer Canyons. Amendment 1 to the Tilefish FMP created closures in these canyons as well as Veatches and Norfolk canyons for bottom trawling. All EFH designations were updated in Amendment 11 and the new designations will be used in future evaluations. Since the EFH for most MSB species is the water column, MSB species are generally not susceptible to habitat impacts from the MSB fisheries but other fisheries may be. Overall, impacts on EFH have been reduced and will continue to be analyzed to see if additional minimization is practicable in the future. As noted above, none of the management measures under the preferred alternatives are expected to result in substantial changes to fishing effort relative to the no action and when combined with past, present and reasonable foreseeable future actions, are not expect to result in significant cumulative impacts to habitat or EFH.

7.6.3 Protected Species

As described in Section 6.4, there are numerous species which inhabit the environment within the management unit of this FMP that are afforded protection under the ESA of 1973 and/or the MMPA. As noted above, none of the management measures under the preferred alternatives are expected to result in substantial changes to levels of effort or the character of that effort relative to the status quo. Prior to the passage of the Magnuson-Stevens Act and development of this FMP, the foreign prosecution of these fisheries occurred at much higher levels of fishing effort and were likely a major

source of mortality for a number of marine mammal stocks, turtles, and sturgeon. The elimination of these fisheries and subsequent controlled development of the domestic fisheries have resulted in lower fishing effort levels. The cumulative effect of the proposed measures in conjunction with past and future management actions under the FMP and take reduction measures developed under the MMPA should continue to reduce the impact of these fisheries on the protected species listed in section 6.4. Therefore, no significant cumulative impacts to protected species are expected.

7.6.4 Human Communities

National Standard 8 requires that management measures take into account fishing communities. Communities from Maine to North Carolina are involved in the harvesting of mackerel, squid and butterfish. Through implementation of the FMP for these species the Council seeks to achieve the primary objective of the Magnuson-Stevens Act which is to achieve optimum yield from these fisheries.

The first cumulative human community effect of the FMP has been to guide the development of the domestic harvest and processing fishery infrastructure. Part of this fishery rationalization process included the development of limited access programs to control capitalization while maintaining harvest levels that are sustainable. In addition, by meeting the National Standards prescribed in the MSA, the Council has strived to meet one of the primary objectives of the act - to achieve optimum yield in each fishery. The proposed specifications, in conjunction with the past and future actions described above, should have positive, non-significant cumulative impacts for the communities which depend on these resources by maintaining stock sizes that provide for optimal sustainable harvests.

7.6.5 Non-target Species

National Standard 9 requires Councils to consider the bycatch effects of existing and planned conservation and management measures. The term "bycatch" 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 discards, 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 any fish that are legally retained in a fishery and kept for personal, tribal, or cultural use, or that enter commerce through sale, barter, or trade.

None of the management measures recommended by the Council under the preferred alternatives are expected to substantially promote or result in increased overall levels of bycatch relative to the status quo because none are expected to substantially increase overall effort. Past measures implemented under this FMP, which help to control or reduce discards of non-target species in these fisheries, include: 1) limited entry and specifications which are intended to control or reduce fishing effort; 2) incidental and bycatch caps or allowances; and, 3) minimum mesh requirements. Other FMPs have also regulated MSB fishing to minimize bycatch as well, such as the Scup Gear Restricted Areas implemented through the Summer Flounder, Scup, and Black Sea Bass FMP. The measures proposed under the preferred alternative for each species, in conjunction with these past actions, should maintain reductions or further reduce historical levels of bycatch and discards in these fisheries so overall bycatch in the MSB fisheries should continue to minimize bycatch to the extent practicable.

In addition to mortality on these stocks due to fishing, there are other indirect effects from non-fishing anthropogenic activities in the Atlantic Ocean (e.g. climate change, point source and non-point source pollution, shipping, dredging, etc.), but these are generally not quantifiable at present for pelagic and semi-pelagic species like those most likely to be encountered during MSB-fishing other than noting that climate change is likely to affect at least the distribution of some species (e.g. Overholtz et al 2011). Nonetheless, since most relevant species occur over wide areas of the mid and north Atlantic Ocean and inhabit both inshore and offshore pelagic waters, it is unlikely that any indirect anthropogenic activity currently impacts these populations substantially, especially in relative comparison to the direct effects on these populations as a result of fishing.

In the near future the Industry Funded Monitoring Omnibus Amendment will specify ways that Councils can develop industry-funded observer programs, which should further assist efforts to evaluate and reduce bycatch and undesired incidental catch. These improvements, along with past management practices are expected to result in non-significant, neutral to slightly positive cumulative impacts for non-target species.

7.7 Summary of cumulative impacts

The impacts of the preferred alternatives on the biological, physical, and human environment are described in section 7. The overall implementation of the measures considered via this document are expected to generate positive impacts by maintaining optimal stock sizes and facilitating optimal yield while minimizing adverse impacts to the environment. Indirect benefits of the preferred alternatives are likely to affect consumers and areas of the economic and social environment that interact in various ways with these fisheries. The proposed actions, together with past and future actions are not expected to result in significant cumulative impacts on the biological, physical, and human components of the environment. As long as management continues to prevent overfishing and rebuild overfished stocks, the fisheries and their associated communities should continue to benefit. As noted above, the historical development of the FMP resulted in a number of actions which have impacted these fisheries and other valued ecosystem components. The cumulative effects of past actions in conjunction with the proposed measures and possible future actions are discussed above. Within the construct of that analysis, the Council has concluded that no significant cumulative impacts will result from the proposed specifications.

8.0 WHAT LAWS APPLY TO THE ACTIONS CONSIDERED IN THIS DOCUMENT?

8.1 Magnuson-Stevens Fishery Conservation and Management Act

8.1.1 NATIONAL STANDARDS

Section 301 of the Magnuson-Stevens Fishery Conservation and Management Act requires that fishery management plans contain conservation and management measures that are consistent with the ten National Standards:

In General. – Any fishery management plan prepared, and any regulation promulgated to implement any such plan, pursuant to this title shall be consistent with the...national standards for fishery conservation and management.

(1) Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.

The measures proposed via this document are designed to avoid acceptable biological catch overages (i.e. avoid overfishing) while also allowing the fishery to achieve the specified quotas (i.e. optimum yield).

(2) Conservation and management measures shall be based upon the best scientific information available.

The data sources considered and evaluated during the development of this action include, but are not limited to: permit data, landings data from vessel trip reports, information from resource trawl surveys, sea sampling (observer) data, data from the dealer weighout purchase reports, peer-reviewed assessments and original literature, and descriptive information provided by fishery participants and the public. To the best of the Council's knowledge these data sources constitute the best scientific information available. All analyses based on these data have been reviewed by National Marine Fisheries Service and the public.

