UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
PROGRAM PLANNING AND INTEGRATION
Silver Spring, Maryland 20910

DEC 28 2012

To All Interested Government Agencies and Public Groups:

Under the National Environmental Policy Act (NEPA), an environmental review has been performed on the following action.

TITLE: 2013 Atlantic Mackerel, Squid, and Butterfish Specifications Environmental Assessment (EA)

LOCATION: Atlantic Exclusive Economic Zone

SUMMARY: This action includes the specifications and management measures for the 2013-2015 fishing years for Atlantic mackerel and for the 2013 fishing year for butterfish, as recommended by the Mid-Atlantic Fishery Management Council. Specifications for longfin squid and *Illex* squid were set for 3 years in 2012 (2012-2014) and therefore, will not be included in this year's specification rulemaking. The specifications also implement regulatory changes to the longfin squid fishery and the butterfish mortality cap to avoid 1-2 week closures at the end of a Trimester. The butterfish domestic annual harvest (DAH) being implemented in this action (2,570 mt) represents an increase of 1,698 mt over the 2012 DAH (872 mt). The butterfish mortality cap being implemented in this action (4,464 mt) represents a 1,299 mt increase over the current 2012 cap level (3,165 mt). Due to the increase in the proposed butterfish quota, this action also implements a variety of management measures for controlling effort in the directed butterfish fishery, including changes to trip limits, the closure threshold for the directed fishery, and post-closure trip limits. These specifications and management measures promote the utilization and conservation of the Atlantic mackerel, squid, and butterfish resource.

RESPONSIBLE OFFICIAL:

John K. Bullard
Regional Administrator
National Marine Fisheries Service
National Oceanic and Atmospheric Administration (NOAA)
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The environmental review process led us to conclude that this action will not have a significant impact on the environment. Therefore, an environmental impact statement was not prepared. A copy of the Finding of No Significant Impact, including the supporting environmental assessment, is enclosed for your information.

Although NOAA is not soliciting comments on this completed EA/FONSI, we will consider any comments submitted that would assist us in preparing future NEPA documents. Please submit any written comments to the Responsible Official named above.

Sincerely,

for: Patricia A. Montanio
Assistant Administrator, PPI

Enclosure

2013 Atlantic Mackerel, Squid and Butterfish Specifications and Management Measures
Environmental Assessment
Regulatory Impact Review
Initial Regulatory Flexibility Analysis

December 26, 2012

Prepared by the

Mid-Atlantic Fishery Management Council (Council) in collaboration with the

National Marine Fisheries Service (NMFS)

1.0 EXECUTIVE SUMMARY & TABLE OF CONTENTS

The Mid-Atlantic Fishery Management Council (Council) made recommendations for 2013 specifications and management measures for the Atlantic mackerel (referred to simply as “mackerel” hereafter), squid (*Illex* and longfin), and butterfish (collectively “MSB”) fisheries at its June 2012 meeting and herein submits them to the National Marine Fisheries Service (NMFS). This document examines the impacts expected from implementation of these potential actions. The recommendations are consistent with the recommendations of the Council’s Scientific and Statistical Committee, which may be accessed at: http://www.mafmc.org/committees/science.htm. The SSC's ABC recommendations account for scientific uncertainty such that overfishing is 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 social/economic benefits 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 2012 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.

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 the specifications are not exceeded. A summary of changes for each species follows.

Illex Squid

Last year the Council recommended, and NMFS implemented, three year specifications for *Illex* squid for the 2012-2014 fishing years. Based on the SSC’s reaffirmation of the 2012 ABC, the Council reaffirmed status quo management for 2013 (commercial quota = 22,915 mt) so there are no alternatives relative to *Illex* in this document. For additional details on *Illex*, readers can consult the Environmental Assessment for the 2012 MSB Specifications, available at: http://www.nero.noaa.gov/nero/regs/com2011.html. *Illex* management will generally not be further discussed in this document since no *Illex* measures are contemplated.

Longfin Squid[1]

Last year the Council recommended, and NMFS implemented, three year specifications for longfin squid for the 2012-2014 fishing years. Based on the SSC’s reaffirmation of the 2012 ABC, the Council reaffirmed status quo management for 2013 in terms of specifications (commercial landings limit = 22,445 mt), so there are no alternatives relative to longfin squid specifications in this document. For additional details on specifications readers can consult the Environmental Assessment for the 2012 MSB Specifications, available at: http://www.nero.noaa.gov/nero/regs/com2011.html. The Council did recommend several management measure changes designed to improve efficient management of the longfin squid fishery, as described in full in Section 5.

1 There has been 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.

Mackerel

The Council recommended status-quo (from 2012) management for mackerel in 2013-2015, subject to positive annual review by the SSC and the Council. This would mean a commercial quota of 33,821 mt and a recreational catch target of 2,443 mt. Thus the only change recommended for mackerel is to make the specifications for three years, subject to positive review by the SSC and Council. Because this action would potentially put mackerel on three-year specifications, there is a separate alternative for the status quo for one year versus codifying the status quo for three years, which is preferred. The SSC and Council would review the specifications every year and if changes were appropriate changes could be considered within the annual specifications process without special procedures.

Butterfish

Based on advice from the Council's SSC, the Council recommended a butterfish ABC of 8,400 mt of butterfish for 2013. Given the 100% increase from the final 2012 ABC of 4,200 mt, the Council recommended that a limited directed fishery be re-established in 2013. At least 1,028 mt would be initially available for a directed fishery with no trip limits. If the fishery does not close early in the year then additional directed-fishery quota would be released incrementally, up to a maximum of 2,005 mt if the fishery does not close before November 1. The rest of the ABC would be reserved for smaller scale catches and potential discards in the same general fashion as the status quo fishery operates. Several trip limits related to smaller scale catches are also proposed to be increased somewhat to hopefully minimize regulatory discards.

A qualitative summary of the expected impacts related to all of the status quo and preferred specification alternatives is provided in Table 1. A summary of the expected impacts related to the status quo and preferred management measure alternatives is provided in Table 2. For this fishery management plan (FMP), the no action and the status quo alternatives are equivalent because provisions exists whereby the existing regulations remain in place until new regulations are implemented.

Table 1. Expected impacts of status quo and preferred specifications.
("+" signifies a positive impact, "-" a negative impact, and "0" a similar impact to the year before. "0/" before "+" or "-" indicates a likely small impact; Impacts for non-preferred alternatives are discussed in Section 7)

	Valued Ecosystem Components/Environmental Dimensions				
Specification Alternatives - JVP and TALFF are not listed in the table because they are both zero throughout. DAHs may be reduced to provide RSA quota as described in this document.	Managed Resource	Non-target Species	Human Communi-ties	Protected Resources	Essential Fish Habitat
Alt 1a - Mackerel No Action/Status Quo - ABC = 80,000mt; U.S. ABC = 43,781mt; DAH = 33,821mt; Rec Target = 2,443mt	0	0	0	0	0
Alt 1b - Mackerel Preferred - ABC = 80,000mt; U.S. ABC = 43,781mt; DAH = 33,821mt; Rec Target = 2,443mt *FOR 3 YEARS 2013-2015*	0	0	0	0	0
Alt 4a2 - Butterfish No Action/Status Quo - ABC = 4,200mt; DAH = 872; Butterfish Cap = 3,165mt	0	0	0	0	0
Alt 4b - Butterfish Preferred - ABC = 8,400mt; DAH = 2,570mt; Butterfish Cap = 4,500mt	0	0/-	+	0/-	0/-

Table 2. Expected impacts of status quo and preferred management measures.
("+" signifies a positive impact, "-" a negative impact, and "0" a similar impact to the year before. "0/" before "+" or "-" indicates a likely small impact; Impacts for non-preferred alternatives are discussed in Section 7)

	Valued Ecosystem Components/Environmental Dimensions				
Management measures besides specifications.	Managed Resource	Non-target Species	Human Communi-ties	Protected Resources	Essential Fish Habitat
Alt 2a - Longfin Status Quo/No Action - No changes to longfin squid closure thresholds	0	0	0	0	0
Alt 2b - Longfin Preferred - Effective April 15 of each year, update the 90% closure threshold for longfin squid to 95% in Trimester 1.	0	0	0/+	0	0
Alt 2c - Longfin Preferred - Effective August 15 of each year, update the 90% closure threshold for longfin squid to 95% in Trimester 2.	0	0	0/+	0	0
Alt 3a - Longfin Status Quo/No Action - No changes to butterfish cap	0	0	0	0	0
Alt 3b - Longfin Preferred - Change the longfin squid trip notification from 72 to 48 hours.	0	0	0/+	0	0
Alt 3c - Longfin Preferred - Effective April 15 of each year, update the 80% closure threshold for the butterfish cap to 90% in Trimester 1.	0	0	0/+	0	0
Alt 3d - Longfin Preferred - Trimester 2 Longfin Squid Fishing Would Close when 75% of the Annual Butterfish Cap was Projected to be Reached.	+	+	0/+	+	+
Alt 5a - Butterfish Status Quo/No Action - No changes to butterfish management measures.	0	0	0	0	0
Alt 5b - Butterfish Preferred - Implement a new butterfish fishery management structure to allow a limited direted fishery.	0/+	0/-	+	0/-	0/-

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2.0 LIST OF ACRONYMS

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
CPUE	Catch Per Unit of Effort
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
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.

3.0 LISTS OF TABLES AND FIGURES

3.1 List of Tables

3.2 List of Figures

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4.0 INTRODUCTION AND BACKGROUND OF SPECIFICATION PROCESS

The Council manages the 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 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 measures over the years in addition to annual specifications, which are summarized at http://www.mafmc.org/fmp/history/smb-hist.htm.

4.1 PURPOSE AND NEED OF THE ACTION

The purpose of this action is to establish annual specifications and other measures that will meet the need to prevent overfishing and achieve optimum yield per the MSA and address the other objectives of the FMP. Optimum yield is defined as the amount of fish which 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 action is needed because failure to implement the preferred measures described in this document could result in lower overall benefits to the Nation.

The Council recommended the butterfish specifications and associated management measures for one year (2013) and the mackerel specifications and associated management measures for 3 years (2013-2015) subject to positive review by the Council and its SSC. In 2013 the squid fisheries will be in year 2 of a 3-year multiyear specifications cycle so no specifications are considered but some management measures are considered for longfin squid to make management of that fishery more efficient.

The specifications process this year began with recommendations from the Council's Scientific and Statistical Committee (SSC) for an acceptable biological catch (ABC) for each species that accounts 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). To avoid overages for any species, the Council recommended annual catch targets (ACTs) to provide a buffer for management uncertainties and other considerations (e.g. optimum yield) not otherwise addressed. Proactive accountability measures help ensure that catch targets are not substantially exceeded. Up to 3% of all four species may be reserved to fund research projects.

The Council's SSC met May 23-24, 2012 in Baltimore MD and recommended all of the ABCs for the preferred alternatives. The MSB Monitoring Committee met on May 31, 2012 to review the SSC's ABC recommendations and consider additional measures to account for management uncertainty. The Council considered the SSC's and Monitoring Committee's recommendations as well as public comments and testimony for specifications for all four species at its June 2012 meeting in New York, NY. Both the SSC and the Council also considered input from the Council's Squid-Mackerel-Butterfish Advisory Panel in the form of fishery-performance reports constructed by the Advisory

Panel. This document serves as the submission to NMFS of the Council's recommendations for 2013 MSB specifications and 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.

5.0 WHAT ALTERNATIVES ARE CONSIDERED IN THIS DOCUMENT?

Introduction

The status quo alternative, what exists currently, is equivalent to the no action alternative because the current regulations contain a "roll-over" provision. This provision specifies that if the Regional Administrator fails to publish annual specifications before the start of the new fishing year, then the previous years' 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), and public testimony and comment given the requirements of the MSA and the MSB FMP. Several additional alternatives are also used to create a “reasonable range” around the preferred alternative, as recommended by NEPA since analysis of a “reasonable range” of alternatives facilitates consideration of a variety of biological impacts on the stocks and economic impacts on fishing communities. Specifications (quotas) and other management measures are dealt with via separate “Alternative Sets,” as described below.

5.1 Alternative Set 1: Mackerel Specifications

The general goal of the mackerel specifications is to account for all mackerel catch such that the ABC provided by the SSC is not exceeded and optimum yield is achieved. The ABC recommended by the SSC is 80,000 mt for 2013-15 (see http://www.mafmc.org/committees/SSC/SSC_Report_23-24_May_2012.pdf for details). To get the portion of that ABC available for U.S. use, the expected Canadian catch must be accounted for and deducted. Due to the low and variable recent catches of mackerel by the U.S. and Canadian fleets, the traditional methods (correlation analysis) to predict/estimate Canadian catches in future years are likely not viable. Instead, the Council recommends that the status quo set-aside for Canadian catch, 36,219 mt, be maintained (the 2011 Canadian catch was about 12,000 mt) until new information suggests another amount is more appropriate. The 2012 quota for Canada is 36,000 mt, which means that using 36,219 mt as an expected Canadian catch would be unlikely to result in an ABC overage. Since 36,219 mt is equal to 2010 Canadian catches, is about triple 2011 Canadian catches, and is about equal to the Canadian quota, using 36,219 mt as the expected Canadian catch should help avoid an ABC overage, which is one of the goals of managing mackerel. Further details on the original derivation of the 36,219 mt amount may be found in Appendix B of the 2012 specifications Environmental Assessment, available at: http://www.nero.noaa.gov/nero/regs/com2011.html.

The Council recommended that all other specifications and management measures also be maintained, i.e. the status quo should be carried forward. A new mackerel assessment is not expected for several years. Therefore, the information available next year may be very similar to the information available this year, so the SSC and Council recommended that the status quo be carried forward for three years for the calendar/fishing years 2013-2015, subject to positive review by both the SSC and Council. This document evaluates a range of specifications for 2013-2015. The existing other management measures (trip limits, fishery closure thresholds, etc.) may be found at: http://www.nero.noaa.gov/nero/regs/ under "Fisheries of the Northeastern United States" but no actions are proposed related to those measures.

Alternative 1a Status Quo and No Action Due to Roll-Over Provisions in FMP

Table 3. 1a - Status Quo/No Action Mackerel Specifications Summary

Alternative 1a for Mackerel - No action, status quo (all numbers are in metric tons)	
Specification	Mackerel
Overfishing Limit (OFL)	Unknown
Total Acceptable Biological Catch (ABC) from SSC	80,000
U.S. ABC = Annual Catch Limit (ACL) (Canadian catch deducted)	43,781
Recreational Allocation (6.2% of ACL)	2,714
Recreational Annual Catch Target (10% less than allocation to account for management uncertainty)	2,443
Commercial Allocation (93.8% of ACL)	41,067
Commercial Annual Catch Target (15% less than allocation to account for management uncertainty)	34,907
Landings or "Domestic Annual Harvest" (3.11% less than Annual Catch Target to account for expected discards)	33,821

In the table above, the 80,000 mt ABC is the recommendation of the SSC. The Canadian catch deduction, 36,219 mt is made to determine the catch available to U.S. fisheries. Amendment 11 established the recreational (6.2%)/commercial (93.8%) allocation percentages. Like last year, quota available to Joint Venture Processing is zero and quota available for foreign fishing, the total allowable level of foreign fishing (TALFF) is also zero since it is expected that if mackerel are available, the U.S. fishery has the capacity to fully harvest the quota. 1a, the status quo and no-action alternative, considers setting these specifications for one year (2013).

The deductions for management uncertainty are set by the Council based on the best available scientific information available at the time of decision-making, including any history of overages as well as imprecision and variability in catch estimates (including discards). The 10% buffer used to derive the recreational ACT includes consideration of management uncertainty issues for recreational catch estimation including discard estimation and general imprecision in catch estimation, as detailed in Appendix C of the 2012 specifications Environmental Assessment, available at: http://www.nero.noaa.gov/nero/regs/com2011.html. The 15% buffer used to derive the commercial ACT includes consideration of management uncertainty issues for commercial catch estimation including discard estimation and general imprecision in catch estimation.

<u>Alternative 1b (Preferred) – Status Quo Due to Roll-Over Provisions in FMP for 3 years (2013-2015)</u>

Table 4. 1b - Status Quo/Preferred Mackerel Specifications (2013-2015) Summary

Alternative 1b for Mackerel - Status quo and preferred, but for 3 years (all numbers are in metric tons)	
Specification	Mackerel
Overfishing Limit (OFL)	Unknown
Total Acceptable Biological Catch (ABC) from SSC	80,000
U.S. ABC = Annual Catch Limit (ACL) (Canadian catch deducted)	43,781
Recreational Allocation (6.2% of ACL)	2,714
Recreational Annual Catch Target (10% less than allocation to account for management uncertainty)	2,443
Commercial Allocation (93.8% of ACL)	41,067
Commercial Annual Catch Target (15% less than allocation to account for management uncertainty)	34,907
Landings or "Domestic Annual Harvest" (3.11% less than Annual Catch Target to account for expected discards)	33,821

In the table above, the 80,000 mt ABC is the recommendation of the SSC. The Canadian catch deduction, 36,219 mt is made to determine the catch available to U.S. fisheries. Amendment 11 established the recreational/commercial allocation percentages. Like last year, quota available to Joint Venture Processing is zero and quota available for foreign fishing, the total allowable level of foreign fishing (TALFF) is also zero since it is expected that if mackerel are available the U.S. fishery has the capacity to fully harvest the quota. The preferred alternative considers setting these specifications for three years (2013-2015), subject to positive annual review by both the SSC and the Council. Setting these specifications for three years is the only difference between the status quo and the preferred specifications.

The deductions for management uncertainty are set by the Council based on the best available scientific information available at the time of decision-making, including any history of overages as well as imprecision and variability in catch estimates (including discards). The 10% buffer used to derive the recreational ACT includes consideration of management uncertainty issues for recreational catch estimation including discard estimation and general imprecision in catch estimation, as detailed in Appendix C of the 2012 specifications Environmental Assessment, available at: http://www.nero.noaa.gov/nero/regs/com2011.html. The 15% buffer used to derive the commercial ACT includes consideration of management uncertainty issues for commercial catch estimation including discard estimation and general imprecision in catch estimation.

The preferred specifications were recommended as 3-year multi-year specifications because it is likely that no information sufficient to justify increasing or decreasing the specifications will be available for the next several years. However, the ABC and specifications will be reviewed annually to determine if continuation of these specifications is appropriate.

Alternative 1c – ABC 25% higher than preferred (for 2013-2015)

Table 5. 1c - Mackerel Specifications – ABC 25% Higher.

Alternative 1c for Mackerel - 25% above no action, status quo, and preferred (all numbers are in metric tons)	
Specification	Mackerel
Overfishing Limit (OFL)	Unknown
Total Acceptable Biological Catch (ABC)	100,000
U.S. ABC = Annual Catch Limit (ACL) (Canadian catch deducted)	63,781
Recreational Allocation (6.2% of ACL)	3,954
Recreational Annual Catch Target (10% less than allocation to account for management uncertainty)	3,559
Commercial Allocation (93.8% of ACL)	59,827
Commercial Annual Catch Target (15% less than allocation to account for management uncertainty)	50,853
Landings or "Domestic Annual Harvest" (3.11% less than Annual Catch Target to account for expected discards)	49,271

In the table above, while 80,000 mt ABC is the recommendation of the SSC a value of 100,000 mt (25% above the preferred specifications) is considered to provide a range of alternatives. The Canadian catch deduction, 36,219 mt is made to determine the catch available to U.S. fisheries. Amendment 11 established the recreational/commercial allocation percentages. Like last year, quota available to Joint Venture Processing is zero and quota available for foreign fishing, the total allowable level of foreign fishing (TALFF) is also zero since it is expected that if mackerel are available the U.S. fishery has the capacity to fully harvest the quota. The alternative considers setting these specifications for three years (2013-2015), subject to positive annual review by both the SSC and the Council.

The deductions for management uncertainty are set by the Council based on the best available scientific information available at the time of decision-making, including any history of overages as well as imprecision in catch estimates (including discards). The 10% buffer used to derive the recreational ACT includes consideration of management uncertainty issues for recreational catch estimation including discard estimation and general imprecision in catch estimation, as detailed in Appendix C of the 2012 specifications Environmental Assessment, available at: http://www.nero.noaa.gov/nero/regs/com2011.html. The 15% buffer used to derive the commercial ACT includes consideration of management uncertainty issues for commercial catch estimation including discard estimation and general imprecision in catch estimation.

Alternative 1d – ABC 25% lower than preferred (for 2013-2015)

Table 6. 1d - Mackerel Specifications – ABC 25% Lower.

Alternative 1d for Mackerel - 25% below no action, status quo, and preferred (all numbers are in metric tons)	
Specification	Mackerel
Overfishing Limit (OFL)	Unknown
Total Acceptable Biological Catch (ABC)	60,000
U.S. ABC = Annual Catch Limit (ACL) (Canadian catch deducted)	23,781
Recreational Allocation (6.2% of ACL)	1,474
Recreational Annual Catch Target (10% less than allocation to account for management uncertainty)	1,327
Commercial Allocation (93.8% of ACL)	22,307
Commercial Annual Catch Target (15% less than allocation to account for management uncertainty)	18,961
Landings or "Domestic Annual Harvest" (3.11% less than Annual Catch Target to account for expected discards)	18,371

In the table above, while 80,000 mt ABC is the recommendation of the SSC a value of 60,000 mt is considered to provide a range of alternatives. The Canadian catch deduction, 36,219 mt is made to determine the catch available to U.S. fisheries. Amendment 11 established the recreational/commercial allocation percentages. Like last year, quota available to Joint Venture Processing is zero and quota available for foreign fishing, the total allowable level of foreign fishing (TALFF) is also zero since it is expected that if mackerel are available the U.S. fishery has the capacity to fully harvest the quota. The alternative considers setting these specifications for three years (2013-2015), subject to positive annual review by both the SSC and the Council.

The deductions for management uncertainty are set by the Council based on the best available scientific information available at the time of decision-making, including any history of overages as well as imprecision in catch estimates (including discards). The 10% buffer used to derive the recreational ACT includes consideration of management uncertainty issues for recreational catch estimation including discard estimation and general imprecision in catch estimation, as detailed in Appendix C of the 2012 specifications Environmental Assessment, available at: http://www.nero.noaa.gov/nero/regs/com2011.html. The 15% buffer used to derive the commercial ACT includes consideration of management uncertainty issues for commercial catch estimation including discard estimation and general imprecision in catch estimation.