(3) To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.

The fishery management plan addresses management of the mackerel, squid, and butterfish stocks throughout the range of the species in U.S. waters, in accordance with the jurisdiction of U.S. law.

(4) Conservation and management measures shall not discriminate between residents of different States. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be (A) fair and equitable to all such fishermen; (B) reasonably calculated to promote conservation; and (C) carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.

The proposed management measures are not expected to discriminate between residents of different States. This action does not allocate or assign fishing privileges among various fishermen.

(5) Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.

The proposed measures should not impact the efficiency of utilization of fishery resources. They are designed to continue the effective management and utilization of mackerel, squid, and butterfish resources.

(6) Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.

Changes in fisheries occur continuously, both as the result of human activity (for example, new technologies or shifting market demand) and natural variation (for example, oceanographic perturbations). Recent stock assessments have suggested that the mackerel, squid, and butterfish stocks are all likely particularly sensitive to environmental variables. In order to provide the greatest flexibility possible for future management decisions, the fishery management plan includes a Framework adjustment mechanism with an extensive list of possible Framework adjustment measures that can be used to quickly adjust the plan as conditions in the fishery change.

(7) Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

As always, the Council considered the costs and benefits associated with the management measures proposed in the action when developing this action. This action should not create any duplications related to managing the MSB resources.

(8) Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.

The human community impacts of the action are described above in Section 7. The reduction of the mackerel quota means a potential reduction in possible revenues, but the Council's SSC determined that a catch reduction was appropriate for conservation of the mackerel stock and the new quota is still higher than recent landings. While the proposed river herring and shad cap reduction may limit mackerel fishing in the short term, the Council determined that the potential benefits for river herring and shad conservation warranted such limits. Also, if the mackerel fishery can achieve a relatively low river herring/shad interaction rate they will still be able to catch their full quota. Other proposed measures (butterfish mesh and ending squid pre-trip notifications) should have low positive impacts for fishing communities as discussed above in Section 7.

(9) Conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.

The Magnuson-Stevens Act defines "bycatch" as fish that are harvested in a fishery, but are not retained (sold, transferred, or kept for personal use), including economic discards and regulatory discards. Incidentally landed catch are fish, other than the target species, that are harvested while fishing for a target species and retained and/or sold. The river herring and shad cap may reduce interactions with these species in the mackerel fishery, and therefore discards of these species (though most are usually retained when caught). Previous actions have reduced bycatch in the squid fisheries to the extent practicable.

(10) Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.

Fishing is a dangerous occupation; participants must constantly balance the risks imposed by weather against the economic benefits. According to the National Standard guidelines, the safety of the fishing vessel and the protection from injury of persons aboard the vessel are considered the same as "safety of human life at sea." The safety of a vessel and the people aboard is ultimately the responsibility of the master of that vessel. Each master makes many decisions about vessel maintenance and loading and about the capabilities of the vessel and crew to operate safely in a variety of weather and sea conditions. This national standard does not replace the judgment or relieve the responsibility of the vessel master related to vessel safety. No measures in this action are expected to impact safety at sea.

8.1.2 OTHER REQUIRED PROVISIONS OF THE MAGNUSON-STEVENS ACT

Section 303 of the MSA contains 15 additional required provisions for FMPs, which are listed and discussed below. Nothing in this action is expected to contravene any of these required provisions.

(1) contain the conservation and management measures, applicable to foreign fishing and fishing by vessels of the United States, which are-- (A) 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; (B) described in this subsection or subsection (b), or both; and (C) consistent with the National Standards, the other provisions of this Act, regulations implementing recommendations by international organizations in which the United States participates (including but not limited to closed areas, quotas, and size limits), and any other applicable law

The MSB FMP has evolved over time through 15 Amendments and currently uses Acceptable Biological Catch recommendations from the Council's Scientific and Statistical Committee to sustainably manage the Mackerel, Squid, and Butterfish fisheries. Under the umbrella of limiting catch to the Acceptable Biological Catch, a variety of other management and conservation measures have been developed to meet the goals of the fishery management plan and remain consistent with the National Standards. The current measures are codified in the Code of Federal Regulations (50 C.F.R. § 648 Subpart B - <http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&SID=1e9802ffddb05d0243d9c657fade956c&rgn=div5&view=text&node=50:12.0.1.1.5&idno=50>) and summarized at <http://www.greateratlantic.fisheries.noaa.gov/regs/infodocs/msbinfosheet.pdf>. This action proposes MSB Acceptable Biological Catches that should be sustainable and a river herring and shad cap to reduce non-target interactions in the mackerel fishery. As such, the existing and proposed management measures should continue to promote the long-term health and stability of the fisheries consistent with the MSA.

(2) contain a description of the fishery, including, but not limited to, the number of vessels involved, the type and quantity of fishing gear used, the species of fish involved and their location, the cost likely to be incurred in management, actual and potential revenues from the fishery, any recreational interest in the fishery, and the nature and extent of foreign fishing and Indian treaty fishing rights, if any

Every Amendment to the Atlantic Mackerel, Squid, and Butterfish Fishery Management Plan provides this information. This document also updates this information as appropriate in Section 6.

(3) assess and specify the present and probable future condition of, and the maximum sustainable yield and optimum yield from, the fishery, and include a summary of the information utilized in making such specification

This provision is addressed via assessments that are conducted through a peer-reviewed process at the NMFS Northeast Fisheries Science Center. The available information is summarized in every Amendment and Specifications document – see Section 6. Full assessment reports are available at: <http://www.nefsc.noaa.gov/saw/>.

(4) assess and specify-- (A) the capacity and the extent to which fishing vessels of the United States, on an annual basis, will harvest the optimum yield specified under paragraph (3); (B) the portion of such optimum yield which, on an annual basis, will not be harvested by fishing vessels of the United States and can be made available for foreign fishing; and (C) the capacity and extent to which United States fish processors, on an annual basis, will process that portion of such optimum yield that will be harvested by fishing vessels of the United States

Based on past performance and capacity analyses (Amendment 11), if Atlantic mackerel, squid, and butterfish are sufficiently abundant and available, the domestic fishery has the desire and ability to fully harvest the available quotas, and domestic processors can process the fish/squid.

(5) specify the pertinent data which shall be submitted to the Secretary with respect to commercial, recreational, and charter fishing in the fishery, including, but not limited to, information regarding the type and quantity of fishing gear used, catch by species in numbers of fish or weight thereof, areas in which fishing was engaged in, time of fishing, number of hauls, and the estimated processing capacity of, and the actual processing capacity utilized by, United States fish processors

Previous Amendments have specified the data that must be submitted to NMFS in the form of vessel trip reports, vessel monitoring, and dealer transactions.

(6) consider and provide for temporary adjustments, after consultation with the Coast Guard and persons utilizing the fishery, regarding access to the fishery for vessels otherwise prevented from harvesting because of weather or other ocean conditions affecting the safe conduct of the fishery; except that the adjustment shall not adversely affect conservation efforts in other fisheries or discriminate among participants in the affected fishery

There are no such requests pending, but the plan contains provisions for framework actions to make modifications regarding access/permitting if necessary.

(7) describe and identify essential fish habitat for the fishery based on the guidelines established by the Secretary under section 305(b)(1)(A), 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

Section 6.3 of this document summarizes essential fish habitat (EFH). Amendments 9 and 11 evaluated habitat impacts, updated essential fish habitat designations, and implemented measures to reduce habitat impacts (primarily related to tilefish essential fish habitat).

(8) in the case of a fishery management plan that, after January 1, 1991, is submitted to the Secretary for review under section 304(a) (including any plan for which an amendment is submitted to the Secretary for such review) or is prepared by the Secretary, assess and specify the nature and extent of scientific data which is needed for effective implementation of the plan

The preparation of this action included a review of the scientific data available to assess the impacts of all alternatives considered. No additional data was deemed needed for effective implementation of the plan.

(9) include a fishery impact statement for the plan or amendment (in the case of a plan or amendment thereto submitted to or prepared by the Secretary after October 1, 1990) which shall assess, specify, and describe the likely effects, if any, of the conservation and management measures on-- (A) participants in the fisheries and fishing communities affected by the plan or amendment; and (B) participants in the fisheries conducted in adjacent areas under the authority of another Council, after consultation with such Council and representatives of those participants;

Section 7.4 of this document provides an assessment of the likely effects on fishery participants and communities from the considered actions.

(10) specify objective and measurable criteria for identifying when the fishery to which the plan applies is overfished (with an analysis of how the criteria were determined and the relationship of the criteria to the reproductive potential of stocks of fish in that fishery) and, in the case of a fishery which the Council or the Secretary has determined is approaching an overfished condition or is overfished, contain conservation and management measures to prevent overfishing or end overfishing and rebuild the fishery

Amendments 8 and 9 to the fishery management plan established biological reference points for the species in the plan, and Amendment 10 contained measures for butterfish rebuilding. If a fishery is declared overfished or if overfishing is occurring, another Amendment would be undertaken to implement effective corrective measures. A pending omnibus framework will also facilitate streamlined incorporation of new overfished/overfishing reference points.

(11) establish a standardized reporting methodology to assess the amount and type of bycatch occurring in the fishery, and include conservation and management measures that, to the extent practicable and in the following priority-- (A) minimize bycatch; and (B) minimize the mortality of bycatch which cannot be avoided

NMFS recently implemented an omnibus amendment to implement a new standardized reporting methodology since the previous methodology was invalidated by court order. See <http://www.greateratlantic.fisheries.noaa.gov/mediacenter/2013/09/draftsbrmamendment.html> for details.

(12) assess the type and amount of fish caught and released alive during recreational fishing under catch and release fishery management programs and the mortality of such fish, and include conservation and management measures that, to the extent practicable, minimize mortality and ensure the extended survival of such fish

The Atlantic mackerel, squid, and butterfish fisheries are primarily commercial. There are some discards in the recreational mackerel fishery, but these are minimal related to the overall scale of the mackerel fishery. There are no size limits that would lead to regulatory recreational discarding of mackerel. There are no specific catch and release fishery management programs. There is some recreational longfin squid fishing, but it is thought to be relatively minor and the Council is considering if a survey is appropriate to further investigate longfin squid recreational fishing.

(13) include a description of the commercial, recreational, and charter fishing sectors which participate in the fishery and, to the extent practicable, quantify trends in landings of the managed fishery resource by the commercial, recreational, and charter fishing sectors

Every Amendment to the Atlantic Mackerel, Squid, and Butterfish Fishery Management Plan provides this information. This document also updates this information as appropriate in Section 6.

(14) to the extent that rebuilding plans or other conservation and management measures which reduce the overall harvest in a fishery are necessary, allocate any harvest restrictions or recovery benefits fairly and equitably among the commercial, recreational, and charter fishing sectors in the fishery.

No rebuilding plans are active (or necessary). The proposed reduction in the mackerel catch is prorated against the recreational and commercial allocations.

(15) establish a mechanism for specifying annual catch limits in the plan (including a multiyear plan), implementing regulations, or annual specifications, at a level such that overfishing does not occur in the fishery, including measures to ensure accountability.

The annual specifications process addresses this requirement. Acceptable Biological Catch recommendations from the Council's Scientific and Statistical Committee are designed to avoid overfishing and form the upper bounds on catches. There are a variety of proactive and reactive accountability measures for these fisheries, fully described at: <http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&SID=1e9802ffddb05d0243d9c657fade956c&rgn=div5&view=text&node=50:12.0.1.1.5&dno=50#50:12.0.1.1.5.2>.

8.1.3 DISCRETIONARY PROVISIONS OF THE MAGNUSON-STEVENSONS ACT

Section 303b of the Magnuson-Stevens Act contains 14 additional discretionary provisions for Fishery Management Plans. They may be read on pages 59 and 60 of the National Marine Fisheries Service's redline version of the Magnuson-Stevens Act at:

http://www.nmfs.noaa.gov/msa2007/MSA_Amended%20by%20Magnuson-Stevens%20Reauthorization%20Act%20%281-31-07%20draft%29.pdf. Given the limited scope of this action, there are no impacts related to such provisions except provision 12: "include management measures in the plan to conserve target and non-target species and habitats, considering the variety of ecological factors affecting fishery populations." The river herring and shad cap is rooted in the mandate to reduce bycatch as well as this discretionary provision since river herring and shad are not specifically targeted by the mackerel fishery.

8.1.4 ESSENTIAL FISH HABITAT ASSESSMENT

The specifications under the preferred alternatives proposed in this action are not expected to result in substantial changes in effort. Therefore, the Council concluded in section 7 of this document that the proposed MSB specifications will have no additional adverse impacts on EFH that are more than minimal. Thus no mitigation is necessary. The adverse impacts of bottom trawls used in MSB fisheries on other managed species (not MSB), which were determined to be more than minimal and not temporary in Amendment 9, were minimized to the extent practicable by the Lydonia and Oceanographer canyon closures to squid fishing. In addition, Amendment 1 to the Tilefish FMP closed those canyons plus Veatch's and Norfolk Canyons to all bottom trawling. Therefore, the adverse habitat impacts of MSB fisheries "continue to be minimized" by the canyon closures. Amendment 11 revised all of the MSB EFH designations and EFH impacts will continue to be monitored and addressed as appropriate.