5.2 Alternative Set 2: Longfin Squid Regulatory Management Measures- Longfin Squid Closures

Alternative 2a – Status Quo and No Action Due

Under the status quo there would be no changes to longfin squid regulatory management measures (the specifications/quotas are in year 2 of a 3-year multi-year specifications cycle and no changes to them are contemplated). The trimester 1 longfin squid closure threshold would remain at 90% for the entire trimester (versus 2b) and the trimester 2 longfin squid closure threshold would remain at 90% for the entire trimester (versus 2c)

Alternative 2b (Preferred) – Effective April 15 of each year, update the 90% closure threshold for longfin squid to 95% in Trimester 1.

Currently, the longfin squid fishery closes on the date when it is projected to reach 90% of the trimester 1 quota. This alternative would change the threshold from 90% to 95% for the last two weeks of the trimester. The rationale is that less of a buffer is needed close to the end of the Trimester and lowering the buffer would allow more of the Trimester quota to be utilized without increasing the likelihood of substantial overages. Since overages and underages from roll over and the annual closure threshold is not changing, and since the total Trimester 1 quota is about 9555 mt, this could shift up to 5% of that, about 478 mt, from later in the year (probably November-December) to the end of Trimester 1, i.e. late April.

Alternative 2c (Preferred) – Effective August 15 of each year, update the 90% closure threshold for longfin squid to 95% in Trimester 2.

Currently, the longfin squid fishery closes on the date when it is projected to reach 90% of the trimester 2 quota. This alternative would change the threshold from 90% to 95% for the last two weeks of the trimester. The rationale is that less of a buffer is needed close to the end of the Trimester and lowering the buffer would allow more of the Trimester quota to be utilized without increasing the likelihood of substantial overages. Since overages and underages from roll over, and the total Trimester 2 quota is about 3777 mt, this could shift up to 5% of that, about 189 mt, from later in the year (probably November-December) to the end of Trimester 2, , i.e. late August.

5.3 Alternative Set 3: Longfin Squid Regulatory Management Measures- Butterfish Cap

Alternative 3a – Status Quo and No Action

Under the status quo there would be no changes to longfin squid regulatory management measures as pertains to the butterfish cap on the longfin squid fishery. The trip notification for vessels with longfin squid permits intending to land over 2,500 lb. would remain 72 hours (versus 3b); the trimester 1 butterfish cap closure threshold would remain at 80% for the entire trimester (versus 3c); and there would be no butterfish cap related closures in Trimester 2 (versus 3d);

Alternative 3b (Preferred) – Change the longfin squid trip notification from 72 to 48 hours.

The trip notification for vessels with longfin squid permits intending to land over 2,500 lb. would change from 72 hours to 48 hours. The Northeast fisheries observer program reports they have the ability to operate with a 48 hour longfin squid notification in terms of placing observers on vessels that have notified.

Alternative 3c (Preferred) – Effective April 15 of each year, update the 80% closure threshold for the butterfish cap to 90% in Trimester 1.

Currently, the longfin squid fishery closes on the date when it is projected to reach 80% of the Trimester 1 butterfish cap. This alternative would change the threshold from 80% to 90% for the last two weeks of the trimester. The rationale is that less of a buffer is needed close to the end of the Trimester and lowering the buffer would allow more of the Trimester cap quota to be utilized without increasing the likelihood of substantial overages. While the amount is difficult to predict since it would depend on the longfin squid to butterfish catch ratio, this could shift some landings later in the year (probably Nov-Dec) to the end of Trimester 1, i.e. late April.

Alternative 3d (Preferred) – Trimester 2 Longfin Squid Fishing Would Close when 75% of the Annual Butterfish Cap was Projected to be Reached.

Currently there are no provisions for any longfin squid closures in Trimester 2 related to the butterfish cap. What this potentially means is that Trimester 2 fishing activity could theoretically use all of the annual butterfish cap, without leaving any cap for Trimester 3. While this appeared to be an unlikely scenario when analyzed in the Amendment that implemented the cap (Amendment 10), and has not occurred yet, recent operation of the fishery has suggested this may be a possibility, especially at lower cap levels. An upcoming framework will consider further changes to the cap program along these lines but this alternative would implement a closure mechanism in Trimester 2 when 75% of the annual butterfish cap is projected to be reached so that until the issue is dealt with via an upcoming framework, there is a backstop to ensure that at least some butterfish cap is available during Trimester 3.

5.4 Alternative Set 4: Butterfish Specifications

The overall goal of the butterfish specifications is to account for all butterfish catch such that the ABC provided by the SSC is not exceeded and optimum yield is achieved. The ABC recommended by the SSC is 8,400 mt for 2013 (see http://www.mafmc.org/committees/SSC/SSC_Report_23-24_May_2012.pdf for details). The SSC's final recommendation for 2012 was 4,200 mt, making the 2013 recommendation a substantial increase from 2012.

ABC Summary

While the rationale for the SSC's 2013 ABC recommendation of 8,400 was documented in the SSC's May 2012 report (available at: http://www.mafmc.org/committees/science.htm) and described to the Council, a further discussion of the SSC's decision-making may help the public more clearly understand the context and rationale for the SSC's OFL and ABC recommendations.

Because of the uncertainty regarding the butterfish stock, in the spring of 2012 Council staff requested that the NMFS Northeast Fishery Science Center (NEFSC) consider if additional investigation of the butterfish stock could take place prior to the SSC meeting that sets the butterfish ABCs. The NEFSC was able to complete such an analysis, which expanded survey data to a range of total swept area biomasses based on ranges of reasonable assumptions regarding catchability, and also investigated likely fishing mortality. Dr. Tim Miller and Dr. Paul Rago collaborated on the analysis summarized herein and available at: http://www.mafmc.org/meeting_materials/SSC/2012-05/SSC_2012_05.htm.

The model results comported well with the 2010 assessment results and while insufficient to recommend particular catch advice for a directed fishery, strongly supported the contention that discard limits of 3,600 mt would have almost no chance of inducing overfishing. Even at the most conservative (smallest) biomasses (resulting from when the survey is assumed to encompass all butterfish habitat and catches every butterfish in the water column it samples, and when natural mortality (M) is assumed to be equal to 0.8) the fishing mortality over 2005-2011 would have been less than any of a suite of potential overfishing reference points whenever total catch is less than 9,400 mt. Actual catch was much lower, but the analysis takes a "what if" approach.

Miller and Rago conducted additional analysis via bootstrapping to further examine the range of probable fishing mortalities that would result from Miller and Rago's relatively conservative assumptions about butterfish biomass. Using Patterson 2002's guidance for small pelagic species of keeping to an F:M ratio of 67% and an assumed M of 0.8 (which translates to an F = 0.536), the analysis suggested that catches of 16,800 mt would only lead to overfishing (F > = 0.536) under Miller and Rago's most extreme assumptions. The SSC therefore adopted 16,800 as a proxy OFL and recommended an ABC of half that amount, 8,400 mt. The relatively large 50% buffer was used to account for uncertainty.

It should be noted that Miller and Rago's analysis is made additionally conservative by averaging 2005-2011 data in their analysis. This time series utilizes several very low survey index values (2005 and 2007), and returns values for sustainable catch that are lower than if only the last several years were incorporated. In other words, if only more recent data was incorporated, the analysis would suggest higher catches would also be unlikely to result in overfishing. It also means that updating their analysis based on 2012 (to 2006-2012) survey data should only result in lower estimates of acceptable catch if the 2012 data point was lower than the 2005 data point, which was the lowest in the time series. Such an occurrence would appear unlikely given the recent trajectory of butterfish survey results.

Related to the increased ABC recommended by the SSC, a new management approach has been recommended by the Council. Accordingly, this document considers several alternatives related to the butterfish specifications (quotas) in Alternative Set 4 and considers other associated management measures in Alternative Set 5.

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Alternative 4a1 – Initial Draft Environmental Assessment No Action Alternative*

Table 7. Initial Draft Environmental Assessment No Action Alternative – 4a1

Alternative 4a1 for Butterfish - Initial No action/status quo (all numbers are in metric tons)	
Specification	Butterfish
Overfishing Limit (OFL)	Unknown
Total Acceptable Biological Catch (ABC) from SSC = ACL	3,622
Commercial Annual Catch Target (10% less than ACL to account/buffer for management uncertainty)	3,260
Landings or "Domestic Annual Harvest (DAH)" (66% less than Annual Catch Target to account for expected discards)	1,072
Butterfish Cap (set at 67.5% of ABC)	2,445

*This alternative was the status quo examined in the draft environmental assessment. However, since the draft environmental assessment was completed, other actions have implemented new management measures, which comprise the current status quo, and which are described in Alternative 4a2.

In the table above, the 3,622 mt ABC was the initial recommendation for 2012 by the SSC. The 10% deduction for management uncertainty is set by the Council based on the best available scientific information available at the time of decision-making, including any history of overages as well as imprecision in catch estimates (including discards). Observer data continues to suggest that overall about 2/3 of butterfish that are caught are discarded (68% in 2011 – NMFS 2012), and to control discards and overall catch, Amendment 10 established a cap on butterfish catch on the longfin squid fishery. Like last year, quota available to Joint Venture Processing is zero and quota available for foreign fishing, the total allowable level of foreign fishing (TALFF) is also zero since the U.S. fishery has the capacity to fully harvest the quota.

Butterfish landings and the butterfish mortality cap are tracked in parallel such that all butterfish landings count against the DAH for quota monitoring while all butterfish catch (landings and discards) by vessels that land over 2,500 lb. of longfin squid counts against the butterfish mortality cap.

This document also notes that the ABC in effect for most of 2012 was 1,811 mt. NMFS initially rejected the increase from 1,811 mt in 2011 to 3,622 mt in 2012 due to an interpretation of the Council's Risk Policy that forbade ABC increases when the status of a stock is as uncertain as butterfish. Via Framework 6 to the MSB FMP, the SSC is allowed to recommend increases in such cases if the SSC can certify that 1) best available science indicates that stock biomass is stable or increasing; and 2) the SSC provides a determination that, based on best available science, the recommended increase to the ABC is not expected to result in overfishing. After the Council voted to recommend implementation of Framework 6, the SSC reaffirmed the 2012 ABC of 3,622 mt per the stipulations described above and NMFS implemented the 3,622 mt ABC in late August 2012.

Alternative 4a2 – Current Status Quo and No Action Due to Roll-Over Provisions in FMP

Table 8. Current Status Quo and No Action Due to Roll-Over Provisions in FMP – 4a2

Alternative 4a2 for Butterfish - No action and status quo (all numbers are in metric tons)	
Specification	Butterfish
Overfishing Limit (OFL)	Unknown
Total Acceptable Biological Catch (ABC) from SSC = ACL	4,200
Commercial Annual Catch Target (10% less than ACL to account/buffer for management uncertainty)	3,780
Landings or "Domestic Annual Harvest (DAH)" (66% less than Annual Catch Target to account for expected discards)	872
Butterfish Cap (set at 75% of ABC)	3,165

Actions taken via a final rule on November 9, 2012 (see http://www.nero.noaa.gov/regs/frdoc/12/12smb2021revisedspecsfr.pdf) increased the butterfish ABC, ACL, ACT, and decreased the DAH from the status quo/no action alternative included in the draft environmental assessment. These changes were related to recommendations from the MAFMC and its SSC, and a separate environmental assessment can be found at http://www.nero.noaa.gov/regs/.

In the table above, the 4,200 mt ABC was the final recommendation for 2012 by the SSC. The 10% deduction for management uncertainty is set by the Council based on the best available scientific information available at the time of decision-making, including any history of overages as well as imprecision in catch estimates (including discards). Observer data continues to suggest that overall about 2/3 of butterfish that are caught are discarded (68% in 2011 – NMFS 2012), and to control discards and overall catch, Amendment 10 established a cap on butterfish catch on the longfin squid fishery. Like last year, quota available to Joint Venture Processing is zero and quota available for foreign fishing, the total allowable level of foreign fishing (TALFF) is also zero since the U.S. fishery has the capacity to fully harvest the quota.

Butterfish landings and the butterfish mortality cap are tracked in parallel such that all butterfish landings count against the DAH for quota monitoring while all butterfish catch (landings and discards) by vessels that land over 2,500 lb. of longfin squid counts against the butterfish mortality cap.

The DAH was lowered to 872 mt because in November 2012 it appeared that the small directed butterfish fishery would not close even if the DAH was reduced to 872 mt, and this continues to prove a valid projection. The reduction was used, in conjunction with the higher overall ABC/ACL/ACT values, to increase the butterfish cap to 3,165 mt so as to not unnecessarily limit the longfin squid fishery. At the time of decision-making it appeared that the additional cap quota may facilitate additional operation of the longfin squid fishery. While preliminary, relatively low longfin squid landings in late 2012 and relatively low bycatch rates of butterfish suggest that less than the original 2,445 mt of cap quota (see 4a1) will actually be utilized in 2012.

Alternative 4b – Preferred

Table 9. Summary of Preferred Butterfish Specifications – 4b

Alternative 4b for Butterfish - Preferred (all numbers are in metric tons)	
Specification	Butterfish
Overfishing Limit (OFL)	16,800
Total Acceptable Biological Catch (ABC) from SSC = ACL	8,400
Commercial Annual Catch Target (10% less than ACL to account/buffer for management uncertainty)	7,560
Landings or "Domestic Annual Harvest (DAH)" (66% less than Annual Catch Target to account for expected discards)	2,570
Butterfish Cap	4,464
Research Set Aside (RSA)	36

In the table above, the 8,400 mt ABC is the recommendation for 2013 by the SSC (see "Preferred ABC Summary on the next page). The 10% deduction from the ABC to determine the ACT for management uncertainty is set by the Council based on the best available scientific information available at the time of decision-making, including any history of overages as well as imprecision in catch estimates (including discards). Observer data continues to suggest that about 2/3 of catch is discarded, and to control discards and overall catch, Amendment 10 established a cap on butterfish catch on the longfin squid fishery. Like last year, quota available to Joint Venture Processing is zero and quota available for foreign fishing, the total allowable level of foreign fishing (TALFF) is also zero since the U.S. fishery has the capacity to fully harvest the quota.

The cap would be set at 4,464 mt, or 59.05% of the ACT. Landings and the cap are tracked in parallel such that all landings count against the DAH for quota monitoring while all butterfish catch (landings and discards) by vessels that land over 2,500 lb. of longfin squid count against the butterfish mortality cap. The Council chose a cap of 4,500 mt initially to balance use of butterfish in the cap versus directed landings while restraining overall catch within the ABC and that amount has been reduced by 36 mt because of butterfish research set aside that has been awarded. That butterfish research set aside award is being used to cover butterfish discarding that could occur with awarded longfin squid research set aside fishing, which is why the 36 mt was reduced from the cap versus from the DAH. The Council specified that up to 2% of the ACT could be set aside for research set asides but only 36 mt was awarded.

Since landings are proposed to be no more than 2,570 mt, total catch from the cap plus landings plus research set aside can equal a maximum of 7,070 mt (4,464+2,570+36 = 7,070). Since there is overlap between the cap and landings (longfin squid trips land butterfish), the total catch between these two sources of mortality would be less. In 2011 the longfin squid cap trips (trips where ≥ 2,500 lb. of longfin was landed) landed 121 mt of butterfish. Using the same numbers for 2013, the total catch between these two sources of mortality (the directed butterfish fishery and butterfish catch on longfin squid cap trips) could be as high as 6,949 mt (7,070 – 121 mt) given similar activity. This leaves 611 mt (7,560 – 6,949) available for discards in other fisheries, which is about the amount of discards estimated from non-cap fisheries trips in 2011 (637 mt) in the report on the 2011 operation of the butterfish cap (http://www.mafmc.org/meeting_materials/SSC/2012-05/3-2011-Butterfish-Cap-Report%28May%202012%29.pdf). While there is uncertainty about the year to year discards in non-cap fisheries, there is an 840 mt buffer (10% of 8,400 mt) between the annual catch target and the ABC, and the proposed less restrictive trip limits should limit regulatory discarding in all fisheries.

Alternative 4c – ABC 25% higher than preferred

Table 10. Summary Butterfish Specifications – ABC 25% Higher – 4c

Alternative 4c for Butterfish - 25% Above Preferred (all numbers are in metric tons)	
Specification	Butterfish
Overfishing Limit (OFL)	16,800
Total Acceptable Biological Catch (ABC) = ACL	10,500
Commercial Annual Catch Target (10% less than ACL to account/buffer for management uncertainty)	9,450
Landings or "Domestic Annual Harvest (DAH)" (66% less than Annual Catch Target to account for expected discards)	3,213
Butterfish Cap	5,625

In the table above, while 8,400 mt ABC is the recommendation of the SSC, a value of 10,500 mt is considered to provide a range of alternatives. The 10% deduction from the ABC to determine the ACT for management uncertainty is set by the Council based on the best available scientific information available at the time of decision-making, including any history of overages as well as imprecision in catch estimates (including discards). Observer data continues to suggest that about 2/3 of catch is discarded, and to control discards and overall catch, Amendment 10 established a cap on butterfish catch on the longfin squid fishery. Like last year, quota available to Joint Venture Processing is zero and quota available for foreign fishing, the total allowable level of foreign fishing (TALFF) is also zero since the U.S. fishery has the capacity to fully harvest the quota.

The cap would be set at 5,625 mt, or 59.52% of the ACT (the division of the ACT into use for the butterfish cap and for landings is described above). Landings and the cap are tracked in parallel such that all landings count against the DAH for quota monitoring while all butterfish catch (landings and discards) by vessels that land over 2,500 lb. of longfin squid count against the butterfish mortality cap.

Since landings are proposed to be no more than 3,213 mt, the total catch from the cap plus landings can equal a maximum of 8,838 mt, though since there is overlap between the cap and landings (longfin squid trips do land some butterfish) the total catch between these two sources of mortality would be somewhat less. In 2011 the longfin squid cap trips (trips were over 2,500 lb. of longfin was landed) landed 121 mt of butterfish. Using the same numbers for 2013, the total catch between these two sources of mortality (the directed butterfish fishery and butterfish catch on longfin squid cap trips) could be as high as 8,717 mt (8,838 mt – 121 mt) given similar activity. This leaves 733 mt (9,450 – 8,717) available for other discards in other fisheries, which is about the amount of discards estimated to have taken place on non-cap fisheries trips in 2011 (637 mt) according to the report on the 2011 operation of the butterfish cap (http://www.mafmc.org/meeting_materials/SSC/2012-05/3-2011-Butterfish-Cap-Report%28May%202012%29.pdf). While there is some uncertainty about the year to year discards in non-cap fisheries, there is a 1,050 mt buffer (10% of 10,500 mt) between the annual catch target and the ABC, and the proposed less restrictive trip limits should limit regulatory discarding in all fisheries.

Alternative 4d – ABC 25% lower than preferred

Table 11. Summary Butterfish Specifications – ABC 25% Lower 4d

Alternative 4d for Butterfish - Above Status Quo, 25% Below Preferred (all numbers are in metric tons)	
Specification	Butterfish
Overfishing Limit (OFL)	16,800
Total Acceptable Biological Catch (ABC) = ACL	6,300
Commercial Annual Catch Target (10% less than ACL to account/buffer for management uncertainty)	5,670
Landings or "Domestic Annual Harvest (DAH)" (66% less than Annual Catch Target to account for expected discards)	1,928
Butterfish Cap	3,375

In the table above, while 8,400 mt ABC is the recommendation of the SSC, a value of 6,300 mt is considered to provide a range of alternatives. The 10% deduction from the ABC to determine the ACT for management uncertainty is set by the Council based on the best available scientific information available at the time of decision-making, including any history of overages as well as imprecision in catch estimates (including discards). Observer data continues to suggest that about 2/3 of catch is discarded, and to control discards and overall catch, Amendment 10 established a cap on butterfish catch on the longfin squid fishery. Like last year, quota available to Joint Venture Processing is zero and quota available for foreign fishing, the total allowable level of foreign fishing (TALFF) is also zero since the U.S. fishery has the capacity to fully harvest the quota.

The cap would be set at 3,375 mt, or 59.52% of the ACT (the division of the ACT into use for the butterfish cap and for landings is described above). Landings and the cap are tracked in parallel such that all landings count against the DAH for quota monitoring while all butterfish catch (landings and discards) by vessels that land over 2,500 lb. of longfin squid count against the butterfish mortality cap.

Since landings are proposed to be no more than 1,928 mt, the total catch from the cap plus landings can equal a maximum of 5,303 mt, though since there is overlap between the cap and landings (longfin squid trips do land some butterfish) the total catch between these two sources of mortality would be somewhat less. In 2011 the longfin squid cap trips (trips where over 2,500 lb. of longfin was landed) landed 121 mt of butterfish. Using the same numbers for 2013, the total catch between these two sources of mortality (the directed butterfish fishery and butterfish catch on longfin squid cap trips) could be as high as 5,182 mt (5,303 mt – 121 mt) given similar activity. This leaves 488 mt (5,670 – 5,182) available for other discards in other fisheries, which is less than the amount of discards estimated to have taken place on non-cap fisheries trips in 2011 (637 mt) according to the report on the 2011 operation of the butterfish cap (http://www.mafmc.org/meeting_materials/SSC/2012-05/3-2011-Butterfish-Cap-Report%28May%202012%29.pdf). While there is considerable uncertainty about the year to year discards in non-cap fisheries, there is a 1,050 mt buffer (10% of 10,500 mt) between the annual catch target and the ABC, and the proposed less restrictive trip limits should limit regulatory discarding in all fisheries.

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5.5 Alternative Set 5: Butterfish Management Measures

5a – No Action and Status Quo

Butterfish management measures would remain as they are:

There would initially be a daily 5,000 pound trip limit for moratorium permits and a 600 pound trip limit for incidental permits. For moratorium permits, there would also be a 2,000 pound trip limit if mesh less than 3 inches is used. The directed fishery for butterfish closes when 80% of the DAH is projected to be taken. If the directed fishery closes before October 1, moratorium and incidental permits will have a daily 250 pound trip limit. If the directed fishery closes on or after October 1, moratorium and incidental permits will have a daily 600 pound trip limit.

5b – 3-Phase Butterfish Management System- Preferred

Related to the potential for increased quota in 2013 (Alternative 4b), the Council developed a 3-phase annual system to allow a limited resumption of a directed butterfish fishery. In phase 1, there would be no trip limit for limited access permits and a trip limit of 600 lb. for incidental permits. After a portion of the DAH was landed, phase 2 would begin with lower trip limits for limited access permit holders similar to the status quo. Phase 3 would implement another round of lowered trip limits for limited access permit holders to avoid quota overages. For phases 2 and 3, the quota threshold to reduce the trip limit vary bimonthly throughout the year. The later in the year either begins, the less time is left in the year, which means that less quota is needed in reserve to support activity during that phase. This is why there are different closure thresholds as the fishery proceeds through the year. If the trip limits are reduced early in the year, more quota will be reserved to cover incidental landings that trickle in without ending up over the DAH.

Since the Council picked Alternative 4b above as preferred, the specifications associated with 4b are used in the numerical descriptions below for purposes of example, but since they are percentage based, the actual metric tons associated with the three phased system would just scale up or down depending on what specifications from Alternative Set 4 above were actually selected.

Phase 1

Initially in the year, longfin squid/butterfish moratorium permits would have no trip limit for butterfish if using mesh greater than 3 inches. For mesh less than 3 inches there would be a 2,500 pound trip limit. There would be a trip limit of 600 pounds year round for incidental permits regardless of the status of the directed fishery.

There would be no change to these trip limits (or lack thereof) until the following percentages of the DAH were reached in the following respective months, at which point Phase 1 would end and Phase 2 would begin (see table next page):

Table 12. Landings percentages and example amounts when Phase 1 ends.

Months	When this percent of the DAH is landed, phase 2 would begin	Total landings (mt) associated with this percent (example based on 2,570 mt DAH)
Jan/Feb	40%	1,028
Mar/Apr	47%	1,208
May/Jun	55%	1,414
Jul/Aug	63%	1,619
Sep/Oct	71%	1,825
Nov/Dec	78%	2,005

Phase 2

Once the above percentages of the DAH were actually reached (not a projection) (40%-78% depending on the point in the year), then a 5,000 pound trip limit would be activated for limited access permitted vessels using greater than 3 inch mesh. The rationale for Phase 2 is that it could be inefficient to go from no trip limit to a very low trip limit in one step. A 5,000 pound trip limit will still allow for some directed fishing, but at a much smaller scale and for longer in the year. By allowing a portion of the DAH to be fished on under Phase 2's trip 5,000 pound trip limits, use of a very low backstop trip limit that avoids DAH overages but likely leads to regulatory discarding should be minimized.

The 2,500 pound limit for limited access permitted vessels using less than 3 inch mesh and the 600 pound trip limit for incidental permits would remain the same in phase 2 from phase 1. The fishery would proceed with these trip limits, hopefully for the remainder of the year to avoid having to implement lower trip limits that cause regulatory discarding. However, to avoid DAH overages, an additional final phase, Phase 3, would commence when the percentages of the total DAH specified in table 13 were reached in the respective months.

An important point is that the landings reserved for phase 2 in Table 13 are the minimum amounts and would only occur if Phases 1 and 2 both ended in the same 2-month step. For example, if Phase 1 ended in February at 1,028 mt and Phase 2 also ended in February at 1,491 mt, then the difference, 463 mt (see first row of Table 13) is what Phase 2 operated under. However, given the trip limits in Phase 2, and given recent performance of the butterfish fishery, it is more likely that 463 mt would last through at least July, at which point the Phase 2 quota would have advanced to 977 mt (Phase 1 closed at 1,028 mt so one would calculate 2,005 mt – 1,028 mt = 977 mt). The goal is that increases in Phase 2 with each two month step will result in the fishery not closing at any point in the year.

Table 13. Landings percentages and example amounts for Phases 2 and 3.

Months	When this percent of the DAH is landed, phase 3 would begin	Total Landings (mt) associated with this percent (example based on 2,570 mt DAH)	Landings Reserved For Phase 2 (example based on 2,570 mt DAH)	Landings Reserved For Phase 3 (example based on 2,570 mt DAH)
Jan/Feb	58%	1,491	463	1,079
Mar/Apr	64%	1,645	437	925
May/Jun	71%	1,825	411	745
Jul/Aug	78%	2,005	386	565
Sep/Oct	85%	2,185	360	386
Nov/Dec	91%	2,339	334	231

Phase 3

Once the above total percentages of the total DAH in table 13 were projected to be reached, ending Phase 2 and beginning Phase 3, a 500 pound trip limit would be implemented for all limited access permitted vessels. Incidental permits would remain under a 600 pound trip limit for the entire year regardless of the status of the directed fishery[2]. This phase is really a backstop phase to avoid/minimize DAH overages. Based on analysis of fishery performance in 2011 when there was a closure for more than 5 months, it appears that if Phase 3 begins in any of the above month/percentage combinations, DAH overages are unlikely with the proposed trip limits. The closure buffer (the difference between the closure threshold in the table above and 100%) is greater early in the year and smaller later in the year to account for the fact that trips of 500 and 600 pounds will add up to a larger total the longer they have to be in place.

The NMFS Regional Administrator would also be granted the discretion of adjusting the phase 3 trip limit from 250 pounds to 750 pounds if it appears that landings are accruing faster or slower than expected during Phase 3. If landings were accruing faster than expected the Phase 3 trip limit could be increased, and if landings were accruing slower than expected the Phase 3 trip limit could be decreased within the above specified range.

2 Currently the incidental trip limit is 600 pounds and decreases to 250 pounds if the directed fishery closes. Discussion at the Council concluded that while incidental trip limits should stay relatively low, there was no need to change them when the directed fishery closes because of the higher quota. Maintaining their same trip limit for the whole year also simplifies regulatory compliance for incidental permit holders.

5c – A Simplified Expanded Butterfish Fishery

A simplified expanded butterfish fishery is also included in this document to provide a "reasonable range" around the preferred alternative, as recommended by NEPA since analysis of a "reasonable range" of alternatives facilitates consideration of a variety of biological impacts on the stocks and economic impacts on fishing communities.

The butterfish fishery would begin annually with a daily 200,000 pound trip limit for moratorium permits and a 1,000 pound trip limit for incidental permits. The directed fishery for butterfish closes when 80% of the DAH is projected to be taken. If the directed fishery closes before October 1, moratorium and incidental permits will have a daily 250 pound trip limit. If the directed fishery closes on or after October 1, moratorium and incidental permits will have a daily 500 pound trip limit. For moratorium permits, there would also be a 2,500 pound trip limit if mesh less than 3 inches is used.

5.6 Research Set-Asides (RSA) Recommendations

Per Framework Adjustment 1 to the Mackerel, Squid and Butterfish (MSB) FMP, the annual RSA amount may vary between 0 and 3% of each species' total allowable landing level, which is the IOY value for MSB species. The Council has recommended that up to 3% of the 2013 preferred mackerel (1120mt), 3% of Illex (687mt), 2% of butterfish (151mt), and up to 3% of longfin squid (673mt) ACT's and/or IOY's be available as set-asides to fund projects selected under the 2013 Mid-Atlantic RSA Program. If any portion of the research quota is not awarded, NMFS will return any un-awarded set-aside amount to the fishery either through the 2013 MSB specification rulemaking process or through the publication of a separate notice in the Federal Register notifying the public of a quota adjustment.

In order to expedite the implementation of the 2013 Mid-Atlantic RSA Program, the program and its projects are described in this section to the extent practicable, and the expected environmental impacts are analyzed in Section 7 below.

Vessels harvesting research quota in support of approved research projects would be issued exempted fishing permits authorizing them to exceed Federal possession limits and to fish during Federal quota closures. MSA requires that interested parties are provided an opportunity to comment on all proposed exempted fishing permits. Comments on exempted fishing permits issued under the 2013 Mid-Atlantic RSA program will be received through the 2013 MSB specification rulemaking process. These exemptions are necessary to facilitate compensation fishing and allow project investigators to recover research expenses as well as adequately compensate fishing industry participants harvesting research quota. Vessels harvesting research quota would operate within all other regulations that govern the fishery, unless otherwise exempted through a separate exempted fishing permit.

Once projects are chosen a description of those projects will be added to the final environmental assessment.

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 will also be assessed from a cumulative effects perspective. The valued ecosystem components are:

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

The physical environment is 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.

Other non-target species fish species that are caught in the MSB fisheries are described in the impact analysis section (Section 7).

6.1 Description of the Managed Resources

Mackerel

The basic biology of Atlantic mackerel, 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, is detailed in the Essential Fish Habitat (EFH) document for the species, located at: http://www.nefsc.noaa.gov/nefsc/habitat/efh/.

While NMFS' official "status of stocks" document technically lists mackerel as "not overfished" and "not experiencing overfishing" the results of the 2010 Transboundary Resource Assessment Committee (TRAC) assessment suggest their true status is unknown with respect to being overfished or not and unknown with respect to experiencing overfishing or not, because the 2010 TRAC both failed to reach a conclusion on new reference points and also identified substantial technical issues with the preceding assessment that call into question the accuracy of its findings (www.mar.dfo-mpo.gc.ca/science/trac/tsr.html). Recent trends in the NEFSC Spring Trawl survey (the spring survey catches the most mackerel) are above the long term median but highly variable, and are graphed in the annual "Fishery Information Documents" that are created as part of the SSC ABC-setting process. These are available at: http://www.mafmc.org/committees/science.htm ("Meeting Materials").

Butterfish

The basic biology of Atlantic butterfish, a semi-pelagic/semi-demersal schooling fish species primarily distributed between Nova Scotia and Florida, is detailed in the EFH document for the species, located at: http://www.nefsc.noaa.gov/nefsc/habitat/efh/.

The status of butterfish is unknown with respect to being overfished or not and “unlikely” with respect to experiencing overfishing or not, based on the 2010 SAW-SARC assessment, available at: http://www.nefsc.noaa.gov/saw/archive.html. Recent trends in the NEFSC Fall Trawl survey (the NEFSC survey that catches the most butterfish) are upward and the most recent survey was above the long term median. Surveys trends are graphed in the annual “Fishery Information Documents” that is created as part of the SSC ABC-setting process. These are available at: http://www.mafmc.org/committees/science.htm (“Meeting Materials”).

Longfin Squid

The basic biology of longfin squid, a semi-pelagic/semi-demersal schooling cephalopod species primarily distributed between Georges Bank and Cape Hatteras, NC, is detailed in the EFH document for the species, located at: http://www.nefsc.noaa.gov/nefsc/habitat/efh/.

Based on a new proposed biomass reference point from a 2010 SAW-SARC assessment, the longfin inshore 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 trends in the NEFSC Trawl surveys (spring and fall) are variable and the most recent surveys were below the long term medians. Surveys trends are graphed in the annual “Fishery Information Documents” that are created as part of the SSC ABC-setting process. These are available at: http://www.mafmc.org/committees/science.htm (“Meeting Materials”).

Ecosystems Considerations

The Mid-Atlantic Fishery Management Council (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.

Developing ecosystem policies will be a multi-year process. 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 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 km^2 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. The main findings of the 2011 Ecosystem Assessment Program update are:

-The Northeast Shelf Large Marine Ecosystem can be divided into four Ecological Production Units, which can in turn provide spatial domains for Ecosystem Based Fisheries Management.

-Atlantic basin scale climate indices, the North Atlantic Oscillation and the Atlantic Multidecadal Oscillation, are at extreme levels, which are reflected in local scale climate changes.

-The physical nature of the Northeast U.S. Continental Shelf Large Marine Ecosystem continues to change, notably there has been a decline in Labrador origin water, which influences salinity and food web processes in the ecosystem, and, there has been an increase in water column stratification, which affects the vertical transport of nutrients.

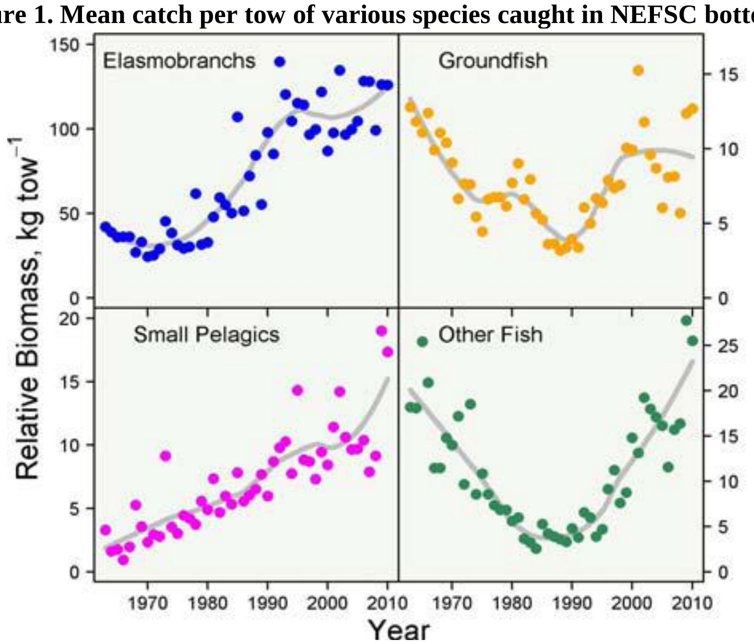
-Recent increases in primary phytoplankton production are not matched by increases in secondary zooplankton production raising the concern that the phytoplankton community structure is shifting to species that fail to effectively enter the food web.

-Many benthic resources have increased in recent years, which can be attributed to both fishery management strategies and environmental effects. The total biomass of fish species remains high.

-Though revenues have remained at high levels in the commercial fishing industry, employment in marine-related employment sectors has declined in recent years.

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



6.2 Physical Environment

Climate, physiographic, and hydrographic differences separate the Atlantic ocean from Maine to Florida into two distinct areas, the New England-Middle Atlantic Area and the South Atlantic Area, with the natural division occurring at Cape Hatteras, though the division is better thought of as a mixing zone rather than as a definitive boundary. 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 ^{o}F from the New York Bight north in the winter to over 80 ^{o}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).

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 managed resource is described using fundamental information on habitat requirements by life history stage that is summarized in a series of documents produced by NMFS and available at: http://www.nefsc.noaa.gov/nefsc/habitat/efh/. Matrices of habitat parameters (i.e. temperature, salinity, light, etc.) for eggs/larvae and juveniles/adults were developed and the updated EFH designations (text and maps) use this information and are available at http://www.nero.noaa.gov/nero/regs/com.html in the Amendment 11 EIS (search for Amendment 11 in the July 2011 actions). In general, the EFH for the MSB species is the water column itself, and the species have temperature and prey preferences/needs that drive the 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-tending mobile gear as described in the following 2-page table (see Stevenson et al 2004):

Table 14. EFH descriptions for federally-managed species/life stages in the U.S. Northeast Shelf Ecosystem that are vulnerable to bottom tending fishing 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	l0-750, 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
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

Species	Life Stage	Geographic Area of EFH	Depth (meters)	Bottom Type
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

6.3.1 Fishery Impact Considerations

Any actions implemented in the FMP 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). Mackerel are primarily caught by mid-water trawls (which should not impact the bottom) but longfin squid, Illex squid, and butterfish are primarily caught with bottom trawls (mobile bottom-tending gear) that can contact the bottom. Amendment 9 included an analysis of the adverse impacts of the MSB fisheries on EFH (as required pursuant to 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 (Veaches and Norfolk) to protect tilefish EFH and prohibited all bottom trawling activity. Because there have be 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.

6.4 ESA Listed Species and MMPA Protected Species

There are numerous species 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 of 1972 (MMPA). Eighteen species are classified as endangered or threatened under the ESA, while the rest are protected by the provisions of the MMPA. The subset of these species that are known to have interacted with the MSB fisheries is starred in the list below, including several candidate species (species being considered for listing as an endangered or threatened species).

Candidate species receive no substantive or procedural protection under the ESA; however, NMFS recommends considering conservation actions to limit the potential for adverse effects on candidate species. The Protected Resources Division of the NMFS Northeast Regional Office has initiated review of recent stock assessments, bycatch information, and other information for these candidate species which will be incorporated in the status review reports for candidate species

* = Known to have interacted with MSB fisheries

Cetacean Species	**Status**
North Atlantic right whale (*Eubalaena glacialis*)	Endangered
Humpback whale (*Megaptera novaeangliae*)	Endangered
Fin whale (*Balaenoptera physalus*)	Endangered
Blue whale (*Balaenoptera musculus*)	Endangered
Sei whale (*Balaenoptera borealis*)	Endangered
Sperm whale (*Physeter macrocephalus*	Endangered
Minke whale (*Balaenoptera acutorostrata*)	Protected
Beaked whales (*Ziphius and Mesoplodon spp*.)	Protected
*Risso's dolphin (*Grampus griseus*)	Protected
*Pilot whale (*Globicephala spp*.)	Protected
*White-sided dolphin (*Lagenorhynchus acutus*)	Protected
*Common dolphin (*Delphinus delphis*)	Protected
Spotted and striped dolphins (*Stenella spp*.)	Protected
*Bottlenose dolphin (*Tursiops truncatus*)	Protected

Sea Turtles Species	**Status**
*Leatherback sea turtle (*Dermochelys coriacea*)	Endangered
Kemp's ridley sea turtle (*Lepidochelys kempii*)	Endangered
Green sea turtle (*Chelonia mydas*)	Endangered
Hawksbill sea turtle (*Eretmochelys imbricata*)	Endangered

*Loggerhead sea turtle (*Caretta caretta*)	
-Northwest Atlantic DPS	Threatened

Fish Species	**Status**
Shortnose sturgeon (*Acipenser brevirostrum*)	Endangered
Atlantic salmon – Gulf of Main DPS(*Salmo salar*)	Endangered
Atlantic sturgeon (*Acipenser oxyrinchus*)	
Chesapeake Bay DPS	Endangered
New York Bight DPS	Endangered
Carolina DPS	Endangered
South Atlantic DPS	Endangered
Gulf of Maine DPS	Threatened
Cusk (*Brosme brosme*)	Candidate
Blueback herring (*Alosa aestivalis*)	Candidate
Alewife (*Alosa pseudoharengus*)	Candidate

Protected Species Interactions with the Managed Resources – Includes Fishery Classification under Section 118 of Marine Mammal Protection Act

Species	Status
Common dolphin (*Delphinus delphis*)	Protected
White-sided dolphin (*Lagenorhynchus acutus*)	Protected
Pilot whale (*Globicephala spp.*)	Protected
Leatherback sea turtle (*Dermochelys coriacea*)	Endangered
Loggerhead sea turtle (*Caretta caretta*)	
-Northwest Atlantic DPS	Threatened
Risso's dolphin (*Grampus griseus*)	Protected
Bottlenose dolphin (*Tursiops truncatus*)	Protected

Under section 118 of the MMPA, NMFS must publish and annually update the List of Fisheries (LOF), which places all U.S. commercial fisheries in one of three categories based on the level of incidental serious injury and mortality of marine mammals in each fishery (arranging them according to a two tiered classification system). The categorization of a fishery in the LOF determines whether participants in that fishery may be required to comply with certain provisions of the MMPA, such as registration, Northeast Fishery Observer Program observer coverage, and take reduction plan requirements. The classification criteria consists of a two tiered, stock-specific approach that first addresses the total impact of all fisheries on each marine mammal stock (Tier 1) and then addresses the impact of the individual fisheries on each stock (Tier 2). If the total annual mortality and serious injury of all fisheries that interact with a stock is less than 10% of the Potential Biological Removal (PBR) for the stock then the stock is designated as Tier 1 and all fisheries interacting with this stock would be placed in Category III. Otherwise, these fisheries are subject to categorization under Tier 2. PBR is the product of minimum population size, one-half the maximum productivity rate, and a "recovery" factor (MMPA Sec. 3. 16 U.S.C. 1362; Wade and Angliss 1997). The current (2012) list of fisheries is available at: http://www.nmfs.noaa.gov/pr/interactions/lof/.

Under Tier 2, individual fisheries are subject to the following categorization:

Category I. Annual mortality and serious injury of a stock in a given fishery is greater than or equal to 50% of the PBR level;
Category II. Annual mortality and serious injury of a stock in a given fishery is greater than one percent and less than 50% of the PBR level; or

Category III. Annual mortality and serious injury of a stock in a given fishery is less than one percent of the PBR level.

In Category I, there is documented information indicating a "frequent" incidental mortality and injury of marine mammals in the fishery. In Category II, there is documented information indicating an "occasional" incidental mortality and injury of marine mammals in the fishery. In Category III, there is information indicating no more than a "remote likelihood" of an incidental taking of a marine mammal in the fishery or, in the absence of information indicating the frequency of incidental taking of marine mammals, other factors such as fishing techniques, gear used, methods used to deter marine mammals, target species, seasons and areas fished, and species and distribution of marine mammals in the area suggest there is no more than a remote likelihood of an incidental take in the fishery. "Remote likelihood" means that annual mortality and serious injury of a stock in a given fishery is less than or equal to 10% of the PBR level or, that it is highly unlikely that any marine mammal will be incidentally taken by a randomly selected vessel in the fishery during a 20-day period or, in the absence of reliable information it is at the discretion of the Assistant Administrator for Fisheries to determine whether the incidental injury or mortality qualifies (or not) for a specific category.

Marine Mammal Stock Assessment Reports:

As required by the Marine Mammal Protection Act (MMPA), NMFS has incorporated earlier public comments into revisions of marine mammal stock assessment reports (SARs). These reports contain information regarding the distribution and abundance of the stock, population growth rates and trends, the stock's Potential Biological Removal level, estimates of annual human-caused mortality and serious injury from all sources, descriptions of the fisheries with which the stock interacts, and the status of the stock. The MMPA requires these assessments to be reviewed at least annually for strategic stocks and stocks for which significant new information is available, and at least once every 3 years for non-strategic stocks. The most recent SARs are available at: http://www.nmfs.noaa.gov/pr/sars/.

NMFS elevated the (mid-water) MSB fishery to Category I in the 2001 LOF but it was reduced to a Category II fishery in 2007 (see discussion below describing the Atlantic Trawl Gear Take Reduction Plan). The reduction in interactions documented between the MSB fisheries and several species/stocks of marine mammals compared to previous years led to the re-classification. No classification changes have occurred since 2007.

6.4.1 Commercial Fisheries Interactions

The following is a description of species of concern because they are protected under MMPA and, as discussed above, have had documented interactions with fishing gears used to harvest species managed under this FMP. Five year take averages are provided as found in Waring *et al* (2011).