8.2 NEPA

8.2.1 Finding of No Significant Impact (FONSI)

National Oceanic and Atmospheric Administration Administrative Order 216-6 (May 20, 1999) contains criteria for determining the significance of the impacts of a proposed action. In addition, the Council on Environmental Quality regulations at 40 C.F.R. '1508.27 state that the significance of an action should be analyzed both in terms of context and intensity. Each criterion listed below is relevant to making a finding of no significant impact and has been considered individually, as well as in combination with the others. The significance of this action is analyzed based on the Administrative Order 216-6 criteria and Council on Environmental Quality's context and intensity criteria. These include:

1) *Can the proposed action reasonably be expected to jeopardize the sustainability of any target species that may be affected by the action?*

None of the proposed specifications are expected to jeopardize the sustainability of any target species affected by the action (see section 7 of this document). The preferred alternatives are consistent with the FMP and best available scientific information. As such, the proposed action is expected to ensure the long-term sustainability of harvests from the MSB stocks.

2) *Can the proposed action reasonably be expected to jeopardize the sustainability of any non-target species?*

The proposed action is not expected to jeopardize the sustainability of any non-target species (see section 7 of this document) because the proposed specifications are not expected to result in substantial increases in overall fishing effort. In addition, none of the measures are expected to substantially alter fishing methods or the temporal and/or spatial distribution of fishing activities. Therefore, none of the proposed actions are expected to jeopardize the sustainability of non-target species. The butterfish cap, which began in 2011, should continue to reduce bycatch of butterfish and may reduce bycatch of other species if the cap closes the longfin squid fishery earlier than would have otherwise occurred or the fishery proactively avoids bycatch. The same is likely to be true related to the river herring/shad (RH/S) cap specifications that are being set in this document for the mackerel fishery. There should be specific benefits to RH/S and general bycatch benefits if mackerel closes because of the cap.

3) *Can the proposed action reasonably be expected to cause substantial damage to the ocean and coastal habitats and/or EFH as defined under the Magnuson-Stevens Act and identified in FMPs?*

The proposed action is not expected to cause damage to the ocean, coastal habitats, and/or EFH as defined under the Magnuson-Stevens Act and identified in the FMP (see Section 7). In general, bottom-tending mobile gear, primarily otter trawls, which are used to harvest mackerel, squid, and butterfish, have the potential to adversely affect EFH for the benthic lifestages of a number of species in the Northeast region that are managed by other FMPs. However, because none of the management measures proposed in this action should cause any substantial increase in overall fishing effort relative to the status quo, they are not expected to have any substantial negative impact on EFH or on coastal and ocean habitats.

4) Can the proposed action reasonably be expected to have a substantial adverse impact on public health or safety?

None of the measures substantially alter the manner in which the industry conducts fishing activities for the target species. Therefore, the proposed actions in these fisheries are not expected to adversely impact public health or safety.

5) Can the proposed action reasonably be expected to adversely affect endangered or threatened species, marine mammals, or critical habitat of these species?

The MSB fisheries are known to interact with common and white sided dolphins and pilot whales. Fishing effort is not expected to substantially increase in magnitude under the proposed specifications. In addition, none of the proposed measures are expected to substantially alter fishing methods, activities, or the spatial and/or temporal distribution of fishing effort. Therefore, this action is not expected to have increased negative effects on common and white sided dolphin and pilot whales. The mackerel, *Illlex* and butterfish fisheries are not known to substantively interact with any endangered or threatened turtle species or their critical habitat. The longfin squid fishery has been known to have interactions with loggerhead, green, and leatherback sea turtles as discussed in section 6.4. The proposed action is not expected to substantially increase fishing effort or substantially alter fishing patterns in a manner that would adversely affect these endangered species of sea turtles.

NMFS reinitiated consultation on seven fisheries, including the MSB FMP and finalized a biological opinion in December 2013. NMFS determined that the continued operation of the MSB fisheries is not likely to jeopardize the continued existence of any Atlantic sturgeon DPS. NMFS will implement any appropriate measures outlined in the Biological Opinion to mitigate harm to Atlantic sturgeon.

6) Can the proposed action be expected to have a substantial impact on biodiversity and/or ecosystem function within the affected area (e.g., benthic productivity, predator-prey relationships, etc.)?

These fisheries are prosecuted using bottom otter trawls, which have the potential to impact bottom habitats. In addition, a number of non-target species are taken incidentally to the prosecution of these fisheries. However, fishing effort is not expected to substantially increase in magnitude under the proposed specifications (see section 7.0 of this document). In addition, none of the proposed specifications are expected to substantially alter fishing methods, activities or the spatial and/or temporal distribution of fishing effort. Therefore, the proposed action is not expected to have a substantial impact on biodiversity or ecosystem function (e.g. food webs) within the affected area.

7) Are significant social or economic impacts interrelated with natural or physical environmental effects?

The action proposed addresses the mackerel, squid, and butterfish fishery specifications process, which was established in the FMP and modified in various amendments, frameworks, and specifications. There are no significant social or economic impacts interrelated with natural or physical environmental effects expected from implementation of this action. A complete discussion of the potential impacts of the proposed specifications and management measures is provided in Section 7 of this document.

8) Are the effects on the quality of the human environment likely to be highly controversial?

The proposed action is based on measures contained in the FMP which have generally been in place for multiple years. In addition, the scientific information upon which the annual quotas for managed species are based has been reviewed by the Council's SSC and is the most recent information available. As a result of these facts, the measures proposed herein are not expected to be controversial.

9) Can the proposed action reasonably be expected to result in substantial impacts to unique areas, such as historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers or ecologically critical areas?

The action proposed addresses management of the MSB fisheries, which was established in the FMP and modified in various amendments, frameworks, and specifications. Other types of commercial fishing already occur in this area, and although it is possible that historic or cultural resources such as shipwrecks could be present, vessels try to avoid fishing too close to wrecks due to the possible loss or entanglement of fishing gear. Therefore, it is not likely that the preferred alternative would result in substantial impacts to unique areas.

10) Are the effects on the human environment likely to be highly uncertain or involve unique or unknown risks?

While there is always a degree of variability in the year to year performance of the relevant fisheries, the proposed actions are not expected to substantially increase overall effort or to substantially alter fishing methods and activities. As a result, the effects on the human environment of the proposed specifications are not highly uncertain nor do they involve unique or uncertain risks (see section 7.0 of this document).

11) Is the proposed action related to other actions with individually insignificant, but cumulatively significant impacts?

The impacts of the preferred alternatives on the biological, physical, and human environment are described in section 7.0. The overall interaction of the proposed action with other actions are expected to generate positive impacts, but are not expected to result in significant cumulative impacts on the biological, physical, and human components of the environment.