Common dolphin (PBR = 1000, all fisheries annual take 2005-2009 = 164)

The common dolphin may be one of the most widely distributed species of cetaceans, as it is found worldwide in temperate, tropical, and subtropical seas. They are widespread from Cape Hatteras northeast to Georges Bank (35 to 42 North latitude) in outer continental shelf waters from mid-January to May. Exact total numbers of common dolphins off the US or Canadian Atlantic coast are unknown, although the most recent Stock Assessment Report considers the best abundance estimate for common dolphins to be 120,743 animals (Coefficient of Variation (CV) =0.23). This is the sum of the estimates from two 2004 U.S. Atlantic surveys, where the estimate for the northern U.S. Atlantic is 90,547 (CV=0.24) and 30,196 (CV=0.54) for the southern U.S. Atlantic. PBR for the western North Atlantic common dolphin is 1000. See Waring *et al*. 2011 (http://www.nefsc.noaa.gov/publications/tm/tm221/) for more life history information.

Fishery Interactions - The following fishery interaction information was taken from the latest stock assessment for common dolphin contained in Waring *et al.* (2011) which summarizes incidental mortality of this species. Annual averages are presented below – details on encounters may be reviewed in Waring *et al* (2011).

Illex/Longfin squid/butterfish - These fisheries are included in both the Northeast and Mid-Atlantic bottom trawl fisheries. The 2005-2009 average annual mortality attributed to the northeast bottom trawl was 23 animals (CV=0.13). The 2005-2009 average annual mortality attributed to the Mid-Atlantic bottom trawl was 110 animals (CV=0.13). The portion attributable to the directed *Illex*/longfin squid fisheries is unknown.

Atlantic Mackerel - This fishery is primarily prosecuted with mid-water trawl in the Mid-Atlantic but also with bottom trawl as well. As noted above, the mean estimated annual mortality of common dolphin during the five year period 2005-2009 in the Mid-Atlantic bottom trawl fishery was 110 animals (CV=0.13). For the Mid-Atlantic mid-water trawl fishery the mean estimated annual mortality of common dolphin was 1 (CV=0.7) during the five year period 2005-2009. The portion attributable to the directed Atlantic mackerel fishery is unknown.

Atlantic white-sided dolphin (*Lagenorhynchus acutus*) (PBR = 190, all fisheries annual take 2005-2009 = 245)

Atlantic white-sided dolphins (*Lagenorhynchus acutus)* are found in temperate and sub-polar waters of the North Atlantic, primarily in continental shelf waters to the 100m depth contour. The exact total number of white-sided dolphins (*Lagenorhynchus acutus)* along the eastern US and Canadian Atlantic coast is unknown, although the best available current abundance estimate for white-sided dolphins in the western North Atlantic stock is 23,390 (CV=0.23), the sum of the 2006 and 2007 surveys. PBR for the western North Atlantic stock of white-sided dolphin (*Lagenorhynchus acutus)* is 190. See Waring *et al*. 2011 (http://www.nefsc.noaa.gov/publications/tm/tm221/)for more life history information.

Fishery Interactions - The following information was taken from the latest stock assessment for white-sided dolphin (*Lagenorhynchus acutus)* contained in Waring *et al* (2011) which summarized incidental mortality of this species. Annual averages are presented below – details on encounters may be reviewed in Waring *et al* (2011).

Illex/Longfin squid/butterfish - These fisheries are included in both the Northeast and Mid-Atlantic bottom trawl fisheries. The 2005-2009 average annual mortality attributed to the northeast bottom trawl was 160 animals (CV=0.14). The 2005-2009 average annual mortality attributed to the Mid-Atlantic bottom trawl was 23 animals (CV=0.12). The portion attributable to the directed *Illex*/longfin squid fisheries is unknown.

Atlantic Mackerel - This fishery is primarily prosecuted with mid-water trawl in the Mid-Atlantic but also with bottom trawl as well. As noted above, the mean estimated annual mortality during the five year period 2005-2009 in the Mid-Atlantic bottom trawl fishery was 23 animals (CV=0.12). For the Mid-Atlantic mid-water trawl fishery the mean estimated annual mortality of common dolphin was 24 (CV=0.55) during the five year period 2005-2009. The portion attributable to the directed Atlantic mackerel fishery is unknown.

Long-finned (*Globicephala melas*) and short-finned (*Globicephala macrorhynchus*) pilot whales (PBR = 265, all fisheries annual take 2005-2009 = 162)

There are two species of pilot whales in the Western Atlantic - the Atlantic (or long-finned) pilot whale, *Globicephala melas*, and the short-finned pilot whale, *G. macrorhynchus*. These species (sp.) are difficult to identify to the species level at sea. Preliminary analysis suggests the following distribution of the two species: sightings south of the mouth of the Chesapeake Bay are likely short-finned pilot whales, as are offshore (near the 4,000m depth contour) sightings from off the mouth of the Chesapeake Bay through off New Jersey. Sightings from the mouth of the Chesapeake Bay to the Southern Edge of Georges Bank along the 100/1,000 m depth contours are likely mixed. Sightings in the Gulf of Maine and east and north of Cape Cod are likely long-finned pilot whales, as are sightings in shelf waters immediately southeast of Nantucket. The minimum population size for short-finned pilot whales is estimated to be 17,190 and the minimum population size for long-finned pilot whales is estimated to be 9,333. PBR for short-finned pilot whales is estimated to be 172 and PBR for long-finned pilot whales is estimated to be 93 (total is 265). See Waring *et al*. 2011 (http://www.nefsc.noaa.gov/publications/tm/tm221/) for more life history information.

Fishery Interactions - The following information was taken from the latest stock assessment for pilot whales (*Globicephala* sp.) contained in Waring *et al* (2011) which summarized incidental mortality of this species. Annual averages are presented below – details on encounters may be reviewed in Waring *et al* (2011).

Illex/Longfin squid/butterfish - These fisheries are included in both the Northeast and Mid-Atlantic bottom trawl fisheries. The 2005-2009 average annual mortality attributed to the northeast bottom trawl was 12 animals (CV=0.14). The 2005-2009 average annual mortality attributed to the Mid-Atlantic bottom trawl was 30 animals (CV=0.16). The portion attributable to the directed *Illex*/longfin squid fisheries is unknown.

Atlantic Mackerel - This fishery is primarily prosecuted with mid-water trawl in the Mid-Atlantic but also with bottom trawl as well. As noted above, the mean estimated annual mortality during the five year period 2005-2009 in the Mid-Atlantic bottom trawl fishery was 30 animals (CV=0.16). For the Mid-Atlantic mid-water trawl fishery the mean estimated annual mortality of common dolphin was 2.4 (CV=0.99) during the five year period 2005-2009. The portion attributable to the directed Atlantic mackerel fishery is unknown.

Risso's dolphin (*Grampus griseus*) (PBR = 124, all fisheries annual take 2005-2009 = 18)

Risso's dolphins are distributed worldwide in tropical and temperate seas, and in the Northwest Atlantic occur from Florida to eastern Newfoundland. Off the northeast U.S. coast, Risso's dolphins are distributed along the continental shelf edge from Cape Hatteras northward to Georges Bank during spring, summer, and autumn. In winter, the range is in the Mid-Atlantic Bight and extends outward into oceanic waters. The minimum population estimate for the western North Atlantic Risso's dolphin is 12,920. See Waring *et al*. 2011 (http://www.nefsc.noaa.gov/publications/tm/tm219/) for more life history information.

Fishery Interactions - NMFS foreign-fishery observers reported four deaths of Risso's dolphins incidental to squid and mackerel fishing activities in the continental shelf and continental slope waters between March 1977 and December 1991. In the pelagic pair trawl fishery, one mortality was observed in 1992.

<u>Mid-Atlantic Mid-water Trawl</u>

One Risso's dolphin mortality was observed in this fishery for the first time in 2008. No bycatch estimate has been generated.

Bottlenose dolphin (*Tursiops truncatus*) Offshore Form (not updated in 2011 so information below is from Waring et al 2008). (PBR = 566, all fisheries take is unknown)

There are two morphologically and genetically distinct bottlenose dolphin morphotypes described as the coastal and offshore forms. Both inhabit waters in the western North Atlantic Ocean along the U.S. Atlantic coast. See Waring *et al*. 2011 (http://www.nefsc.noaa.gov/publications/tm/tm221/) for more life history information.

<u>Fisheries Information</u>

Total estimated mean annual fishery-related mortality for this stock during 2001-2006 is unknown, however mortalities of offshore bottlenose dolphins were observed during this period in the Northeast Sink Gillnet and Mid-Atlantic Gillnet commercial fisheries.

<u>Earlier Interactions</u>

Thirty-two bottlenose dolphin mortalities were observed in the pelagic pair trawl fishery between 1991 and 1995. Estimated annual fishery-related mortality (CV in parentheses) was 13 dolphins in 1991 (0.52), 73 in 1992 (0.49), 85 in 1993 (0.41), 4 in 1994 (0.40) and 17 in 1995 (0.26).

Although there were reports of bottlenose dolphin mortalities in the foreign squid mackerel butterfish fishery during 1977-1988, there were no fishery-related mortalities of bottlenose dolphins reported in the self-reported fisheries information from the mackerel trawl fishery during 1990-1992.

One bottlenose dolphin mortality was documented in the North Atlantic bottom trawl in 1991 and the total estimated mortality in this fishery in 1991 was 91 (CV=0.97). Since 1992 there were no bottlenose dolphin mortalities observed in this fishery.

6.4.2 Atlantic Trawl Gear Take Reduction Plan

In September 2006, the National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS) convened the Atlantic Trawl Gear Take Reduction Team (ATGTRT) under the Marine Mammal Protection Act (MMPA). The ATGTRT was convened to address incidental mortality and serious injury of long-finned pilot whales (*Globicephala melas*), short-finned pilot whales (*Globicephala macrorhynchus*), common dolphins (*Delphinus delphis*), and Atlantic white-sided dolphins (*Lagenorhynchus acutus*) in several trawl gear fisheries operating in the Atlantic Ocean. These marine mammal species are known to interact with the Mid-Atlantic Mid-Water Trawl, the Mid-Atlantic Bottom Trawl, Northeast Mid-Water Trawl and the Northeast Bottom Trawl fisheries.

The immediate goal of a Take Reduction Plan is to reduce, within six months of implementation, the incidental serious injury or mortality of marine mammals from commercial fishing to levels less than PBR. The long-term goal is to reduce, within five years of its implementation, the incidental serious injury and mortality of marine mammals from commercial fishing operations to insignificant levels approaching a zero serious injury and mortality rate, taking into account the economics of the fishery, the availability of existing technology, and existing state or regional FMPs.

Presently, none of these marine mammal stocks under consideration by the ATGTRT are classified as a strategic stock nor do they currently interact with a Category I fishery. NOAA's General Counsel legal guidance has stated that neither the 11 month timeline for the development of a Take Reduction Plan nor the 5 year goal for reaching the Zero Mortality Rate Goal apply to non-strategic stocks that do not interact with Category I fisheries. The ATGTRT agreed that while a take reduction plan may not be required at this time, efforts should be made to identify and conduct research necessary to identify measures to reduce serious injury and mortality of marine mammals in Atlantic trawl fisheries and, ultimately, to achieve the MMPA's Zero Mortality Rate Goal. This information is captured in the Atlantic Trawl Gear Take Reduction Strategy (ATGTRS).

The ATGTRT recommended that two plans be developed to achieve the overall goal of the Take Reduction Strategy to reduce the incidental take of marine mammals in Atlantic trawl fisheries. These include an Education and Outreach Plan and a Research Plan as part of an overall take reduction strategy. The ATGTRT established two sub-groups to develop the Education and Outreach and Research Plans. The Education and Outreach Plan identifies activities that promote the exchange of information necessary to reduce the bycatch of marine mammals in Atlantic trawl fisheries. The Research Plan identifies information and research needs necessary to improve our understanding of the factors resulting in the bycatch in Atlantic trawl fisheries. The results of the identified research will be used to direct additional research and/or identify measures to reduce the serious injury and mortality of short- and long-finned pilot whales, Atlantic white-sided dolphins, and common dolphins in trawl fisheries to levels approaching the Zero Mortality Rate Goal. The Atlantic Trawl Gear Take Reduction Strategy is available at: http://www.nero.noaa.gov/prot_res/atgtrp/.

6.4.3 Description of Turtle Species with Documented Interactions with the MSB Fisheries

The October 2010 Biological Opinion for the MSB (http://www.nero.noaa.gov/prot_res/section7/NMFS-signedBOs/SMB%20BIOP%202010.pdf) fisheries contains detailed information on sea-turtle interactions. This document updates information on sea turtle interactions with trawl gear in the MSB fisheries. Summary information is provided below and the full document above may be consulted for details.

The primary species likely to be adversely affected by the MSB fishery would be loggerhead sea turtles, as they are the most abundant species occurring in U.S. Atlantic waters. Sea sampling and observer data indicate that fewer interactions occur between fisheries that capture MSB and leatherback, Kemp's ridley, and green sea turtles. The primary area of impact of the directed commercial fishery for MSB on sea turtles is likely bottom otter trawls in waters of the Mid-Atlantic from Virginia through New York, from late spring through fall (peak longfin squid abundance July-October). In New England, interactions with trawl gear may occur in summer through early fall (peak squid abundance August -September), although given the level of effort, the probability of interactions is much lower than in the Mid-Atlantic.

There have been 9 observed sea turtle takes in the MSB fishery during the past 11 years (using top species landed). All sea turtle takes have occurred in bottom otter trawl gear participating in the squid fishery. Loggerhead sea turtles are more likely to interact with MSB trawl gear but green, Kemps ridley and leatherback interaction may also occur. All sea turtles were released alive, except the 2002 take, when a gillnet was hauled up as part of the catch when the loggerhead turtle entangled was fresh dead.

Based on data collected by observers for the reported sea turtle captures in or retention in MSB trawl gear, the NEFSC has estimated loggerhead bycatch in the MSB trawl fishery 2005-2008 to be about 25 animals annually (Warden 2011). NMFS estimates 1 leatherback, 2 green, and 2 Kemp's ridley turtles are taken each year based on the very low encounter rates for these species and/or unidentified turtles (Murray 2008).

On March 16, 2010, the Services announced 12-month findings on petitions to list the North Pacific populations and the Northwest Atlantic populations of the loggerhead sea turtle as DPSs with endangered status and published a proposed rule to designate nine loggerhead DPSs worldwide, seven as endangered (North Pacific Ocean DPS, South Pacific Ocean DPS, Northwest Atlantic Ocean DPS, Northeast Atlantic Ocean DPS, Mediterranean Sea DPS, North Indian Ocean DPS, and Southeast Indo-Pacific Ocean DPS) and two as threatened (Southwest Indian Ocean DPS and South Atlantic Ocean DPS). On March 22, 2011, the timeline for the final determination was extended for six months until September 16, 2011 (76 FR 15932).

A final listing determination was published on September 22, 2011 (76 FR 58867). Unlike the proposed listing, the final listing designates four DPSs (Northwest Atlantic, South Atlantic, Southeast Indo-Pacific, Southwest Indian) as threatened, and five DPSs (Northeast Atlantic, Mediterranean, North Indian, North Pacific, South Pacific) as endangered.

6.4.4 Atlantic sturgeon

In 2012 NOAA's Fisheries Service announced a final decision to list five distinct population segments (DPS) of Atlantic sturgeon under the Endangered Species Act. The Chesapeake Bay, New York Bight, Carolina, and South Atlantic DPSs of Atlantic sturgeon were listed as endangered, while the Gulf of Maine DPS was listed as threatened. Atlantic sturgeon from any of the five DPSs could occur in areas where MSB fisheries operate, and the species has been captured in gear targeting longfin squid (Stein et al. 2004a, ASMFC 2007). Therefore, this Environmental Assessment includes background information on Atlantic sturgeon in this section and considers the anticipated effects of the action on Atlantic sturgeon in Section 7 of this Environmental Assessment.

Atlantic sturgeon is an anadromous species that spawns in relatively low salinity, river environments, but spends most of its life in the marine and estuarine environments from Labrador, Canada to the Saint Johns River, Florida. There are no total population size estimates for any of the 5 Atlantic sturgeon DPSs at this time. However, there are two estimates of spawning adults per year for two river systems (e.g., 863 spawning adults for the Hudson River, and 343 spawning adults per year for the Altamaha River). The Altamaha estimate represent only a fraction of the total population size of this subpopulation as Atlantic sturgeon do not spawn every year. Additionally, neither of these estimates include subadults or early life stages. Detailed life history information may be found in the 2007 Atlantic Sturgeon Status Review, available at:
http://sero.nmfs.noaa.gov/pr/esa/Sturgeon/Atl%20Sturgeon/atlanticsturgeon2007.pdf.

Atlantic sturgeon are known to be captured in sink gillnet, drift gillnet, and otter trawl gear (Stein et al. 2004a, ASMFC TC 2007). Of these gear types, sink gillnet gear poses the greatest known risk of mortality for bycaught sturgeon (ASMFC TC 2007). Sturgeon deaths are rarely reported in the otter trawl observer dataset (ASMFC TC 2007). However, the level of mortality after release from the gear is unknown (Stein et al. 2004a).

ASMFC analysis has estimated that an average of 650 Atlantic sturgeon mortalities occurred per year (during the 2001 to 2006 timeframe) in sink gillnet fisheries. Stein et al. (2004a) found the bycatch rate of Atlantic sturgeon (reported as pounds of sturgeon catch per pounds of targeted species landed) to be 0.000194 for longfin squid and 0.000800 for butterfish. There was no observed bycatch during this period for vessels targeting *Illex* squid or Atlantic mackerel. For the years 2006 through 2010, an average of 775 Atlantic sturgeon encounters with small mesh otter trawl gear occurred in all areas (759 in the 600 series of statistical areas).

In an updated analysis, NEFSC was able to use data from the Northeast Fishery Observer Program database to provide updated estimates for the 2006 to 2010 timeframe. The data for encounter rates by month and statistical area for small-mesh otter trawl is presented in Table 15. The expanded estimates of all sturgeon encounters with small-mesh otter trawl by quarter, division and year are in Table 16. Total estimated dead sturgeons resulting from small-mesh otter trawl encounters are in Table 17. For reference, estimated total annual takes for all gear types (otter trawl and sink gillnet) ranged from 1536 to 3221 (average 2,215). For small-mesh otter trawls, total annual takes from 2006 to 2010 ranged from 394 to 1546 (average 775). Estimated annual mortalities for all gear types ranged from 37 to 376 sturgeon.

Table 15. Encounters of Atlantic Sturgeon and Unknown Sturgeon By Month, Area In Small Mesh Otter Trawl Gear, 2006-2010 Combined.

	month											
area	1	2	3	4	5	6	7	8	9	10	11	12
465									0			
512							0		0		0	
513	0	0				0	0	0	0		0	
514	0	0	0				0	0	0	0	1	0
515	0		0			0	0		0		0	
521	0	0	0				0	0	0	0	0	0
522						0	0	0	0	0		
525	0	0	0	0	0	0	0	0	0	0	0	0
526	0	0	0				0	0	0	0	0	0
533				0								
534									0			
537	0	0	0	0	0	**1**	**1**	0	0	0	0	0
538				0	0	0	0	0	0	0		
539	0	0	0	0	0	1	0	0	0	0	0	0
562	0	0	0		0	0	0	0	0	0	0	0
611	0	0		0	1	0	0	0	0	0	0	0
612	0		0	**6**	**14**	**13**	0	0	**1**	0	0	0
613	0	0	0	0	0	0	**1**	0	0	**1**	**4**	0
614					**1**	**3**	0	0	0	0	0	
615	0	0	0	0	0	0	0	0	0	0	0	0
616	0	0	0	0	0	0	0	0	0	0	0	0
621	0	0	0	0	**3**	**1**	**1**	0	3	9	2	0
622	0	0	0	0	0	0	0	0	0	0	0	0
623	0	0	0	0				0	0	0	0	0
625	4		0			0				**1**	**12**	**2**
626	0	0	0	0		0	0	0	0	0	0	0
627	0	0		0			0	0	0	0		
631	**2**	**2**	**22**	**7**						**1**	**2**	**3**
632	0			0		0	0	0	0	0	0	0
633								0				
635	**10**	**4**	**8**	**1**						0	0	0
636	0	0		0		0	0	0	0	0	0	0

Table 16. **All Atlantic Sturgeon Encounters Expanded By VTR Landings By Division, Mesh Size, and Year for Otter Trawls (2006 Across Top Row to 2010 Across Bottom Row).**

	1	**2**	**3**	**4**	
51	0		0	0	
52	0	0	0	0	
53	0	0	0	0	
56					
61	0	996	0	184	
62	29	0	8	309	
63	20	0	0	0	1546

51	0		0	0	
52	0	0	0	0	
53	0	0	0	0	
56					
61	0	0	0	0	
62	0	0	0	449	
63	47			40	536

51	0	0	0	0	
52	0	0	0	0	
53	0	0	0	0	
56					
61	0	279	80	0	
62	0	21	0	19	
63	19		0	36	454

51	0		0	22	
52	0	0	0	0	
53	0	0	17	0	
56					
61	0	336	9	0	
62	0	9	48	24	
63	435	0	0	6	907

51	0		0	0	
52	0	0	0	0	
53	0	39	0	0	
56					
61	0	317	0	0	
62	0	0	0	0	
63	41	36	0	0	433

Table 17. Dead Atlantic Sturgeon Encounters Expanded By VTR Landings By Division, and Year for Small Mesh Otter Trawl (2006 Across Top Row to 2010 Across Bottom Row).

		1	2	3	4	
2006	51	0		0	0	
	52	0	0	0	0	
	53	0	0	0	0	
	56					
	61	0	0	0	61	
	62	29	0	0	0	
	63	0	0	0	0	90
2007	51	0		0	0	
	52	0	0	0	0	
	53	0	0	0	0	
	56					
	61	0	0	0	0	
	62	0	0	0	0	
	63	4			0	4
2008	51	0	0	0	0	
	52	0	0	0	0	
	53	0	0	0	0	
	56					
	61	0	0	0	0	
	62	0	0	0	0	
	63	0		0	0	0
2009	51	0		0	0	
	52	0	0	0	0	
	53	0	0	0	0	
	56					
	61	0	0	0	0	
	62	0	0	0	0	
	63	19	0	0	0	19
2010	51	0		0	0	
	52	0	0	0	0	
	53	0	0	0	0	
	56					
	61	0	0	0	0	
	62	0	0	0	0	
	63	7	0	0	0	7

It should be noted that other fisheries, such as the small-mesh multispecies (whiting) fishery, utilize the small-mesh otter trawl gear and fish in the same area where MSB species occur. Accordingly, it is likely that actual encounters with Atlantic sturgeon by the MSB fisheries are lower than what is presented in Table 16. However, because the Northeast Fishery Observer Program data available for this analysis did not identify the species targeted, a more precise evaluation of encounters in only the MSB fisheries cannot be specified at this time.

A comparison of the location of the MSB fisheries (see Section 6.1) and with the known-preferred habitat of Atlantic sturgeon (shallow inshore areas, primarily less than 50 m), suggests that the portion of 2006-2010 small-mesh otter trawl interactions attributable to MSB fisheries could likely have occurred in the summer/fall inshore longfin squid fishery, which occurs nearshore in waters less than 40 fathoms (Figures 18-20, Amendment 10 EIS). The longfin squid quota is allocated in trimesters (43% for Trimester 1; 17% for Trimester 2; 40% for Trimester 3), so roughly half of the quota is available during the summer and fall period. The nearshore effort in the summer and fall longfin squid fishery overlaps with the water depths in which most observed sturgeon encounters occur. This is supported by the Stein et al. (2004a) analysis, which showed sturgeon encounters with the longfin squid and butterfish fisheries during the period from 1989-2000, but showed no encounters with *Illex* squid and mackerel fisheries.

Atlantic sturgeon interactions with small-mesh otter trawl are distributed throughout the year. On average, the most estimated small-mesh otter trawl encounters with Atlantic sturgeon in the 600 series of statistical areas occur during Quarter 2 (April through June), and the fewest occur during Quarter 3 (July – September) (Table 18). However, the contribution of each quarter to total estimated encounters differs from year to year.

Table 18. Atlantic Sturgeon Encounters Expanded by VTR Landings for Southern (600 Series of Statistical Areas) for Small-Mesh Otter Trawls in Each Quarter of the Year.

Year	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Total Estimated Encounters
2006	49	996	8	493	1546
2007	47	0	0	489	536
2008	19	300	80	55	454
2009	435	345	57	30	867
2010	41	353	0	0	394
Average	114	399	29	213	759

Compared to gillnet gear, small-mesh otter trawl gear accounts for relatively few sturgeon mortalities. The number of small-mesh otter trawl takes resulting in mortality remained at less than 5% of total estimated encounters for the entire period, with estimated annual mortalities ranging from 4 to 90 (total mortalities for all gear types ranged from 37 to 376). Between 2006 and 2010, there were no estimated Atlantic sturgeon mortalities in small-mesh otter trawl gear during Quarters 2 and 3, and an average of 11 estimated mortalities in Quarters 1. Estimated Quarter 4 mortalities in small-mesh otter trawl gear only occurred 2006 (61 total estimated mortalities). All mortalities in small-mesh otter trawl gear occurred in the 600 series of statistical areas. It is important to note that the information provided on mortality rates may be an underestimate as the rate of post-release mortality for those reportedly released alive is unknown. An analysis of observer data has suggested that the proportions of these mortalities by DPS are approximately: 11% Gulf of Maine, 49% New York Bight, 14% Chesapeake Bay, 4% Carolina, 20% South Atlantic, and 2% Canada (which are not listed). NMFS is undertaking a biological opinion to determine what fishery restrictions might be necessary for Council fisheries. The Council has established a Sturgeon Advisory Panel to help guide its efforts and will consider appropriate measures once the biological opinion is finalized.

6.4.5 Description of River Herring Candidate Species with Documented Interactions with the MSB Fisheries

On August 5, 2011, the National Marine Fisheries Service (NMFS) received a petition from the Natural Resources Defense Council (NRDC), requesting that alewife (*Alosa pseudoharengus*) and blueback herring (*Alosa aestivalis*) be listed each as threatened throughout all or a significant portion of their range under the Endangered Species Act (ESA). In the alternative, NRDC requested that NMFS designate distinct population segments of alewife and blueback herring as specified in the petition (Central New England, Long Island Sound, Chesapeake Bay, and Carolina for alewives, and Central New England, Long Island Sound, and Chesapeake Bay for blueback herring). NMFS reviewed the petition and published a positive 90-day finding on November 2, 2011, determining that the information in the petition, coupled with information otherwise available to the agency, indicated that the petitioned action may be warranted. As a result of the positive finding, the agency is required to review the status of the species to determine if listing under the ESA is warranted.

The Atlantic States Marine Fisheries Commission (ASMFC) completed a stock assessment for river herring in May 2012, which they had been conducting since 2008, covering over 50 river specific stocks throughout the species U.S. range. This represented a significant effort on behalf of the ASMFC and the coastal states from Maine to Florida. NMFS recognized this extensive effort to compile the most current information on the status of these stocks throughout their range in the United States and, in order to not duplicate this effort, has been working cooperatively with ASMFC. NMFS will utilize the information from the stock assessment as a critical component in the ESA listing decision for these two species. Due to the nature of the stock assessment, it did not contain all elements necessary for making a listing determination under the ESA; therefore, NMFS identified the additional required elements and held workshops focused on addressing this information. The three workshops organized for this purpose addressed river herring stock structure, extinction risk analysis (ERA), and climate change. Reports from the stock structure and ERA workshop and working group meeting were compiled and are being independently peer reviewed by the Center for Independent Experts, and the report from the climate change workshop has been compiled and is also being reviewed. The peer review reports and additional climate change analysis and extinction risk modeling results will be available in September/October, 2012. NMFS will use these reports and the modeling results along with the ASMFC river herring stock assessment and all other best available information to develop a listing determination which will be published in the *Federal Register* as soon as possible.

6.5 Other Non-Target Species

Illex

This document does not discuss in detail the non-target interactions in the *Illex* fishery because in 2013 *Illex* will be in year two of three-year multi-year specifications and non-target interactions for the three-year specifications were analyzed in the 2012 specifications (see http://www.nero.noaa.gov/regs/ for the accompanying environmental assessments). No actions are contemplated that affect *Illex* fishing. In general, non-target interactions in the *Illex* fishery are low and include butterfish, hakes, John Dories, herring, spiny dogfish, chub mackerel, and a variety of other species caught in very small quantities.

Butterfish

A list of species taken incidentally and discarded in the butterfish fishery has not been calculated recently because currently there is very limited directed fishing for butterfish because of regulations and market demand. It is also very difficult to identify a directed butterfish trip in the observer database and double counting with other fisheries would likely occur due to the 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. However, in previous years when the butterfish fishery operated there was no minimum mesh and the attitude toward discarding fishery-wide was different. It is expected that the 3" minimum mesh proposed as part of the reestablishment of the butterfish fishery would minimize bycatch (further reducing the applicability of previous analyses), and any observer data from trips targeting butterfish will be examined to describe non-target interactions and to determine if additional bycatch minimization measures are needed in the future. 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.

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 2009-2011 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, versus the five-year time period examined in prior specifications. 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 95% of all mackerel landings in the dealer weighout database 2009-2011. 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 10 on average for each year 2009-2011 (29 total with 135 hauls, 41 of which had at least some unobserved catch). The observed mackerel caught on these trips accounted for approximately 11% of the total mackerel caught.

Information on catch and discards is provided for observed hauls in the table below. 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. Extrapolations of total catch are made using the ratios from observed hauls but such extrapolations are very uncertain and should be thought of more on an indication of potential relative scale rather than a specific quantity. All species with over 100 pounds actual observed catch are included. The discards of large pelagics in the mackerel fishery are generally unknown due to the inability of the observers to view these discards because of the pumping of fish that occurs from the codend to an internal hold. Large-bodied species are prevented from entering the pump (the pump sends the catch directly from the codend into the hold) and are discarded while the codend is submerged.

Table 19. Discards and Incidental Catch in the Mackerel Fishery 2009-2011.

Species	Pounds Observed Caught	Pounds Observed Discarded	For every metric ton of mackerel caught, pounds of given species caught.	Of all discards observed, percent that comes from given species	Percent of given species that was discarded	Rough Annual Incidental Catch (pounds) based on 3-year average of mackerel landings (2009-2011 = 11,014 mt)
MACKEREL, ATLANTIC	8,025,092	9,723	NA	6.0%	0.1%	NA
HERRING, ATLANTIC	5,480,880	49,914	1,505.7	30.9%	0.9%	16,583,458
DOGFISH SPINY	79,313	74,131	21.8	45.9%	93.5%	239,976
HERRING (NK)	55,754	10	15.3	0.0%	0.0%	168,694
FISH, NK	19,105	19,105	5.2	11.8%	100.0%	57,806
HERRING, BLUE BACK	15,796	491	4.3	0.3%	3.1%	47,793
HAKE, SILVER	11,693	1,011	3.2	0.6%	8.6%	35,378
ALEWIFE	11,401	154	3.1	0.1%	1.4%	34,496
BUTTERFISH	6,168	2,721	1.7	1.7%	44.1%	18,662
SQUID (LOLIGO)	3,233	116	0.9	0.1%	3.6%	9,782
SCUP	1,847	1,847	0.5	1.1%	100.0%	5,588
SHAD, AMERICAN	1,368	51	0.4	0.0%	3.7%	4,138
SQUID (ILLEX)	1,160	965	0.3	0.6%	83.2%	3,510
SEA BASS, BLACK	608	469	0.2	0.3%	77.1%	1,840
DOGFISH (NK)	500	500	0.1	0.3%	100.0%	1,513
SEA ROBIN, NORTHERN	300	300	0.1	0.2%	100.0%	908
MENHADEN	117	13	0.0	0.0%	11.1%	354

Longfin Squid

While the overall specifications for longfin squid are not considered in this action (in 2013 they will be in year two of three-year multiyear specifications), since some management measure changes are being considered and because the butterfish specifications can affect the amount of longfin squid effort, non-target interactions in the longfin squid fishery are described below.

Various species are caught incidentally by the longfin squid fishery and will be impacted to some degree by the prosecution of the 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.

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 2009-2011 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 and expectation of the butterfish cap (began on 2011) has likely changed behavior recently, a more recent, three-year time period was examined, versus the five-year time period examined in prior specifications.

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 and all trips that had at least 10,000 pounds of longfin squid regardless of the ratio to other species. This definition results in capturing over 89% of all longfin squid landings in the dealer weighout database 2009-2011. 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 152 on average for each year 2009-2011. These trips made 5307 hauls of which 93% 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.

The observed longfin squid caught on these trips accounted for approximately 8.8% of the total longfin squid caught. 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 Table 20 and the fact that about 8,701 MT of longfin squid were caught annually 2009-2011 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 general, rough, and relative estimate given the available data, it is highly imprecise. Note also that even the estimates that can be calculated would only really be valid for the 89% of landings captured by the chosen directed trip definition. It is even more difficult to assess the other 11% 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.

Table 20. Discards and Incidental Catch in the Longfin Squid Fishery 2009-2011.

NE Fisheries Science Center Common Name	Pounds Observed Caught	Pounds Observed Discarded	For every metric ton of longfin caught, pounds of given species caught.	For every metric ton of longfin caught, pounds of given species discarded.	D:K Ratio (Ratio of species discarded to longfin Kept)	Of all discards observed, percent that comes from given species	Percent of given species that was discarded	Rough Annual Catch (pounds) based on 3-year average of longfin catch (8,701 mt)
Directed LongfinTrip Bycatch and Discards								
BUTTERFISH	614,073	575,395	272.9	255.7	0.12	17.6%	93.7%	2,374,461
DOGFISH SPINY	417,734	412,649	185.6	183.4	0.08	12.6%	98.8%	1,615,268
HAKE, SILVER	609,489	364,962	270.9	162.2	0.07	11.2%	59.9%	2,356,735
HAKE, SPOTTED	293,294	286,218	130.3	127.2	0.06	8.8%	97.6%	1,134,092
SQUID (ILLEX)	1,101,544	236,393	489.5	105.1	0.05	7.2%	21.5%	4,259,384
SCUP	291,838	170,420	129.7	75.7	0.04	5.2%	58.4%	1,128,460
SKATE, LITTLE	165,023	164,687	73.3	73.2	0.03	5.0%	99.8%	638,101
HAKE, RED	136,495	129,085	60.7	57.4	0.03	4.0%	94.6%	527,792
SQUID (LOLIGO)	4,960,828	92,926	2204.6	41.3	0.02	2.8%	1.9%	NA
CRAB, LADY	81,086	81,086	36.0	36.0	0.02	2.5%	100.0%	313,536
FLOUNDER, FOURSPOT	68,055	67,900	30.2	30.2	0.01	2.1%	99.8%	263,151
FLOUNDER, SUMMER	96,220	46,789	42.8	20.8	0.01	1.4%	48.6%	372,058
DOGFISH SMOOTH	60,132	46,336	26.7	20.6	0.01	1.4%	77.1%	232,514
SKATE, BIG	46,876	43,806	20.8	19.5	0.01	1.3%	93.5%	181,256
SCALLOP, SEA	47,424	40,953	21.1	18.2	0.01	1.3%	86.4%	183,377
BASS, STRIPED	36,742	36,097	16.3	16.0	0.01	1.1%	98.2%	142,070
SEA ROBIN, NORTHERN	32,653	32,558	14.5	14.5	0.01	1.0%	99.7%	126,259
BLUEFISH	82,341	27,910	36.6	12.4	0.01	0.9%	33.9%	318,390
FLOUNDER, WINTER	27,338	27,032	12.1	12.0	0.01	0.8%	98.9%	105,708
SEA WEEDS	26,041	26,041	11.6	11.6	0.01	0.8%	100.0%	100,694
HADDOCK	24,727	24,727	11.0	11.0	0.01	0.8%	100.0%	95,612
SEA ROBIN, STRIPED	22,261	21,927	9.9	9.7	0.00	0.7%	98.5%	86,077
MACKEREL, ATLANTIC	46,229	21,537	20.5	9.6	0.00	0.7%	46.6%	178,757
HERRING, ATLANTIC	405,494	20,689	180.2	9.2	0.00	0.6%	5.1%	1,567,941
SEA BASS, BLACK	30,837	20,404	13.7	9.1	0.00	0.6%	66.2%	119,240
DORY, BUCKLER (JOHN)	50,134	18,824	22.3	8.4	0.00	0.6%	37.5%	193,855
ANGLER	29,592	12,792	13.2	5.7	0.00	0.4%	43.2%	114,426
LOBSTER	16,241	12,033	7.2	5.3	0.00	0.4%	74.1%	62,798
HAKE, NK	12,848	11,126	5.7	4.9	0.00	0.3%	86.6%	49,681
SKATE, BARNDOOR	6,497	6,450	2.9	2.9	0.00	0.2%	99.3%	25,121
SHAD, AMERICAN	7,081	6,199	3.1	2.8	0.00	0.2%	87.5%	27,378
WINDOWPANE	6,162	6,162	2.7	2.7	0.00	0.2%	100.0%	23,825
DOGFISH CHAIN	4,955	3,661	2.2	1.6	0.00	0.1%	73.9%	19,159
TAUTOG	2,373	2,373	1.1	1.1	0.00	0.1%	100.0%	9,176
HERRING (NK)	2,344	2,344	1.0	1.0	0.00	0.1%	100.0%	9,065
SKATE, ROSETTTE	2,139	2,139	1.0	1.0	0.00	0.1%	100.0%	8,271
FLOUNDER, WITCH	1,275	1,275	0.6	0.6	0.00	0.0%	100.0%	4,930
SKATE, CLEARNOSE	1,182	1,182	0.5	0.5	0.00	0.0%	100.0%	4,569
SKATE, NK	2,381	1,036	1.1	0.5	0.00	0.0%	43.5%	9,208
FISH, NK	1,208	806	0.5	0.4	0.00	0.0%	66.8%	4,670
ALEWIFE	775	761	0.3	0.3	0.00	0.0%	98.1%	2,997

6.6 Human Communities and Economic Environment

6.6.1 Fishery Descriptions

This section describes socio-economic importance of the mackerel, squid and butterfish fisheries. Recent Amendments to the MSB FMP contain additional information, especially demographic information on ports that land MSB species. See Amendments 10 and 11 at http://www.mafmc.org/fmp/history/smb-hist.htm for more information or visit NMFS' community profiles page at: http://www.nefsc.noaa.gov/read/socialsci/community_profiles/.

For each species with alternatives in this document, Section 6.6 describes the following: history of landings, prices and total revenues since 1982, specification performance for the last 10 years, 2011 data for permitted and active vessels by state, 1997-2011 numbers of uncanceled permits, 2011 vessel dependence on mackerel as a proportion of total ex-vessel sales, 2009-2011 landings by state, 2009-2011 landings by month, 2009-2011 landings by gear, 2009-2011 landings in key ports, 2009-2011 numbers of active dealers, and 2009-2011 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, some information may be withheld or limited in order to maintain the confidentiality of proprietary business data from fishery participants.

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 2013. 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/meeting_materials/SSC/2012-05/SSC_2012_05.htm. 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.

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6.6.2 Atlantic mackerel (mackerel)

<u>Historical Commercial Fishery – History of Landings</u>

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).

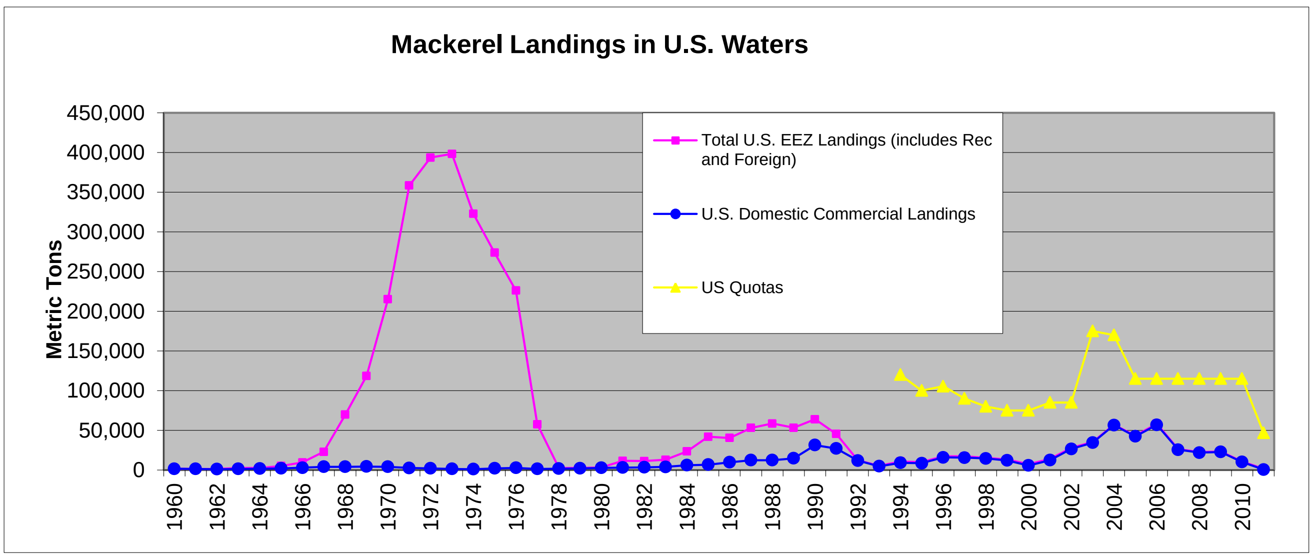


Figure 2. Historical Atl. Mackerel Landings in the U.S. EEZ.

US commercial landings of mackerel increased steadily from roughly 3000 mt in the early 1980s 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 with minimal catch in 2011 (landings of 531 mt generating ex-vessel revenues of about $0.4 million). The mackerel fishery usually catches 95% of its mackerel by May 1 so while incomplete, available 2012 data suggests that around 5,000-6,000 mt will be landed in 2012.

Nominally ex-vessel price has generally varied about $200-$400 per mt but when inflation is taken into account there has generally been erosion in the ex-vessel per-pound value of mackerel. 2011 prices (avg of 670$/mt) may have been a temporary increase due to the very low quantities landed. Total ex-vessel value tracks both price and the quantity of fish landed (see Fishery Information Document at http://www.mafmc.org/meeting_materials/SSC/2012-05/SSC_2012_05.htm for details).

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, primarily because the fisheries have not approached the quotas.

Table 21. Mackerel DAH Performance. (mt)

Year	Harvest (mt) (Commercial and Recreational)	Quota (mt)	Percent of Quota Landed
2002	27,824	85,000	33%
2003	35,068	175,000	20%
2004	56,911	170,000	33%
2005	43,302	115,000	38%
2006	58,370	115,000	51%
2007	26,130	115,000	23%
2008	22,517	115,000	20%
2009	23,238	115,000	20%
2010	10,635	115,000	9%
2011	1,463	47,395	3%

Source: Unpublished NMFS dealer reports

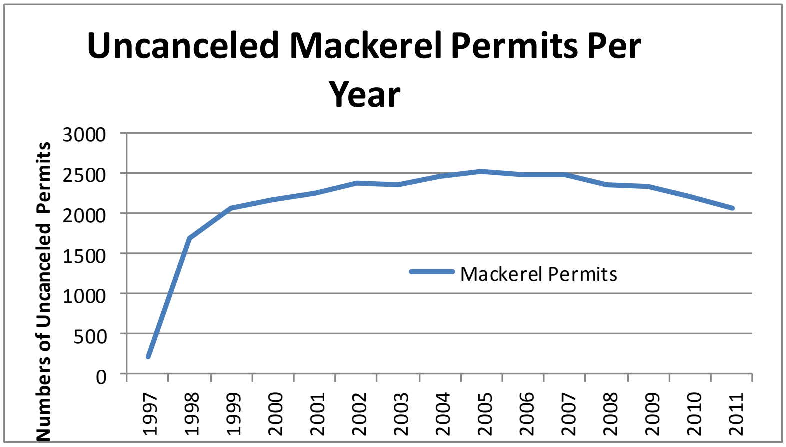
Participation in the fishery was minimal in 2011 related to the low availability of mackerel. The tables and figures below and on the following 3 pages describe vessel participation, vessel dependency, distribution of landings by state/month/gear/port, dealer participation, and the general at-sea location of recent mackerel landings/catches.