12) Is the proposed action likely 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 action proposed addresses management of the MSB fisheries, which was established in the FMP and modified in various amendments, frameworks, and specifications. 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 the possible loss or entanglement of fishing gear. Therefore, it is not likely that the preferred alternative would adversely affect the historic resources listed above.

13) 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 these fisheries have ever resulted or would ever result in the introduction or spread of nonindigenous species.

14) Is the proposed action likely to establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration?

The proposed action has been proposed and evaluated consistent with prior year's specification setting processes and/or amendments and therefore is neither likely to establish a precedent for future actions with significant effects nor to represent a decision in principle about a future consideration.

15) Can the proposed action reasonably be expected to threaten a violation of Federal, State, or local law or requirements imposed for the protection of the environment?

Overall fishing effort is not expected to substantially increase in magnitude under the proposed action (see section 7.0 of this document). In addition, none of the proposed specifications are expected to substantially alter fishing methods, activities, or the spatial and/or temporal distribution of fishing effort. Thus, it is not expected that they would 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 as described in this Section.

16) Can the proposed action reasonably be expected to result in cumulative adverse effects that could have a substantial effect on the target species or non-target species?

Overall fishing effort is not expected to substantially increase in magnitude under the proposed action (see section 7.0 of this document). In addition, none of the proposed specifications are expected to substantially alter fishing methods, activities or the spatial and/or temporal distribution of fishing effort. Therefore the proposed action is unlikely to result in cumulative adverse effects (including any that could have a substantial effect on the target species or non-target species).

DETERMINATION

In view of the information presented in this document and the analysis contained in the supporting Environmental Assessment prepared for the MSB fisheries, it is hereby determined that the proposed specifications will not significantly impact the quality of the human environment as described 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 EIS for this action is not necessary.

Greater Atlantic Regional Administrator, NOAA

Date

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8.3 Marine Mammal Protection Act

The various species which inhabit the management unit of this FMP that are afforded protection under the Marine Mammal Protection Act of 1972 (MMPA) are described in Section 6.4. Four species of marine mammals are known to interact with the mackerel, squid and butterfish fisheries - long and short finned pilot whales, common dolphin and white sided dolphin. None of the specifications are expected to significantly alter fishing methods or activities or result in substantially increased effort. The Council has reviewed the impacts of the proposed specifications on marine mammals and concluded that the management actions proposed are consistent with the provisions of the MMPA and would not alter existing measures to protect the species likely to inhabit the management units of the subject fisheries. For further information on the potential marine mammal impacts of the fishery and the proposed management action, see Sections 6 and 7 of this Environmental Assessment.

8.4 Endangered Species Act

Section 7 of the ESA requires Federal agencies conducting, authorizing, or funding activities that affect threatened or endangered species to ensure that those effects do not jeopardize the continued existence of listed species. The Council has concluded that the proposed specifications and the prosecution of the associated fisheries are not likely to result in jeopardy to any ESA-listed species under NOAA Fisheries Service jurisdiction, or alter or modify any critical habitat, based on the analysis in this document. For further information on the potential impacts of the fisheries and the proposed management action, see Sections 6.4 and 7 of this document.

NMFS reinitiated consultation on seven fisheries, including the MSB FMP and finalized a biological opinion in December 2013 (<http://www.greateratlantic.fisheries.noaa.gov/protected/section7/bo/actbo.html>). NMFS determined that:

“After reviewing..., it is our biological opinion that the proposed action may adversely affect, but is not likely to jeopardize, the continued existence of North Atlantic right whales, humpback whales, fin whales, and sei whales, or loggerhead (specifically, the NWA DPS), leatherback, Kemp’s ridley, and green sea turtles, any of the five DPSs of Atlantic sturgeon, or GOM DPS Atlantic salmon. It is also our biological opinion that the proposed action is not likely to adversely affect hawksbill sea turtles, shortnose sturgeon, smalltooth sawfish DPS, *Acroporid* corals, Johnson’s seagrass, sperm whales, blue whales, designated critical habitat for right whales in the Northwest Atlantic, or designated critical habitat for GOM DPS Atlantic salmon.”

8.5 Administrative Procedures Act

Section 553 of the Administrative Procedure Act establishes 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 adequate notice and opportunity for comment. At this time, the Council is not requesting any abridgement of the rulemaking process for this action.

8.6 Paperwork Reduction Act

The purpose of the Paperwork Reduction Act is to control and, to the extent possible, minimize the paperwork burden for individuals, small businesses, nonprofit institutions, and other persons resulting from the collection of information by or for the Federal Government. This action does not propose to modify any existing collections, or to add any new collections; therefore, no review under the Paperwork Reduction Act is necessary. Removing the PTNS requirement will somewhat, but not significantly, reduce administrative burdens for squid fishermen.

8.7 Coastal Zone Management Act

Section 307(c)(1) of the Federal Coastal Zone Management Act of 1972 requires that all Federal activities that directly affect the coastal zone be consistent with approved state coastal zone management programs to the maximum extent practicable. Pursuant to the Coastal Zone Management Act regulations at 15 CFR 930.35, a negative determination may be made if there are no coastal effects and the subject action: (1) Is identified by a state agency on its list, as described in ' 930.34(b), or through case-by-case monitoring of unlisted activities; or (2) which is the same as or is similar to activities for which consistency determinations have been prepared in the past; or (3) for which the Federal agency undertook a thorough consistency assessment and developed initial findings on the coastal effects of the activity. Accordingly, NMFS has determined that this action would have no effect on any coastal use or resources of any state. Letters documenting the NMFS negative determination, along with this document, were sent to the coastal zone management program offices of the states of Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, and Florida. A list of the specific state contacts and a copy of the letters are available upon request.

8.8 Section 515 (Data Quality Act)

Pursuant to NOAA guidelines implementing section 515 of Public Law 106-554 (the Data Quality Act), all information products released to the public must first undergo a Pre-Dissemination Review to ensure and maximize the quality, objectivity, utility, and integrity of the information (including statistical information) disseminated by or for Federal agencies. The following section addresses these requirements.

Utility

The information presented in this document should be helpful to the intended users (the affected public) by presenting a clear description of the purpose and need of the proposed action, the measures proposed, and the impacts of those measures. A discussion of the reasons for selecting the proposed action is included so that intended users may have a full understanding of the proposed action and its implications, as well as the Council's rationale.

Until a proposed rule is prepared and published, this document is the principal means by which the information contained herein is available to the public. The information provided in this document is based on the most recent available information from the relevant data sources. The development of

this document and the decisions made by the Council to propose this action are the result of a multi-stage public process. Thus, the information pertaining to management measures contained in this document has been improved based on comments from the public, the fishing industry, members of the Council, and NMFS.