Table 22. 2011 Data for Permitted and Active Vessels by State

State of Principal Port	Permited Vessels	1,000,000 or more pounds	100,000-1,000,000 pounds	50,000-100,000 pounds	10,000-50,000 pounds
ME	255	0	0	0	1
NH	103	0	0	0	0
MA	901	0	3	2	0
RI	156	0	0	5	1
CT	40	0	0	0	0
NY	216	0	0	5	0
NJ	311	0	0	2	1
DE	8	0	0	0	0
MD	29	0	0	0	0
VA	109	0	0	1	0
NC	81	0	0	0	0
Other	16	0	0	0	0

Source: Unpublished NMFS dealer reports and permit data.

Figure 3. Uncanceled Mackerel Permits Per Year



Source: Unpublished NMFS permit data.

Table 23. 2011 Vessel Dependence on Mackerel (revenue-based)

Dependence on Mackerel	Number of Vessels in Each Dependency Category
1%-5%	24
5%-25%	1
25%-50%	1
More than 50%	1

Source: Unpublished NMFS dealer reports – not at state level due to data confidentiality issues

Table 24. 2009-2011 Data (most recent 3) Landings by State (mt)

YEAR	CT	MA	MD	ME	NA	NC	NH	NJ	NY	RI
2009	53	13,698	0	24	10	1	0	4,652	89	4,108
2010	17	5,514	0	161	9	21	0	2,128	50	1,976
2011	17	234	0	90	5	3	0	48	60	73

Source: Unpublished NMFS dealer reports

Table 25. 2009-2011 Data (most recent 3 years) for Landings by Month (mt)

YEAR	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2009	10,947	7,767	3,271	429	67	17	6	18	23	9	11	69
2010	5,633	2,654	1,187	160	102	57	10	4	5	54	2	10
2011	22	91	131	113	35	13	56	1	14	4	18	33

Source: Unpublished NMFS dealer reports

Table 26. 2009-2011 Data (most recent 3 years) for Landings by Gear (mt)

YEAR	Gill Nets	Bottom Trawl	Single Mid-Water Trawl	Pair Mid-Water Trawl	Trap/Pots/ Pound Nets/Weir	Other/ Unknown
2009	29	6,786	5,670	9,318	34	799
2010	37	2,757	1,992	4,149	33	909
2011	27	327	69	72	5	30

Source: Unpublished NMFS dealer reports

Table 27. 2009-2011 Ex-Vessel Revenues by Port for All Ports with at Least $100,000 Ex-Vessel Sales Combined Over 2009-2011

YEAR	NORTH KINGSTOWN, RI	CAPE MAY, NJ	NEW BEDFORD, MA	GLOUCESTER, MA	FALL RIVER, MA	POINT JUDITH, RI	MONTAUK, NY
2009	>$2 million	$2,035,086	$1,613,826	$1,581,435	$183,546	$144,588	$55,560
2010	>$1 million	$449,494	$616,462	$636,568	$131,739	$58,954	$53,871
2011	<500,000	$12,160	$75,302	$44,775	$1,437	$34,089	$57,924

Source: Unpublished NMFS dealer reports. Exact numbers for North Kingstown not provided due to confidentiality issues.

Table 28. 2009-2011 Numbers of Active Dealers

	Number of dealers buying at least $10,000 Mackerel	Number of dealers buying at least $100,000 Mackerel
2009	23	7
2010	18	5
2011	13	0

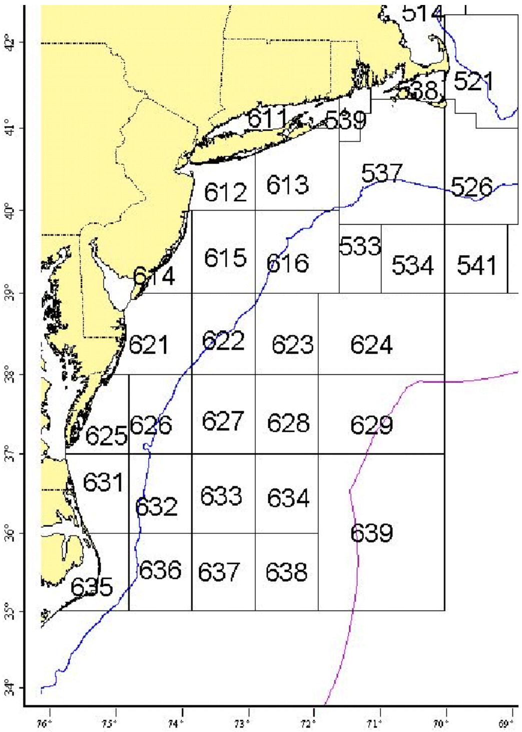
Source: Unpublished NMFS dealer reports

Table 29. Kept Catch in Statistical areas with at least 1,000 mt of mackerel caught in at least one year 2009-2011.

YEAR	_612	_613	_615	_539	_616	_622	_621
2009	6,148	4,401	4,035	2,435	1,714	745	472
2010	5,760	293	399	36	383	1,260	1,131
2011	3	3	.	27	99	18	59

Source: Unpublished NMFS vessel trip reports

Figure 4. NMFS Statistical Areas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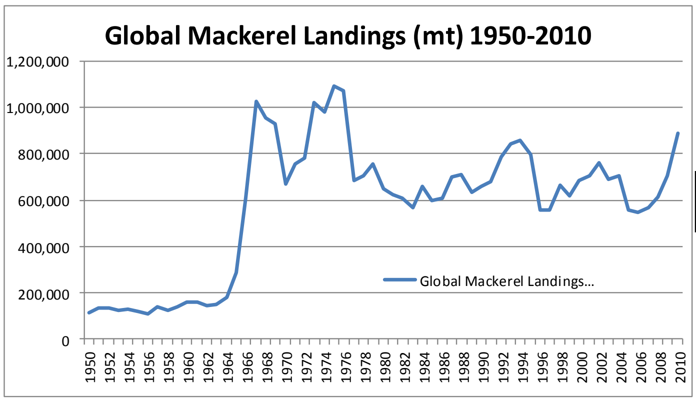
Current Market Overview for Mackerel and World Production (Required by FMP)

According to the U.N. Food and Agriculture Organization, world landings of mackerel dramatically increased in the 1960s, peaked at 1,092,759 mt in 1975, and have been between 550,000 mt and 900,000 mt since 1977 (Figure 5). Prices for imported and exported U.S. mackerel, somewhat indications of prices on the world market, averaged $1,510 per mt in 2011 (2,496 mt total) for exports and $2,993 per mt in 2011 for imports (9,155 mt total) (NMFS 2010; http://www.st.nmfs.noaa.gov/st1/trade/documents/TRADE2011.pdf). US mackerel (western Atlantic) are a substitute for European mackerel (eastern Atlantic), which are caught in much larger quantities. There are currently political battles in Europe over mackerel allocations that have recently (2012) led to European mackerel losing Marine Stewardship Council certifications. It is unclear how demand for US mackerel may be impacted by these still unfolding events.

Figure 5. World production of Mackerel, 1950-2010.



Source: http://www.fao.org/fishery/statistics/

Recreational Fishery

Mackerel are 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. 2002-2011 recreational landings of mackerel, as estimated from the NMFS Marine Recreational Fishery Statistics Survey (MRFSS) and the new Marine Recreational Information Program ("MRIP"), are given in the table below. Most mackerel are caught in the private/rental mode but some are caught in the party/charter and shore modes as well. Approximately 10% of all mackerel caught (by number) are released. Compared to other recreationally-important species, estimates for mackerel recreational harvest are relatively uncertain due to low encounter rates.

Table 30. Recreational Harvest (rounded to nearest mt) of Mackerel by State, 2002-2011.

Year	CT	DE	ME	MD	MA	NH	NJ	RI	VA	NY	NC	Annual Total
2002	1	3	387	2	728	65	60	47	0	.	.	1,294
2003	.	0	123	0	510	79	29	8	1	19	0	770
2004	.	5	234	.	207	26	0	1	0	.	.	473
2005	.	.	118	.	813	84	18	.	.	0	0	1,032
2006	5	0	143	.	1,322	41	.	0	.	.	.	1,511
2007	.	.	154	.	381	49	.	.	.	0	.	584
2008	.	.	146	.	530	107	.	0	.	0	.	783
2009	.	0	275	.	112	214	.	.	.	1	.	603
2010	.	.	212	.	467	79	0	0	.	.	.	759
2011	.	.	354	0	276	303	.	.	0	.	0	932

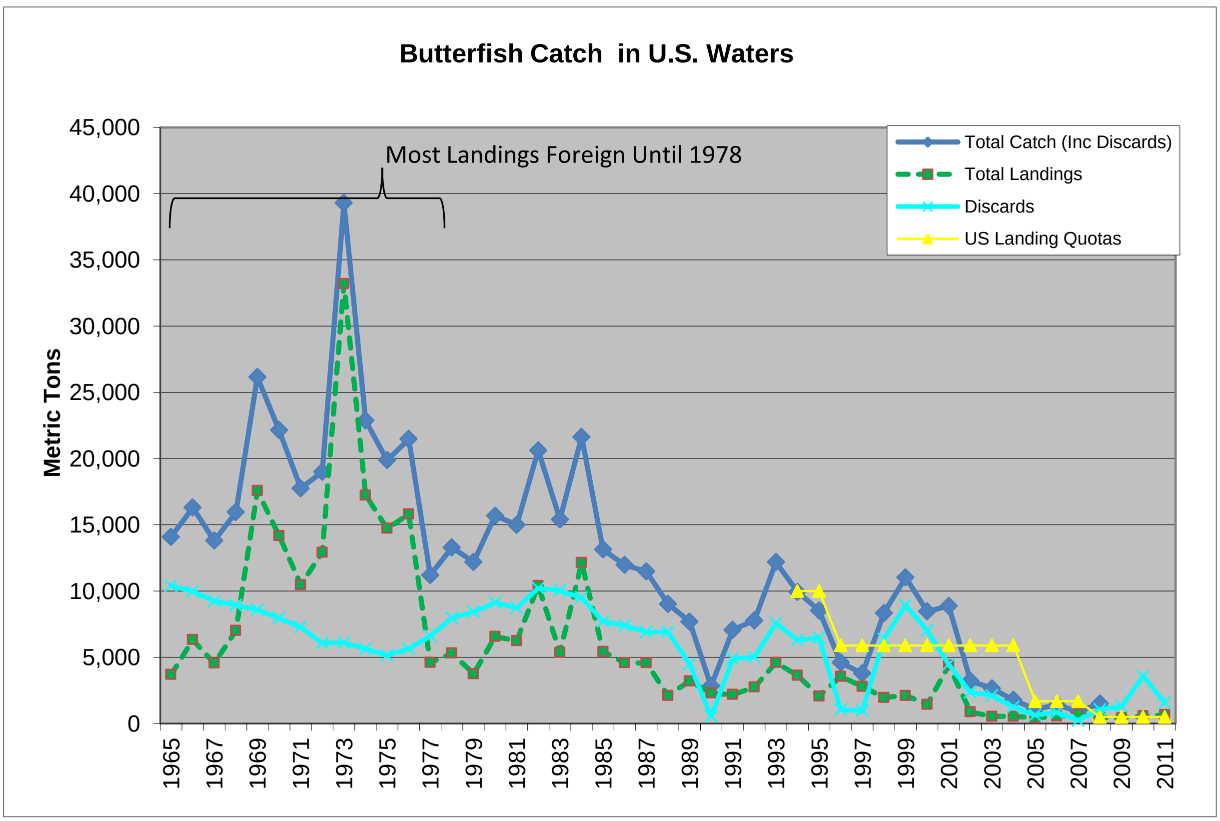
Source: Personal communication from NMFS, Fisheries Statistics Division.

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. 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.

Figure 6. Historical Butterfish Landings in the U.S. EEZ



During the period 1965-1976, US Atlantic butterfish landings averaged 2,051 mt. From 1977-1987, average US landings doubled to 5,252 mt, with a historical peak of slightly less than 12,000 mt landed in 1984. Since then US landings have declined sharply. Low abundance and reductions in Japanese demand for butterfish probably had a negative effect on butterfish landings in the 1990s-early 2000s but regulations have kept butterfish catches low since 2005.

Price (nominal) has increased fitfully since 1982 to $1694/mt in 2011, but taking inflation into account erodes most of that price increase (see Fishery Information Document at http://www.mafmc.org/meeting_materials/SSC/2012-05/SSC_2012_05.htm for details). 2011 landings totaled 664 mt and generated $1.1 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 relatively low trip limits when 80% of the DAH is landed. The table below lists the performance of the butterfish fishery compared to the effective quota for the last 10 years. There have been quota overages in 2010 and 2011. The causes of these are likely the increased butterfish abundance in recent years leading to early closures, as well as incomplete controls on state-permitted vessels. The long time period of incidental post-closure landings has resulted in the fishery ending up over its quota (the proposed 2013 management measures should correct this problem). Closures the last three years have occurred earlier and earlier, on November 19 (2009), August 24 (2010), and June 30 (2011).

Table 31. Butterfish DAH Performance (mt)

Year	Harvest (only commercial)	Quota	Percent of Quota Landed
2002	872	5,900	15%
2003	536	5,900	9%
2004	537	5,900	9%
2005	428	1,681	25%
2006	554	1,681	33%
2007	678	1,681	40%
2008	451	500	90%
2009	435	500	87%
2010	576	500	115%
2011	664	500	133%

Source: Unpublished NMFS dealer reports

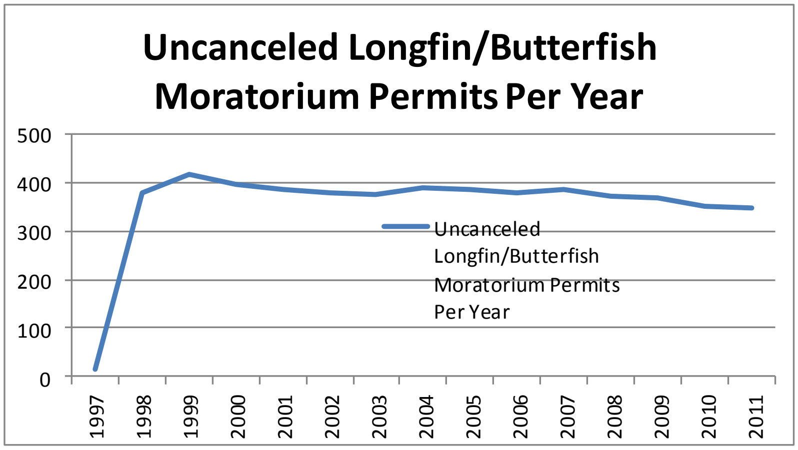
The tables and figures on the following three pages describe vessel participation, vessel dependency, distribution of landings by state/month/gear/port, dealer participation, and the general at-sea location of most recent catches.

Table 32. 2011 Data (most recent) for Permitted and Active Vessels by State

State of Principal Port	Permited Vessels	200,000 or more pounds	50,000-200,000 pounds	10,000-50,000 pounds	1,000-10,000 pounds
ME	16	0	0	0	1
NH	3	0	0	0	0
MA	103	0	0	1	5
RI	56	0	1	17	24
CT	9	0	0	2	4
NY	59	0	1	11	14
NJ	86	0	0	1	10
MD	2	0	0	0	0
VA	21	0	0	0	0
NC	18	0	0	0	0
OT	1	0	0	0	0

Source: Unpublished NMFS dealer reports and permit data.

Figure 7. Uncanceled Longfin/Butterfish Moratorium Permits Per Year



Source: Unpublished NMFS permit data.

Table 33. 2011 Vessel Dependence on Butterfish (revenue-based)

Dependence on Butterfish	Number of Vessels in Each Dependency Category
1%-5%	81
5%-25%	21
25%-50%	0
More than 50%	0

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

Table 34. 2009-2011 Data (most recent 3) Landings by State (mt)

YEAR	CT	DE	MA	MD	NA	NH	NJ	NY	RI	ME
2009	34	0	56	1	11	2	15	109	207	0
2010	31	0	79	1	5	2	20	184	254	0
2011	48	0	64	1	4	4	29	235	278	0

Source: Unpublished NMFS dealer reports

Table 35. 2009-2011 Data (most recent 3 years) for Landings by Month (mt)

YEAR	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2009	24	29	107	38	41	25	10	17	25	47	50	22
2010	32	17	24	47	82	89	61	71	43	56	37	18
2011	54	40	55	63	97	100	31	25	60	54	47	38

Source: Unpublished NMFS dealer reports

Table 36. 2009-2011 Data (most recent 3 years) for Landings by Gear (mt)

YEAR	Bottom Trawl	Dredge	Trap/Pots/Pound/Weir	Gill Nets	Other/Unknown
2009	319	15	9	6	86
2010	404	28	20	4	119
2011	446	27	12	7	171

Source: Unpublished NMFS dealer reports

Table 37. 2009-2011 Ex-Vessel Revenues by Port for All Ports with at least $50,000 ex-vessel sales totaled over 2009-2011.

YEAR	POINT JUDITH, RI	MONTAUK, NY	NEW BEDFORD, MA	NEWPORT, RI	NORTH KINGSTOWN, RI	HAMPTON BAYS, NY	STONINGTON, CT	AMAGANSETT, NY	LITTLE COMPTON, RI
2009	$183,094	$115,159	$54,600	$17,110	$72,966	$21,627	$15,156	$20,449	$2,097
2010	$258,129	$204,895	$73,271	$54,808	$4,704	$34,693	$28,054	$22,958	$38,253
2011	$373,268	$280,943	$58,449	$52,997	$31,224	$47,095	$52,168	$49,144	$21,525

Source: Unpublished NMFS dealer reports

Table 38. 2009-2011 Numbers of Active Dealers

	Number of dealers selling at least $10,000 Butterfish	Number of dealers selling at least $25,000 Butterfish
2009	13	8
2010	18	9
2011	22	11

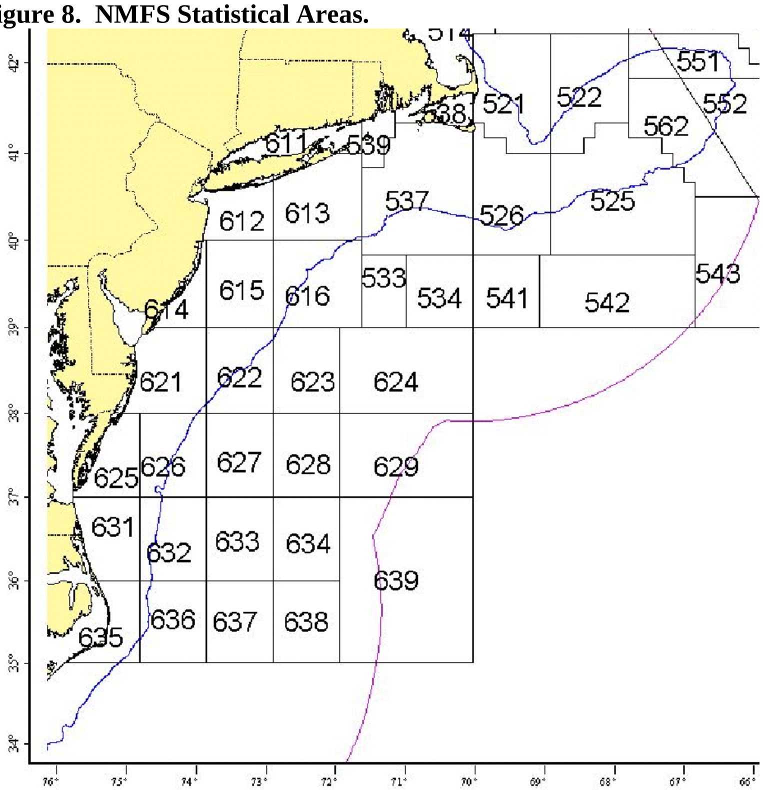
Source: Unpublished NMFS dealer reports

Table 39. Kept Catch in Statistical Areas with at least 20 mt of butterfish caught in at least one year 2009-2011.

YEAR	_537	_611	_539	_616	_525	_613	_562	_522	_526
2009	149	35	30	33	37	24	6	7	21
2010	127	54	65	36	26	29	27	20	2
2011	101	79	60	68	24	29	9	7	1

Source: Unpublished NMFS vessel trip reports

Figure 8. 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 2000 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 (Figure 9).

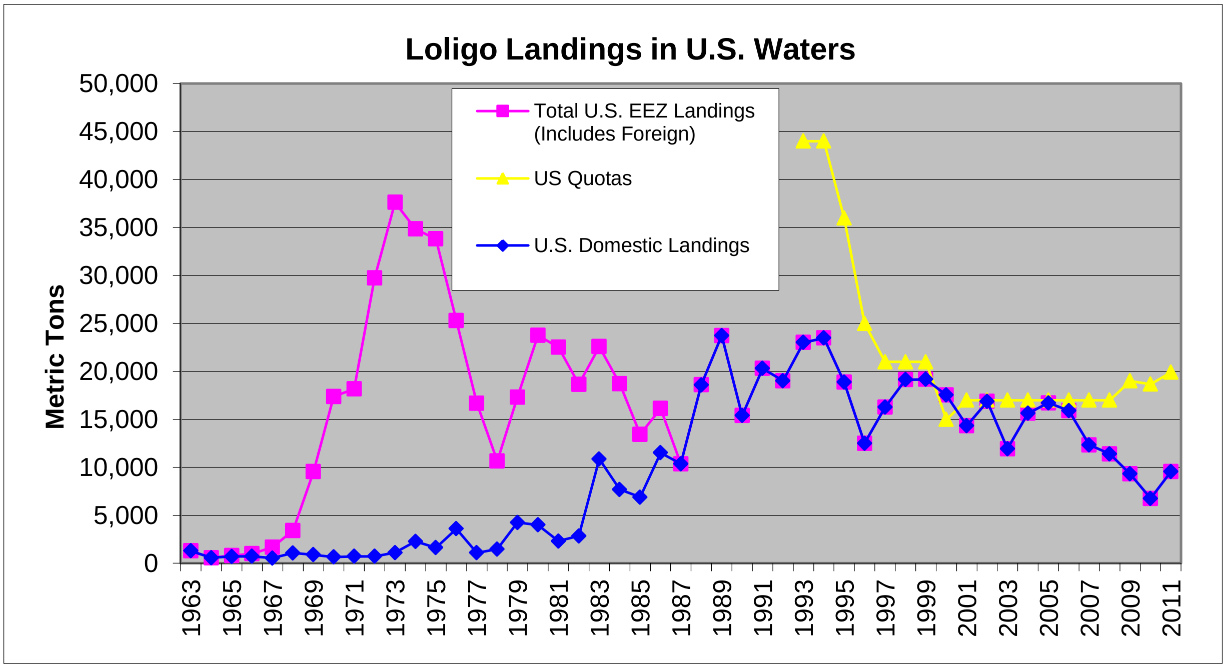


Figure 9. Historical Longfin Squid Landings in the U.S. EEZ.