The Federal Register notice that announces the proposed rule and the final rule and implementing regulations will be made available in printed publication, on the website for the Greater Atlantic Regional Fisheries Office, and through the Regulations.gov website. The Federal Register documents will provide metric conversions for all measurements.

Integrity

Prior to dissemination, information associated with this action, independent of the specific intended distribution mechanism, is safeguarded from improper access, modification, or destruction, to a degree commensurate with the risk and magnitude of harm that could result from the loss, misuse, or unauthorized access to or modification of such information. All electronic information disseminated by NOAA Fisheries adheres to the standards set out in Appendix III, Security of Automated Information Resources,⁶ of OMB Circular A-130; the Computer Security Act; and the Government Information Security Act. All confidential information (e.g., dealer purchase reports) is safeguarded pursuant to the Privacy Act; Titles 13, 15, and 22 of the U.S. Code (confidentiality of census, business, and financial information); the Confidentiality of Statistics provisions of the Magnuson-Stevens Act; and NOAA Administrative Order 216-100, Protection of Confidential Fisheries Statistics.

Objectivity

For purposes of the Pre-Dissemination Review, this document is considered to be a Natural Resource Plan. Accordingly, the document adheres to the published standards of the Magnuson-Stevens Act; the Operational Guidelines, FMP Process; the EFH Guidelines; the National Standard Guidelines; and NOAA Administrative Order 216-6, Environmental Review Procedures for Implementing the National Environmental Policy Act.

This information product uses information of known quality from sources acceptable to the relevant scientific and technical communities. Stock status (including estimates of biomass and fishing mortality) reported in this product are based on either assessments subject to peer-review through the Stock Assessment Review Committee or on updates of those assessments prepared by scientists of the Northeast Fisheries Science Center. Landing and revenue information is based on information collected through the Vessel Trip Report and Commercial Dealer databases. Information on catch composition, by tow, is based on reports collected by the NOAA Fisheries observer program and incorporated into the sea sampling or observer database systems. These reports are developed using an approved, scientifically valid sampling process. In addition to these sources, additional information is presented that has been accepted and published in peer-reviewed journals or by scientific organizations. Original analyses in this document were prepared using data from accepted sources, and the analyses have been reviewed by members of the Mackerel, Squid and Butterfish Monitoring Committee or other NMFS staff with expertise on the subject matter.

Despite current data limitations, the conservation and management measures proposed for this action were selected based upon the best scientific information available. The analyses conducted in support

of the proposed action were conducted using information from the most recent complete calendar years, generally through 2013 except as noted. The data used in the analyses provide the best available information on the number of seafood dealers operating in the northeast, the number, amount, and value of fish purchases made by these dealers. Specialists (including professional members of plan development teams, technical teams, committees, and Council staff) who worked with these data are familiar with the most current analytical techniques and with the available data and information relevant to these fisheries.

The policy choices are clearly articulated in Section 5 of this document as well as the management alternatives considered in this action. The supporting science and analyses, upon which the policy choices are based, are described in Sections 6 and 7 of this document. All supporting materials, information, data, and analyses within this document have been, to the maximum extent practicable, properly referenced according to commonly accepted standards for scientific literature to ensure transparency.

The review process used in preparation of this document involves the responsible Council, the Northeast Fisheries Science Center, the Greater Atlantic Regional Fisheries Office, and NOAA Fisheries Headquarters. The Center's technical review is conducted by senior level scientists with specialties in population dynamics, stock assessment methods, demersal resources, population biology, and the social sciences. The Council review process involves public meetings at which affected stakeholders have opportunity to provide comments on the document. Review by staff at the Regional Office is conducted by those with expertise in fisheries management and policy, habitat conservation, protected species, and compliance with the applicable law. Final approval of the action proposed in this document and clearance of any rules prepared to implement resulting regulations is conducted by staff at NOAA Fisheries Headquarters, the Department of Commerce, and the U.S. Office of Management and Budget.

8.9 Regulatory Flexibility Analysis

The purpose of the Regulatory Flexibility Act is to reduce the impacts of burdensome regulations and recordkeeping requirements on small businesses. To achieve this goal, the Regulatory Flexibility Act requires Federal agencies to describe and analyze the effects of proposed regulations, and possible alternatives, on small business entities. This document contains an Initial Regulatory Flexibility Analysis, found at section 12.0 at the end of this document, which includes an assessment of the effects that the proposed action and other alternatives are expected to have on small entities.

8.10 Executive Order (E.O.) 12866 (Regulatory Planning and Review)

To enhance planning and coordination with respect to new and existing regulations, this Executive Order requires the Office of Management and Budget (OMB) to review regulatory programs that are considered to be significant. Section 12.0 at the end of this document includes the Regulatory Impact Review, which includes an assessment of the costs and benefits of the proposed action, in accordance with the guidelines established by Executive Order 12866. The analysis shows that this action is not a significant regulatory action because it will not affect in a material way the economy or a sector of the economy.

8.11 Executive Order (E.O.) 13132 (Federalism)

This Executive Order established nine fundamental federalism principles for Federal agencies to follow when developing and implementing actions with federalism implications. The Executive Order also lists a series of policy making criteria to which Federal agencies must adhere when formulating and implementing policies that have federalism implications. However, no federalism issues or implications have been identified relative to the measures proposed measures. This action does not contain policies with federalism implications sufficient to warrant preparation of an assessment under Executive Order 13132. The affected states have been closely involved in the development of the proposed management measures through their representation on the Council (all affected states are represented as voting members of at least one Regional Fishery Management Council). No comments were received from any state officials relative to any federalism implications that may be associated with this action

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10.0 LIST OF AGENCIES AND PERSONS CONSULTED

In preparing this annual specifications analysis the Council consulted with the NMFS, New England and South Atlantic Fishery Management Councils, Fish and Wildlife Service, Department of State, and the states of Maine through Florida through their membership on the Mid-Atlantic, New England and/or South Atlantic Fishery Management Councils. In addition, states that are members within the management unit were consulted through the Coastal Zone Management Program consistency process. Letters were sent to each of the following states within the management unit reviewing the consistency of the proposed action relative to states' Coastal Zone Management Programs: Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia and Florida.

11.0 LIST OF PREPARERS AND POINT OF CONTACT

This environmental assessment was prepared by the following member of the Council staff: Jason Didden. Questions about this environmental assessment or additional copies may be obtained by

contacting Jason Didden, Mid-Atlantic Fishery Management Council, 800 N. State Street, Dover, DE 19901 (302-674-2331). This Environmental Assessment may also be accessed by visiting the NMFS Greater Atlantic Region website at <http://www.greateratlantic.fisheries.noaa.gov/regs/>.

12.0 INITIAL REGULATORY FLEXIBILITY ANALYSIS AND REGULATORY IMPACT REVIEW

12.1 Initial Regulatory Flexibility Analysis

The Regulatory Flexibility Act (RFA), first enacted in 1980, and codified at 5 U.S.C. 600-611, was designed to place the burden on the government to review all 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 frequently has a bearing on its ability to comply with a Federal regulation. Major goals of the RFA are: 1) to increase agency awareness and understanding of the impact of their regulations on small business; 2) to require that agencies communicate and explain their findings to the public; and 3) to encourage agencies to use flexibility and to provide regulatory relief to small entities.

The RFA emphasizes predicting significant adverse impacts on small entities as a group distinct from other entities and on the consideration of alternatives that may minimize the impacts, while still achieving the stated objective of the action. When an agency publishes a proposed rule, it must either, (1) “certify” that the action will not have a significant adverse impact on a substantial number of small entities, and support such a certification declaration with a “factual basis”, demonstrating this outcome, or, (2) if such a certification cannot be supported by a factual basis, prepare and make available for public review an Initial Regulatory Flexibility Analysis (IRFA) that describes the impact of the proposed rule on small entities.

This document provides the factual basis supporting a certification that the proposed regulations will not have a “significant impact on a substantial number of small entities” and that an IRFA is not needed in this case. Certifying an action must include the following elements, and each element is subsequently elaborated upon below:

- A. A statement of basis and purpose of the rule
- B. A description and estimate of the number of small entities to which the rule applies
- C. Description and estimate of economic impacts on small entities, by entity size and industry
- D. An explanation of the criteria used to evaluate whether the rule would impose significant economic impacts
- E. An explanation of the criteria used to evaluate whether the rule would impose impacts on a substantial number of small entities
- F. A description of, and an explanation of the basis for, assumptions used

A – Basis and purpose of the rule

The bases of the rules proposed in this action are the provisions of the MSA for federal fishery management to prevent overfishing, achieve optimum yield, reduce bycatch to the extent practicable,

and conserve non-target species. Optimum yield is defined as the amount of fish which will achieve the maximum sustainable yield, as reduced by any relevant economic, social, or ecological factor. The purpose of the rules associated with the preferred alternatives is to implement specifications for the MSB fisheries that institute quotas and related measures that will restrict catch so as to avoid overfishing while facilitating catch within the constraint of avoiding overfishing such that optimum yield is achieved. Alternative 3 would also implement specifications for the RH/S cap for the mackerel fishery so as to conserve RH/S populations. Failure to implement the preferred measures described in this document could result in overfishing, stock depletion, failure to reach optimum yield and/or undermining conservation of RH/S, a non-target catch in the mackerel fishery. To assist with further evaluation of the measures proposed in this document, a brief summary of the preferred alternatives is provided next. A full description of all alternatives is provided in Section 5.

Alternative 1 – No Action, Which Would Maintain the Status Quo

Since the MSB fisheries have a rollover provision where the current measures remain in place until new measures are implemented, if no action is taken then the current specifications and management measures would remain in place. More detailed information on no action, i.e. the status quo, is presented in Section 5.

Alternative 2 – New 2016-2018 Mackerel Specifications (PREFERRED)

Currently the mackerel ABC is 40,165 mt and other catch limits and targets are based on that ABC. The SSC recommended a reduced ABC of 19,898 mt and this alternative would implement that ABC and associated measures. After accounting for Canadian catch, management uncertainty, and discards, the commercial quota (domestic annual harvest or DAH) would be lowered from 20,872 mt to 9,177 mt. The recreational annual catch target would be lowered from 1,397 mt to 614 mt. Other than the RH/S cap discussed below, no other management changes are proposed for mackerel.

Alternative 3 – New 2016-2018 River Herring and Shad (RH/S) Cap (PREFERRED)

Currently the RH/S cap starts at 89 mt and is potentially expandable to 155 mt if mackerel catches are greater than 10,000 mt. Related to the lower commercial mackerel quota proposed in this action (9,177 mt), this alternative would lower the RH/S cap to 82 mt.

Alternative 4 – Butterfish Mesh Requirement Adjustment (PREFERRED)

Currently a vessel must use 3-inch or greater mesh to possess more than 2,500 pounds of butterfish. This applies only to vessels with longfin squid-butterfish moratorium permits (the incidental trip limit is 600 pounds). This alternative would increase the trigger for when 3-inch mesh is required to 5,000 pounds. This alternative also clarifies that 5-inch (square or diamond) or greater strengtheners may be used outside the 3-inch mesh to avoid breaking nets during large hauls (industry reports they use these strengtheners already but the regulations are not clear that they are allowed).

Alternative 5 – Suspend the Longfin Squid Pre-Trip Notification System (PTNS) Requirement (PREFERRED)

Currently vessels with longfin squid-butterfish moratorium permits must use NMFS' pre-trip notification system (PTNS) before making trips that can land more than 2,500 pounds of longfin squid (vessels with incidental permits are always limited to 2,500 pounds). New observer selection protocols

have made this system unnecessary and potentially counterproductive, so this alternative would suspend the PTNS requirement for directed longfin squid fishing.

B – Description and estimate of the number of small entities to which the rule applies

The measures proposed in this action apply to the vessels that hold limited access permits for the MSB fisheries. There are also incidental permits that allow small-scale landings, and more vessels hold incidental permits, but landings of MSB species by incidental permit holders are relatively minor and no changes are proposed for the incidental trip limits.

Many MSB-permitted vessels hold multiple permits and some small entities own multiple vessels with limited access MSB permits. Staff queried NMFS databases for 2014 MSB limited access permits, and then cross-referenced those results with ownership data provided by the Social Science Branch of NMFS' Northeast Fisheries Science Center. This analysis found that 370 separate vessels held MSB limited access permits in 2014, 271 entities own those vessels, and based on current SBA definitions, 259 are small entities. All of the entities that had revenue fell into the finfish or shellfish categories, and the SBA definitions for those categories for 2014 are \$20.5 million for finfish fishing and \$5.5 million for shellfish fishing. Of the 259 small entities, 25 had no revenue in 2014 and those entities with no revenue are listed as small entities for the purposes of this analysis.

The only proposed alternatives that involve increased restrictions (Alternatives 2 and 3) apply to mackerel limited access permits so those numbers are listed separately (they are a subset of the above entities). This analysis found that 139 separate vessels hold mackerel limited access permits, 105 entities own those vessels, and based on current SBA definitions, 97 are small entities. Of the 97 small entities, 3 had no revenue in 2014 and those entities with no revenue are listed as small entities for the purposes of this analysis. Of the entities with revenues, their average revenues in 2014 were \$1,212,230. 60 had primary revenues from finfish fishing and 34 had their primary revenues from shellfish fishing.