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.

Price (nominal) has increased fairly steadily since 1982 to $2526/mt in 2011, even taking inflation into account (see Fishery Information Document at http://www.mafmc.org/meeting_materials/SSC/2012-05/SSC_2012_05.htm for details). 2011 landings totaled 9,554 mt and generated $24.1 million in ex-vessel revenues. 2012 landings totaled more than these values by September 1 so 2012 landings and revenues should be at least somewhat higher.

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. The table below lists the performance of the longfin squid fishery compared to its DAH for the last 10 years (no quota overages). The tables and figures on the subsequent three 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.

The longfin squid DAH is currently divided up into trimesters and has been 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. There are occasional overages of the trimester quotas, but these are typically minor and should minimal effects since any Trimester 1 and 2 overages are applied to Trimester 3.

Table 40. Longfin DAH Performance. (mt)

Year	Harvest (Commercial and Recreational)	Quota	Percent of Quota Landed
2002	16,868	17,000	99%
2003	11,941	17,000	70%
2004	15,629	17,000	92%
2005	16,720	17,000	98%
2006	15,920	17,000	94%
2007	12,343	17,000	73%
2008	11,394	17,000	67%
2009	9,307	19,000	49%
2010	6,750	18,667	36%
2011	9,556	19,906	48%

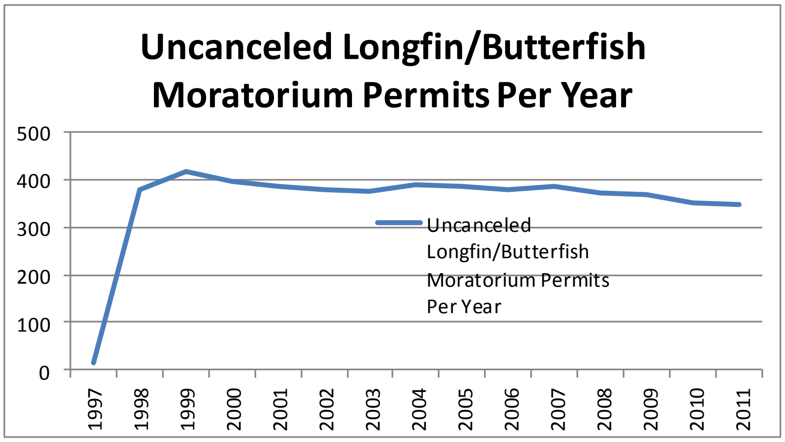
Source: Unpublished NMFS dealer reports

Table 41. 2011 Data for Permitted and Active Vessels by State

State of Principal Port	Permited Vessels	500,000 or more pounds	100,000-500,000 pounds	50,000-100,000 pounds	10,000-50,000 pounds
ME	16	0	0	1	0
NH	3	0	0	0	0
MA	103	0	1	3	3
RI	56	4	25	8	6
CT	9	0	2	3	0
NY	59	2	18	8	8
NJ	86	1	8	5	9
MD	2	0	0	0	0
VA	21	0	0	1	0
NC	18	0	1	0	2
OT	1	0	0	0	0

Source: Unpublished NMFS dealer reports and permit data.

Figure 10. Uncanceled Longfin/Butterfish Permits Per Year



Source: Unpublished NMFS permit data.

Table 42. 2011 Vessel Dependence on Longfin (revenue-based)

Dependence on Longfin	Number of Vessels in Each Dependency Category
1%-5%	55
5%-25%	73
25%-50%	46
More than 50%	28

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

Table 43. 2009-2011 Data (most recent 3) Landings by State (mt)

YEAR	CT	MA	MD	ME	NA	NC	NH	NJ	NY	RI
2009	166	585	1	0	63	13	0	1,565	1,859	5,054
2010	166	701	1	0	25	0	0	713	1,769	3,342
2011	226	639	1	0	34	11	0	1,591	2,553	4,498

Source: Unpublished NMFS dealer reports

Table 44. 2009-2011 Data (most recent 3 years) for Landings by Month (mt)

YEAR	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2009	880	968	1,216	288	414	778	1,613	438	387	1,568	560	195
2010	524	336	289	271	781	533	632	274	720	1,056	723	578
2011	1,245	913	975	447	345	1,011	2,135	949	344	552	288	350

Source: Unpublished NMFS dealer reports

Table 45. 2009-2011 Data (most recent 3 years) for Landings by Gear (mt)

YEAR	Bottom Trawl	Unknown	Midwater Trawl	Dredge	Trap/Pots/Pound/Weir	Other
2009	7,971	981	90	192	12	61
2010	5,339	991	215	61	30	81
2011	8,039	1,326	91	54	8	35

Source: Unpublished NMFS dealer reports

Table 46. 2009-2011 Ex-Vessel Revenues by Port for All Ports with at Least $150,000 Ex-Vessel Sales Combined Over 2009-2011

YEAR	POINT JUDITH, RI	MONTAUK, NY	CAPE MAY, NJ	NORTH KINGSTOWN, RI	HAMPTON BAYS, NY	NEW BEDFORD, MA	BARNSTABLE, MA
2009	$8,215,747	$2,763,207	$2,492,213	$1,583,757	$1,100,908	$451,649	$486,620
2010	$6,079,897	$2,862,926	$1,181,245	$1,249,178	$818,683	$930,328	$482,247
2011	$8,206,277	$3,792,852	$2,932,800	$2,321,291	$2,643,944	$1,128,010	$331,584
	POINT LOOKOUT, NY	POINT PLEASANT, NJ	STONINGTON, CT	BELFORD, NJ	NEWPORT, RI	NEW LONDON, CT	FALMOUTH, MA
2009	$109,240	$167,916	$118,455	NA - Confidential	$223,694	$76,976	$44,082
2010	$475,173	$216,999	$249,568	NA - Confidential	$34,464	$62,170	$43,027
2011	$488,106	$390,524	$360,612	NA - Confidential	$89,768	$141,030	$159,765
	EAST HAVEN, CT	GREENPORT, NY	WOODS HOLE, MA	FREEPORT, NY	NIANTIC, CT	SHINNECOCK, NY	
2009	$30,833	$40,041	NA - Confidential	$39,588	$29,095	$55,536	
2010	$104,191	$134,586	NA - Confidential	$61,328	$56,581	$75,334	
2011	$104,035	$59,818	NA - Confidential	$96,889	$85,330	$28,201	

Source: Unpublished NMFS dealer reports

Table 47. 2009-2011 Numbers of Active Dealers

	Number of dealers buying at least $50,000 longfin	Number of dealers buying at least $100,000 longfin	Number of dealers buying at least $1,000,000 longfin
2009	29	22	6
2010	29	26	4
2011	39	28	6

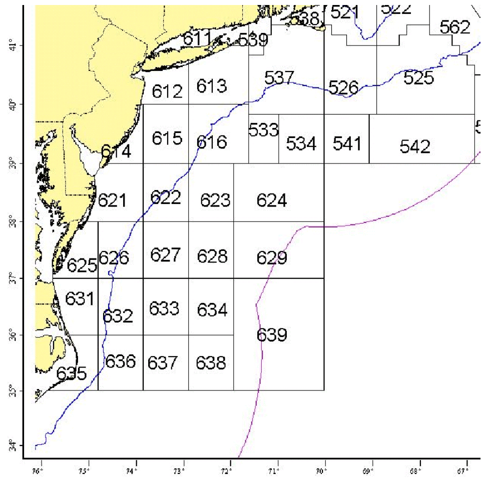
Source: Unpublished NMFS dealer reports

Table 48. Kept Catch in Statistical areas with at least 250 mt of longfin caught in at least one year 2009-2011.

YEAR	_616	_622	_537	_612	_613	_626	_539	_525	_632	_611	_526
2009	1,904	1,613	2,416	486	905	624	331	42	313	186	54
2010	2,470	1,040	595	465	466	173	333	339	275	226	43
2011	1,262	1,601	1,227	1,593	623	412	320	427	136	305	324

Source: Unpublished VTR reports

Figure 11. NMFS Statistical Areas



Butterfish Catch/Mortality Cap

Beginning in 2011 the longfin squid fishery was subject to closure if it caught too much butterfish (amounts are set annually - 1,436 mt in 2011), with the cap divided up such that closures could occur in Trimesters 1 (Jan-Apr) and 3 (Sept-Dec). The cap is important for the longfin squid fishery because changes in the butterfish specifications, and the resulting cap amount, can have effects related to the "shadow value" of butterfish for the longfin squid fishery (longfin squid and butterfish are often caught together). 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 is unknown 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. While the cap was instituted due to an assessment and overfished finding that have since been debunked and voided, since ACL overages of butterfish have to be paid back in following years, the cap serves to 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 and 2012 was still underway at the time this document was written. Additional details on the cap estimation may be found here: http://www.nero.noaa.gov/nero/regs/frdoc/11/11SMB2011ButterfishSpecsRevisedCAP.pdf and a report on the 2011 operation of the cap may be found here: http://www.mafmc.org/meeting_materials/SSC/2012-05/SSC_2012_05.htm. Review of the cap's 2011 operation by the SSC in May 2012 found that the cap appears to be operating as designed, i.e. tracking and limiting butterfish mortality in the longfin squid fishery. It did also find that non-cap mortality also needs to be sufficiently accounted for to avoid ABC overages. As described in Section 5 of this document, the proposed butterfish specifications do account for non-cap mortality in 2013.

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 research 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 the Council may request that additional information on squid catches be collected by MRIP interviewers. 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/.

6.6.5 *Illex* Squid

There are no changes contemplated for *Illex* squid and in 2013 they will be in year 2 of three-year specifications. For general information on the performance of the *Illex* squid fishery through 2011 please consult the Council's "*Illex* Fishery Information Document," available at: http://www.mafmc.org/meeting_materials/SSC/2012-05/SSC_2012_05.htm.

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

The alternatives considered for 2013 are fully described in section 5. Related to the specifications, the key determinant of biological impact on the managed resources is how much fish can be caught and the likely upper limit on catch is noted again below to facilitate comparison.

In recent years the mackerel, longfin squid, and *Illex* fisheries have not caught their entire quota. Thus even the status quo 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 status quo. Conversely, for the same reasons that catch has been lower than the quotas, catch and effort, and related impacts, could decrease under the status quo. 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. Also, <u>the focus of analysis is on the relative upper limits imposed by the various specifications.</u>

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).

Since limits on catch do cap effort, catch limits are a factor related to effort but many other factors 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.) also affect how much and what sort of effort is utilized to land a given quantity of a given species of fish in any given year. Table 49 provides a general evaluation of how effort may change relative to changes in quota and fish abundance and/or availability, and highlights the complexity of predicting effort changes based on changes in quotas alone. 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 enough to stimulate effort).

Note: For mackerel the status quo is proposed to be extended for three years, from 2013-2015. Since the Council can revisit the specifications annually if necessary (for example if new information becomes available), setting the same specification for three years just extends the same annual impacts for an additional two years. Thus while the impact section focuses on impacts from an annual perspective (since that is how the fishery is managed), the analysis applies to each year of the three year specifications. If the Council did not intend to have the operation of the fishery reviewed annually then there could be differential impacts from the perspective that the management measures had lost flexibility, but since that flexibility remains there is no difference in setting the specifications for one year or three years. The only change is that if the Council decides no changes are needed, then there would be administrative efficiencies gained from not renewing the status quo through an additional action.

Table 49. Changes in fishing 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	Fishing effort may decrease, increase, or stay the same depending on a combination of factors.	Effort likely to decrease or stay the same. 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).	Effort likely to decrease or stay the same. 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	Effort may increase or decrease. 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.	Effort should decrease. 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	Fishing effort likely to increase or stay the same. A higher quota plus lower CPUEs from lower availability should increase effort. However, managers may increase trip limits or adjust regulations to allow more efficient fishing (keeping effort the same).	Effort likely to increase or stay the same. 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).	Fishing effort may decrease, increase, or stay the same depending on a combination of factors.

7.1 Biological Impacts on Managed Species

7.1.1 Impacts on Mackerel

Alternative Set 1 – Mackerel Catch Levels

1a/1b – status quo – The combination of the commercial and recreational ACTs, 37,350 mt, would be the likely effective U.S. catch limit. 1a would extend the status quo to 2013 while 1b would implement multi-year specs with the status quo for 2013-2015.

Alternatives 1a and 1b maintain the current catch quotas. Due to the uncertainty regarding the mackerel stock and its productivity, it is difficult to quantify impacts but given the likely effective catch limit would remain the same, impacts from 1b should be similar to the status quo. The specifications are designed such that total catch should not exceed 80,000 mt between the U.S. and Canada (the ABC established by the Council's SSC), which the last assessment suggested would be appropriate given the status of the mackerel stock. Since the Council will revisit the mackerel specifications each year and make changes if appropriate, there is no biological difference between setting specifications for one year or three years.

1c – high alternative – The combination of the commercial and recreational ACTs, 54,412 mt, would be the likely effective U.S. catch limit.

Due to the uncertainty regarding the mackerel stock and its productivity, it is difficult to quantify impacts but since the likely effective catch limit would be higher than the status-quo, the impact of 1c as an implemented specification should be less protective than the status quo. However, since catch has recently been below even the status quo alternative's specifications (see section 6.6.2), and there is no indication that even with a higher U.S. catch limit that mackerel catch would increase, impacts may be similar to the status quo. The measures contained in 1c could lead to catches higher than the 80,000 mt recommended as management advice by both the most recent mackerel assessment (TRAC 2010) and the Council's SSC. Given the above, overall impacts are likely best characterized as "small negative" compared to the status quo.

1d – low alternative – The combination of the commercial and recreational ACTs, 20,288 mt, would be the likely effective U.S. catch limit.

Due to the uncertainty regarding the mackerel stock and its productivity, it is difficult to quantify impacts but since given the likely effective catch limit would be less than the status-quo, the impact of 1d as an implemented specification should be more protective than the status quo. However, since catch has recently been below this alternative's specifications (see section 6.6.2), impacts may be similar to the status quo. Given the above, overall impacts are likely best characterized as "small positive" compared to the status quo.

Alternative Set 2 – Longfin Squid Closure Regulations
Alternative Set 3 – Butterfish Cap Regulations
Alternative Set 4 – Butterfish Catch Levels
Alternative Set 5 – Butterfish Management
Research Set Aside

The alternatives in these alternative sets (status quo or action alternatives) are all not expected to impact the mackerel stock (status quo or action alternatives) as there is not a substantial catch of mackerel in the longfin squid or butterfish fisheries. Also, research set aside is usually only requested for longfin squid and butterfish so the same would apply to any research set-aside (i.e. no impacts).

7.1.2 Impacts on Butterfish

Alternative Set 1 – Mackerel Catch Levels

While some butterfish are caught in the mackerel fishery, given the mackerel fishery has been operating well below any of the considered quotas (see section 6.6.2) and given the incidental catch rates are relatively low anyway (see section 6.5), the butterfish stock is not expected to be impacted substantially (positively or negatively) by any of the mackerel catch levels (status quo or action) being considered.

Alternative Set 2 – Longfin Squid Closure Regulations

While there is substantial incidental catch of butterfish in the longfin squid fishery (see Section 6.5), that catch is and will be directly controlled to biologically acceptable levels through the butterfish cap, so no negative impacts should result regardless whether or not any or all of the small adjustments to the longfin squid end of trimester closures (Trimesters 1 and 2) under consideration are implemented.

Alternative Set 3 – Butterfish Cap Regulations

3a – status quo –the trip notification and cap closure thresholds would remain the same.

The trip notification facilitates implementation of the butterfish cap on the longfin squid fishery, which benefits butterfish by controlling mortality. Effective closure of the longfin squid fishery when the butterfish cap closes also ensures that butterfish mortality is controlled, helping maintain the butterfish stock. Similar impacts would be expected if these status-quo measures are maintained. There is a chance that the current lack of closure authority in Trimester 2 could lead to an ABC overage but that has not occurred to date.

3b – Change the longfin squid trip notification from 72 to 48 hours.

The change in the longfin squid trip notification would have no impact on the butterfish stock compared to the status quo alternative because the observer program is able to place observers on vessels with a 48-hour notice. Thus control of butterfish mortality through the butterfish mortality cap program would not be compromised, maintaining benefits for the butterfish stock.

3c - Effective April 15 of each year, update the 80% closure threshold for the butterfish cap to 90% in Trimester 1.

This would mean that it is possible for the longfin squid fishery to stay open a little bit longer (up to two weeks) in Trimester 1. While this could mean slightly more effort and therefore impacts on butterfish during Trimester 1, since the cap limits overall butterfish catch to a biologically acceptable amount, similar impacts would be expected compared to the status quo, i.e. butterfish morality would continue to be controlled through the cap and limited to biologically acceptable levels. Underages and overages from earlier Trimesters roll over to later in the year and the end of year closure procedures are not proposed to change, so the overall control of butterfish mortality should not be affected.

3d - Trimester 2 Longfin Squid Fishing Would Close when 75% of the Annual Butterfish Cap was Projected to be Reached.

Currently there is no closure authority in Trimester 2 and it is possible that the entire annual butterfish cap is expended in Trimester 2 but the longfin fishery still could not be closed. This could lead to higher than acceptable butterfish mortality (higher than the ABC). 3d, by preventing such occurrences, should have a positive impact on the butterfish stock compared to the status quo.

Alternative Set 4 – Butterfish Catch Levels

Recent extensions of the work conducted in the 2010 Assessment by the Northeast Fishery Science Center (NEFSC) (Miller & Rago 2012 – available at http://www.mafmc.org/meeting_materials/SSC/2012-05/SSC_2012_05.htm), suggest that butterfish catch throughout the range being considered in the alternatives would be unlikely to result in overfishing, i.e. would be unlikely to have a negative impact on the butterfish stock, as described below.

4a1 – Original Status Quo/ No Action – 3,622 mt.

The available analyses (see Miller and Rago 2012, also summarized above), data, and judgment of the Council's SSC suggest that the impact of 3,622 mt of fishing-related butterfish mortality, while somewhat uncertain, will not be negative for the butterfish stock over a wide range of assumptions and criteria. Accordingly, the impact is likely best characterized as neutral.

4a2 – Current Status Quo and No Action Due to Roll-Over Provisions in FMP – 4,200 mt.

The available analyses (see Miller and Rago 2012, also summarized above), data, and judgment of the Council's SSC suggest that the impact of 4,200 mt of fishing-related butterfish mortality, while somewhat uncertain, will not be negative for the butterfish stock over a wide range of assumptions and criteria. Accordingly, the impact is likely best characterized as neutral.

4b - Preferred ABC – 8,400 mt.

The available analyses (see Miller and Rago 2012, also summarized above), data, and judgment of the Council's SSC suggest that the impact of 8,400 mt of fishing-related butterfish mortality, while somewhat uncertain, will not be negative for the butterfish stock over a wide range of assumptions and criteria. This catch level would be less protective of the butterfish stock than the status-quo of 4,200 mt but possibly only minimally so, given the current information about the butterfish stock. Accordingly, the impact is likely best characterized as neutral compared to the status quo.

4c - ABC 25% higher than preferred – 10,500 mt.

The available analyses (see Miller and Rago 2012, also summarized above) and data suggest that the impact of 10,500 mt of fishing-related butterfish mortality, while somewhat uncertain, will not be negative for the butterfish stock over a wide range of assumptions and criteria. This catch level would be less protective of the butterfish stock than the status-quo of 4,200 mt but possibly only minimally so, given the current information about the butterfish stock. Alternative 4c could result in catch higher than the ABC provided by the Council's SSC however. Given the uncertainty regarding the status and productivity of the butterfish stock, exceeding the SSC's ABC of 8,400 mt could potentially negatively impact the butterfish stock so the impact of 4c would be "low negative" compared to the status quo or other alternatives.

4d - Alternative 4d – ABC 25% lower than preferred – 6,300 mt.

The available analyses (see Miller and Rago 2012, also summarized above), data, and judgment of the Council's SSC suggest that the impact of 6,300 mt of fishing-related butterfish mortality, while somewhat uncertain, will not be negative for the butterfish stock over a wide range of assumptions and criteria. This catch level would be less protective of the butterfish stock than the status-quo of 4,200 mt but possibly only minimally so, given the current information about the butterfish stock. Accordingly, the impact is likely best characterized as neutral compared to the status quo.

Alternative Set 5 – Butterfish Management

When combined with the SSC-recommended catch levels (see alternative set 4), all of the management alternatives for butterfish (including the status quo) would probably involve staying below the SSC-recommended catch level, which maintains the sustainability of the butterfish stock. These management alternatives more impact how the butterfish catch is caught rather than how much total butterfish catch there will be, so the alternatives in alternative set 5 (including the status quo) should have a neutral impact on the butterfish stock - it is the overall catch level (see alternative set 4) that could have more of an impact on the butterfish stock. The one potential difference between the alternatives is that 5b sets aside a prorated reserve for post directed-fishery-closure landings, that early in the year sets aside more than the 20% that 5a and 5c set aside for the entire year. Setting aside more landings early in the year could help prevent landings overages, which could help avoid ABC overages, which could benefit the butterfish stock slightly compared to the status quo.

Research Set Aside

The RSA quota is part of the overall quota. If any portion of the 3-percent RSA quota is not awarded to an RSA project, the remainder will be returned to the commercial quota. With the exception of exemptions from possession limits and quota closures, the RSA quota will be harvested in the same manner as the commercial fishery. Therefore, it is unlikely that the retention of butterfish under RSA projects would have negative biological impacts compared to if the quota had been utilized by the directed fishery, especially since differences in how an RSA project uses the quota compared to directed fishery are likely to be minor.

7.1.3 Impacts on Longfin Squid

Alternative Set 1 – Mackerel Catch Levels

There is not substantial discarding of longfin squid in the mackerel fishery so any level of mackerel catch (including the status quo) is likely to have neutral impacts on longfin squid. Any incidental landings (again low) would be accounted for against the longfin squid quota, so again impacts should be neutral for any mackerel catch level.