C – Description and estimate of economic impacts on small entities (Alternative 1 is no action)

Alternative 2 should have no negative impacts on any of the relevant entities compared to recent operation of the fishery (2012-2014, and 2015's landings to date appear similar to 2014's). Even though the proposed 2016-2018 quota is lower than 2015, it would still allow more catch compared to any year 2012-2014.

Alternative 3 should not have more than minimal impact on any of the relevant entities compared to recent operation of the fishery. Based on the operation of the cap in 2014 and first half of 2015 (the first years of the cap), as long as the fishery can maintain relatively low RH/S catch rates, the proposed lower cap should not negatively impact fishery participants. However, a few large RH/S bycatch events could potentially shut down the fishery early. At 2014 prices (\$491/mt), the proposed mackerel quota (9,177 mt) could potentially generate about \$4.5 million. While the performance of the cap in 2014-2015 suggests the fishery can operate with very low RH/S catch rates, consistent with Amendment 14's analysis, if RH/S catch rates happen to be relatively high then most of the mackerel catch, and associated revenues could be forgone. The industry has also been actively participating in a voluntary avoidance program that should help to keep RH/S catches low. The proposed reduction in the RH/S cap is an 8% reduction, so the mackerel fishery would only be limited by 8% compared to

the no action. If the current RH/S cap just barely allowed the full utilization of the mackerel quota, an 8% reduction in the RH/S cap would cause an 8% reduction in revenues compared to the status quo, which equals approximately \$360,000 based on the proposed quotas and 2014 prices (an average of \$3,830 if spread over the 94 small entities with revenues in 2014).

Alternative 4 proposes to allow more butterfish to be retained with small mesh gear, so there should be no negative impacts on any of the relevant entities.

Alternative 5 proposes to eliminate the longfin squid pre trip notification system (PTNS), reducing administrative burdens, so there should be no negative impacts on any of the relevant entities.

D/E – An explanation of the criteria used to evaluate whether the rule would impose significant economic impacts/ An explanation of the criteria used to evaluate whether the rule would impose impacts on a substantial number of small entities

The only alternative that would appear to have the potential to cause any adverse impacts is Alternative 3. While it appears that the mackerel fishery can operate within the proposed RH/S cap based on 2014-2015 performance, it is possible that the cap could become constraining. The average impact of \$3,830 compares with an average revenue of \$1,212,230 for the relevant entities in 2014. As such, the impacts do not appear likely to be significant relative to recent fishery operation

F – A description of, and an explanation of the basis for, assumptions

Other than those described directly in the above analyses, the primary assumption utilized in the above analyses is that comparing likely 2016 fishery operation to how the fishery operated over 2012-2014 is appropriate. Using the most recent three years of fishery operation is standard practice for Regulatory Flexibility Analysis and there is no indication that such an approach is contraindicated in this case since doing so captures what the industry has recently experienced versus potential impacts going forward from implementation of the proposed specifications.

12.2 Regulatory Impact Review

INTRODUCTION

Executive Order 12866 requires a Regulatory Impact Review (RIR) in order to enhance planning and coordination with respect to new and existing regulations. This Executive Order requires the Office of Management and Budget (OMB) to review regulatory programs that are considered to be “significant.” Section 7 assesses the costs and benefits of the Proposed Action and found the impacts to be mostly neutral or positive. The analysis included in this RIR further demonstrates that this action is not a “significant regulatory action” because it will not affect in a material way the economy or a sector of the economy.

Executive Order 12866 requires a review of proposed regulations to determine whether or not the

expected effects would be significant, where a significant regulatory action is one that may:

1* Have an annual effect on the economy of \$100 million or more, or adversely affect in a material way the economy, a sector of the economy, productivity, jobs, the environment, public health or safety, or State, local, or tribal governments or communities;

2* Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

3* Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

4* Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

OBJECTIVES

The objectives of the MSB FMP are as follows:

- Enhance the probability of successful (i.e., the historical average) recruitment to the fisheries.
- Promote the growth of the U.S. commercial fishery, including the fishery for export.
- Provide the greatest degree of freedom and flexibility to all harvesters of these resources consistent with the attainment of the other objectives of this Fishery Management Plan.
- Provide marine recreational fishing opportunities, recognizing the contribution of recreational fishing to the national economy.
- Increase understanding of the conditions of the stocks and fisheries.
- Minimize harvesting conflicts among U.S. commercial, U.S. recreational, and foreign fishermen.

Consistent with these objectives, these specifications seek to facilitate landings consistent with avoiding overfishing and also minimizing bycatch, which has been an important consideration in Council actions for this fishery in recent years.

AFFECTED ENTITIES

A description of the entities affected by this action is provided in section 12.1 above, and Section 6.6 provides additional detail on participation in the MSB fisheries.

PROBLEM STATEMENT

The purpose of the measures proposed in this action are described in Section 4 of this document but is generally to set specifications for the MSB fisheries. This action is needed to prevent overfishing and achieve optimum yield in the MSB fisheries, while controlling the incidental (non-target) catch of RH/S.

ANALYSIS OF ALTERNATIVES

Executive Order 12866 mandates that proposed measures be analyzed below in terms of: (1) changes in net benefits and costs to stakeholders, (2) changes to the distribution of benefits and costs within the industry, (3) changes in income and employment, (4) cumulative impacts of the regulation, and (5) changes in other social concerns. As described in Section 7, the mackerel landings limit is proposed to decrease, but mackerel landings have been well below even the new limit in recent years so minimal impacts would be expected. The RH/S cap is also proposed to be lowered, but again mackerel landings have been low in recent years, and in the first years of the RH/S cap the fleet avoided RH/S so they were not impacted. If similar RH/S encounter rates occur, the mackerel fishery will continue to not be impacted by even the lower RH/S cap. The reduction in the RH/S cap is also only 8% compared to the status quo. The low levels of activity in the mackerel fishery in recent years, the possibility that the mackerel fishery may not be impacted at all by the lower allowed mackerel and RH/S catch levels, and the positive impacts for squids/butterfish support a determination that this action is not significant for purposes of Executive Order 12866.

There should not be substantial distributional issues (all permit holders are impacted similarly), and impacts on income and employment should mirror the impacts on fishing revenues described above (i.e. should be relatively minor). As described in Section 7, the Council has concluded that no significant cumulative impacts will result from the proposed specifications. There are no other expected social concerns.

DETERMINATION OF EXECUTIVE ORDER 12866 SIGNIFICANCE

Given the analysis in Section 7 and summary information above, the action overall should have neutral to low-positive impacts on participants in the MSB fisheries. In addition, there should be no interactions with activities of other agencies and no impacts on entitlements, grants, user fees, or loan programs. The proposed action is also similar to actions taken each year that set MSB specifications, and as such does not raise novel legal or policy issues. As such, the Proposed Action is not considered significant as defined by Executive Order 12866.

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