Alternative Set 2 – Longfin Squid Closure Regulations

The status quo closure measures ensure that the longfin squid fishery is closed appropriately and the health of the longfin squid stock is maintained. The slight liberalization of the closure thresholds could allow slightly more squid to be caught in Trimesters 1 and 2 (see section 5.2) but since any early-season trimester overages are deducted from Trimester 3 and the end of year closure threshold is not changing, the total amount of squid caught should not exceed the ABC under any of the alternatives so minimal impacts on the longfin squid stock would be expected from implementation of any or all of the action alternatives compared to the status quo.

Alternative Set 3 – Butterfish Cap Regulations

3a – status quo –the trip notification and cap closure thresholds would remain the same.

The butterfish cap can close the longfin squid fishery but catches of longfin squid are directly controlled by quotas on longfin squid so the butterfish cap regulations should not substantially impact longfin squid. The status-quo management system for longfin squid should control the fishery such that the longfin squid ABC is not exceeded.

3b – Change the longfin squid trip notification from 72 to 48 hours.

NMFS has reported that this change should not affect their ability to place observers on longfin squid trips so similar impacts would be expected compared to the status quo.

3c - Effective April 15 of each year, update the 80% closure threshold for the butterfish cap to 90% in Trimester 1.

This would mean that it is possible for the longfin squid fishery to stay open a little bit longer (up to two weeks) in Trimester 1. While this could mean slightly more longfin squid catch in Trimester 1, since any overages are deducted from Trimester 3 and no changes are proposed for end of year closure procedures, the total amount of squid caught should not exceed the ABC so similar impacts would be expected compared to the status quo.

3d – Trimester 2 Longfin Squid Fishing Would Close when 75% of the Annual Butterfish Cap was Projected to be Reached.

Currently there is no closure authority in Trimester 2 and it is possible that the entire annual butterfish cap is expended in Trimester 2 but the longfin fishery still could not be closed. By providing for such closures, this alternative could lead to lower longfin squid catches but they should stay below the longfin squid ABC regardless so similar impacts on longfin squid would be expected compared to the status quo.

Alternative Set 4 – Butterfish Catch Levels

The butterfish catch level alternatives impact the butterfish cap amount, which indirectly impacts the amount of longfin squid that is caught. However, because of direct controls on the longfin squid fishery, longfin squid catches should stay below the longfin ABC regardless of any butterfish catch level (including the status quo), so minimal impacts would be expected for longfin squid related to any alternative in this alternative set.

Alternative Set 5 – Butterfish Management

These alternatives impact how the butterfish ABC is caught. While there are linkages between the butterfish and longfin squid fisheries, because the proposed management measures for butterfish don't affect the longfin squid fishery, longfin squid catches should stay below the longfin ABC regardless, so minimal impacts would be expected for longfin squid related to any alternative (including the status quo) in this alternative set.

Research Set Aside

The RSA quota is part of the overall quota. If any portion of the 3-percent RSA quota is not awarded to an RSA project, the remainder will be returned to the commercial quota. With the exception of exemptions from possession limits and quota closures, the RSA quota will be harvested in the same manner as the commercial fishery. Therefore, it is unlikely that the retention of butterfish under RSA projects would have negative biological impacts compared to if the quota had been utilized by the directed fishery, especially since differences in how an RSA project uses the quota compared to directed fishery are likely to be minor.

7.1.3 Impacts on *Illex* Squid

Alternative Set 1 – Mackerel Catch Levels
Alternative Set 2 – Longfin Squid Closure Regulations
Alternative Set 3 – Butterfish Cap Regulations
Alternative Set 4 – Butterfish Catch Levels
Alternative Set 5 – Butterfish Management
Research Set Aside

The *Illex* squid fishery is sufficiently separate from the mackerel, longfin squid, and butterfish fisheries that these alternative sets would not be expected to substantially impact the *Illex* stock, especially since 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 exist, *Illex* squid catches should stay below the *Illex* ABC regardless, so minimal impacts would be expected for *Illex* squid related to any alternatives (including the status quo) in these alternative sets.

Managed Species Impacts Summary

The status-quo alternatives should continue to be protective of the MSB stocks. Most of the action alternatives considered in this document should have no or similar impacts relative to how the fishery would be conducted with the status-quo alternatives. Those that may have directional impacts are: The high (1c) and low (1d) alternatives for mackerel may have negative and positive impacts for mackerel respectively compared to the status quo. 3d could have a positive impact for butterfish compared to the status quo related to ensuring the cap closes longfin squid appropriately. 4c may have a low negative impact for the butterfish stock compared to the status quo by allowing too much butterfish catch. 5b may slightly more protect the butterfish stock compared to the status quo by being more likely to avoid landings overages.

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7.2 Habitat Impacts

7.2.1 Impacts on Managed Species Habitat

EFH for the managed species generally consists of the water column which is not significantly impacted by fishing activity. The exception to the EFH 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 EFH for longfin squid eggs are expected from any increase or decrease in fishing effort by bottom trawls. Thus the impact is neutral for the managed species' EFH for any level of MSB fishing, which means that the impact of any of the status quo or action alternatives on the managed species' EFH is neutral.

7.2.2 Impacts on Other Federally Managed Species Habitat (see table 14)

Alternative Set 1 – Mackerel Catch Levels

Mackerel are primarily caught with mid-water trawl gear, which should not substantially impact the bottom so any impacts on habitat of other federally managed species should be minimal.

Alternative Set 2 – Longfin Squid Closure Regulations

Under the status quo, bottom trawling activity related to longfin squid fishing may impact EFH for other federally-managed species, but these impacts have been reduced to the extent practicable via other actions. Alternative Set 2 alternatives may slightly alter the temporal distribution of longfin squid effort, which does involve bottom-tending mobile gear. However, neither the status quo nor action alternatives are expected to impact overall longfin squid effort, and only slightly alter the temporal distribution of effort, so any impacts should be similar to the status quo. Also, as discussed in table 49 and accompanying text, the availability of the targeted species may drive effort as much as quotas and other regulations.

Under the status quo the longfin squid fishery is closed upon reaching 90% of its Trimester 1 and/or 2 quotas, ending effort (and habitat impacts) in that Trimester. Since overages and underages roll over between trimesters, temporally, making the Trimester 1 and 2 closure buffers 5% smaller at the end of the trimester (the preferred alternatives 2b and 2c) means that a small amount of extra quota (478 mt in Trimester 1 and 189 mt in Trimester 2) would be available near the end of Trimester 1 (late April) and/or Trimester 2 (late August) respectively, instead of being available at the end of the year (most likely November-December). Since overall effort may not be impacted, and since the quota and therefore potential effort transfers are small (even if both occurred) compared to either the overall quota (22,220 mt) or the trimester quotas, even temporal impacts should be minimal, especially since it will likely be only once every few years when the quota actually would close in the last 2 weeks of Trimester 1 or 2. In the last five years (2008-2012), such an occurrence has only happened once (Trimester 2, 2011).

Alternative Set 3 – Butterfish Cap Regulations

Under the status quo, bottom trawling activity related to longfin squid fishing may impact EFH for other federally-managed species, but these impacts have been reduced to the extent practicable via other actions.

Alternative 3b (observer notification) is not expected to impact overall longfin squid effort so any impacts would be minimal compared to the status quo.

Alternative 3c would lower the Trimester 1 closure buffer for the longfin squid fishery due to the butterfish cap from 20% to 10% on April 15 and later in April. This has the potential to allow more catch and effort in late April than would have otherwise occurred, and cause less catch and effort later in the year (the annual closure buffer is not being changed). However, allowing approximately 10% more squid to be taken in Trimester 1 than would have otherwise occurred, and less squid to be taken later in the year, is likely to have a minimal impact compared to overall longfin squid effort and impacts, especially since it would probably only be once every few years where one might have a closure take effect from April 15-April 30. Thus overall impacts should be similar to the status quo. However, as discussed in table 49 and accompanying text, the availability of the targeted species may drive effort as much as quotas and other regulations.

Alternative 3d (Longfin Squid Fishing Would Close when 75% of the Annual Butterfish cap was Projected to be Reached) could reduce overall longfin squid fishing activity compared to the status quo by closing Trimester 2 if it nears the total cap quota, which would have a positive habitat impact by reducing contact with the bottom by mobile trawl gear. Even though overages and underages roll over between Trimesters, theoretically more than 100% of the cap could be taken in Trimester 2. Also, as discussed in table 49 and accompanying text, the availability of the targeted species may drive effort as much as quotas and other regulations.

Alternative Set 4 – Butterfish Catch Levels

Note: As discussed in table 49 and accompanying text, the availability of the targeted species may drive effort as much as quotas and other regulations.

4a1 – original status quo – The ACT of 3,260 mt would be the likely effective catch limit.

Since this is very close to the current status quo, impacts would be similar at 4a2 – see below.

4a2 – current status quo – The ACT of 3,780 mt would be the likely effective catch limit.

Impacts on habitat would likely remain about the same if the status quo is maintained. There is some directed fishing for butterfish at current levels, and bottom-tending mobile gear is utilized, which has the potential to impact seafloor habitat. Effort is likely to take place over sand/mud bottoms given sand/mud/rock bottoms are the preferred substrates for butterfish (see butterfish EFH Source Document, NMFS 1999, for details). Bottom-tending mobile gear will generally avoid rocky areas that cause gear damage unless catches would be higher over rocky areas, which is not known to be the case with butterfish. The butterfish ACT also can limit longfin squid effort due to the butterfish cap. Longfin squid are caught in bottom trawls, which have the potential to adversely impact seafloor

habitat. The Council has already minimized to the extent practicable impacts to other fish EFH by 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).
4b – preferred – The ACT of 7,560 mt would be the likely effective catch limit.
4c – high alternative – The ACT of 9,450 mt would be the likely effective catch limit.
4d – low alternative – The ACT of 5,670 mt would be the likely effective catch limit.

The ACT increases partly could affect longfin squid effort through the butterfish cap and partly affect butterfish effort through landings quotas increasing. Related to the butterfish cap and longfin squid effort, higher cap amounts as proposed in 4b-4d would allow the longfin squid fishery to operate as it recently has, meaning that impacts would be close to the status quo for 4b, 4c, and 4d – no cap closures have occurred at even the status-quo cap level.

Related to butterfish quotas, the above ACTs involve an increase from the current DAH of 1,087 mt to 2,570 mt for 4b, to 3,213 mt for 4c, and to 1,928 for 4d. These are increases of 1,483 for 4b, 2,216 mt for 4c, and 841 mt for 4d. While this is a large percentage increase, overall effort changes are not expected to be more than minimal compared to the status quo as described in the following paragraph.

In 2001, the last year of substantial directed butterfish fishing, it only took the 10 largest trips by just two vessels to catch 2,214 mt, just about the amount of the largest potential increase considered. These trips spent 86 days at sea and with likely a day of travel at the beginning and end for offshore fishing, likely spent around 66 days fishing, a very small number compared to overall bottom trawl activity. The increase under the preferred alternative would have amounted to just 7 trips. Furthermore, those vessels might not actually expend extra total bottom trawl activity to pursue butterfish but may target butterfish when they would have otherwise been targeting longfin squid. Thus the increases to the butterfish ACT may only lead to a few additional butterfish trips, and may not lead to any appreciable change in total effort utilizing bottom-tending mobile gear, as longfin squid fishing uses the same gear. If such redirection occurs, due to similar habitat preferences of butterfish and longfin squid, the fishing activity would likely occur in similar habitats and as detailed in section 5, recent catches of butterfish and longfin squid have occurred in similar statistical areas. Thus total effort should change only minimally compared to the status quo in response to any of the action alternatives under consideration, which means that impacts on habitat should not change more than minimally. Given the above, the expected overall impacts are best characterized as minimal and/or temporary (though "small negative") for 4b, 4c, and 4d compared to the status quo alternative.

Alternative Set 5 – Butterfish Management

Note: As discussed in table 49 and accompanying text, the availability of the targeted species may drive effort as much as quotas and other regulations.

5a – Status Quo

Under the status quo system of trip limits and closures, landings have not approached the status quo landings limit of 1072 mt (see section 6.6.3). Thus even if the landings limit is increased in other alternatives or remains the same, a similar level of effort could be expected if the status quo system of trip limits and closures is maintained. There is some directed fishing for butterfish currently, and bottom-tending mobile gear is utilized, which has the potential to impact seafloor habitat. Effort is likely to take place over sand/mud bottoms given sand/mud/rock bottoms are the preferred substrates for butterfish (see butterfish EFH Source Document, NMFS 1999, for details). Bottom-tending mobile gear will generally avoid rocky areas that cause gear damage unless catches would be higher over rocky areas, which is not known to be the case with butterfish. The Council has already minimized to the extent practicable impacts to other fish EFH by 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).

5b – Preferred – 3-Phase Butterfish Management System

The proposed new 3-Phase Butterfish Management System eliminates trips limits for part of the year to allow a directed fishery and increases trip limits for other parts of the year to avoid causing regulatory discarding of incidentally-caught butterfish outside of the directed fishery. Avoiding regulatory discarding will not change effort or habitat impacts. The directed fishery that is allowed by the combination of the expanded ACT as described in Alternative 4b and the partial elimination of trip limits contemplated in 5b would likely lead to additional directed butterfish fishing. However, as detailed in the analysis for 4b/4c/4d above, the actual amount of increased effort and therefore trawled bottom habitat is best characterized as minimal and/or temporary (though “small negative”) compared to the status quo alternative.

5c – Simplified Expanded Butterfish Fishery

A simplified (compared to the preferred alternative) expanded butterfish fishery would substantially increase trip limits for part of the year to allow a directed fishery and increases trip limits for other parts of the year to avoid causing regulatory discarding of incidentally-caught butterfish outside of the directed fishery. Avoiding regulatory discarding will not change effort or habitat impacts. The directed fishery that is allowed by the combination of the expanded ACT as described in Alternative 4b and the increased trip limits contemplated in 5c would likely lead to additional directed butterfish fishing. However, as detailed in the analysis for 4b/4c/4d above, the actual amount of increased effort and therefore trawled bottom habitat is best characterized as minimal and/or temporary (though “small negative”) compared to the status quo alternative. The 200,000 pound trip limit proposed in 5c might cause more trips to occur compared to 5b but it is likely that approximately the same number of hauls/bottom contact would occur; they would just be spread out over more trips.

Research Set Aside

The RSA quota is part of the overall quota. If any portion of the 3-percent RSA quota of MSB species is not awarded to an RSA project, the remainder will be returned to the commercial quota. With the exception of exemptions from possession limits and quota closures, the RSA quota will be harvested in the same manner as the commercial fishery. Therefore, it is unlikely that the pursuit of fish under RSA projects would have negative habitat impacts compared to if the quota had been utilized by the directed fishery, especially since differences in how an RSA project uses the quota compared to directed fishery are likely to be minor.

Habitat Impacts Summary

Status-quo MSB fishing impacts habitat and EFH but has been minimized to the extent practicable by other actions. Most of the alternatives considered in this document should have no or similar impacts relative to the status quo. Those that may have directional impacts are: 3d could have positive impacts related to reducing longfin squid effort. The higher butterfish specifications (4b, 4c, 4b) may have small negative impacts related to higher effort but they should be minimal.

7.3 Impacts on Protected Resources

Alternative Set 1 – Mackerel Catch Levels

Note: As discussed in table 49 and accompanying text, the availability of the targeted species may drive effort as much as quotas and other regulations.

1a/1b – status quo – The combination of the commercial and recreational ACTs, 37,350 mt, would be the likely effective U.S. catch limit. 1a would extend the status quo to 2013 while 1b would implement multi-year specs with the status quo for 2013-2015.

Due to the year-to-year variation in catch and effort in the mackerel fishery, it is difficult to quantify protected species impacts. Section 6.4 describes the available information on recent interactions between the mackerel fishery and endangered and other protected species. Since the mackerel fishery overlaps with some marine mammal distributions, some marine mammal interactions are possible with the species highlighted in Section 6.4. The distribution of sea turtles also overlaps with the operation of the mackerel fishery. However, most of these species, including green, Kemp's ridley and loggerhead sea turtles, stay close to the coast feeding on bottom dwelling species (i.e., crabs) or vegetation where the mackerel fishery is less likely to occur and no interactions have been observed. Leatherbacks generally do not prey on fish and are unlikely to be attracted to operations of this fishery. While consumption of mackerel by Loggerheads has been documented, loggerheads do not generally target fast-moving fish such as mackerel (Dodd 1988). Thus, interactions between sea turtles and the mackerel fishery are not anticipated. Atlantic sturgeon occurs in the mackerel fishing area throughout the mackerel fishing season. The Stein et al. (2004a) review of sturgeon bycatch from 1989-2000 showed no observed sturgeon bycatch on vessels targeting Atlantic mackerel. See Section 6.4 for additional information on Atlantic sturgeon interactions in small-mesh otter trawl fisheries.

Since the likely effective catch limit would remain the same for 1b, impacts would be expected to be similar to the status quo.

1c – high alternative – The combination of the commercial and recreational ACTs, 54,412 mt, would be the likely effective U.S. catch limit.

Due to the year-to-year variation in catch and effort in the mackerel fishery, it is difficult to quantify protected species impacts but since the likely effective catch limit and fishing effort would be higher than the status-quo, the impact of 1c as an implemented specification should be less protective than the status quo. However, since catch has recently been below even the status-quo alternative’s specifications (see section 6.6.2), impacts may be similar to the status quo. Given the above, overall impacts are likely best characterized as “small negative” compared to the status quo.

1d – low alternative – The combination of the commercial and recreational ACTs, 20,288 mt, would be the likely effective U.S. catch limit.

Due to the year-to-year variation in catch and effort in the mackerel fishery, it is difficult to quantify protected species impacts but since the likely effective catch limit would be less than the status-quo, the impact of 1d as an implemented specification should be more protective than the status quo. However, since catch has recently been below this alternative's specifications (see section 6.6.2), impacts may be similar to the status quo. Given the above, overall impacts are likely best characterized as "small positive" compared to the status quo

Alternative Set 2 – Longfin Squid Closure Regulations

Note: As discussed in table 49 and accompanying text, the availability of the targeted species may drive effort as much as quotas and other regulations.

The basic interactions between small mesh bottom trawl fisheries and protected resources are discussed in section 6.4. Under the status quo, these interactions would continue but are monitored and mitigation alternatives would be developed if necessary.

Under the status quo (2a) the longfin squid fishery is closed upon reaching 90% of its Trimester 1 and/or 2 quotas, ending effort (and limiting protected resource impacts) in that Trimester. Since overages and underages roll over between trimesters, temporally, making the Trimester 1 and 2 closure buffers 5% smaller at the end of the trimester (the preferred alternatives 2b and 2c) mean that a small amount of extra quota (478 mt in Trimester 1 and 189 mt in Trimester 2) would be available near the end of Trimester 1 (late April) and/or Trimester 2 (late August) respectively, instead of being available toward the end of Trimester 3 (most likely November-December). Since overall effort may not be impacted, and since the quota and therefore potential effort transfers are small (even if both occurred) compared to either the overall quota (22,220 mt) or the trimester quotas, even temporal impacts should be minimal. This is especially likely since it will likely be only once every few years when the quota actually would close in the last 2 weeks of Trimester 1 or 2. In the last five years (2008-2012), such an occurrence has only happened once (Trimester 2, 2011). Thus if either or both of the action alternatives (2b,2c) were implemented, protected resource impacts would be expected to remain approximately the same as the status quo.

Alternative Set 3 – Butterfish Cap Regulations

Note: As discussed in table 49 and accompanying text, the availability of the targeted species may drive effort as much as quotas and other regulations.

The basic interactions between small mesh bottom trawl fisheries and protected resources are discussed in section 6.4. Under the status quo (3a), these interactions would continue but are monitored and mitigation alternatives would be developed if necessary. Alternative 3b (observer notification) is not expected to impact overall longfin squid effort so any impacts should be minimal.

Alternative 3c would lower the Trimester 1 closure buffer for the longfin squid fishery due to the butterfish cap from 20% to 10% on April 15 and after. This has the potential to allow more catch and effort in late April than would have otherwise occurred, and cause less catch and effort later in the year (the annual closure buffer is not being changed). However, allowing approximately 10% more squid to be taken in Trimester 1 and less squid to be taken later in the year is likely to have a minimal impact compared to overall longfin squid effort and impacts, especially since it would probably only be once every few years where one might have a closure take effect from April 15-April 30. Thus impacts would be expected to be similar to the status quo.

Alternative 3d (Longfin Squid Fishing Would Close when 75% of the Annual Butterfish cap was Projected to be Reached) could reduce overall longfin squid fishing activity by closing Trimester 2 if it nears the total cap quota, which would have a positive protected resource impact compared to the status quo by reducing overall effort (even though overages and underages roll over between Trimesters, theoretically more than 100% of the entire cap could be taken in Trimester 2).

Alternative Set 4 – Butterfish Catch Levels

Note: As discussed in table 49 and accompanying text, the availability of the targeted species may drive effort as much as quotas and other regulations.

The basic interactions between small mesh bottom trawl fisheries and protected resources are discussed in section 6.4. Under the status quo (4a2), these interactions would continue but are monitored and mitigation alternatives would be developed if necessary. The original status quo (4a1) is similar enough to the current status quo the impacts would be expected to be similar. As detailed above in the habitat impact analysis for this alternative set, any of the increases proposed in alternative set 4 (4b, 4c, 4d) are likely to lead to only a minimal increase in overall fishing effort. Thus impacts would be expected to be similar to the status quo under any of the butterfish catch level alternatives under consideration. Given the above, overall impacts from any of the action alternatives are likely best characterized as likely “small negative” compared to the status quo.

Alternative Set 5 – Butterfish Management

Note: As discussed in table 49 and accompanying text, the availability of the targeted species may drive effort as much as quotas and other regulations.

5a – Status Quo

The basic interactions between small mesh bottom trawl fisheries and protected resources are discussed in section 6.4. Under the status quo (5a), these interactions would continue but are monitored and mitigation alternatives would be developed if necessary.

5b – Preferred – 3-Phase Butterfish Management System

The proposed new 3-Phase Butterfish Management System eliminates trips limits for part of the year to allow a directed fishery and increases trip limits for other parts of the year to avoid causing regulatory discarding of incidentally-caught butterfish outside of the directed fishery. Avoiding regulatory discarding will not change effort or protected resource impacts. The directed fishery that is allowed by the combination of the expanded ACT as described in Alternative 4b and the partial elimination of trip limits contemplated in 5b would likely lead to additional directed butterfish fishing. However, as detailed in the analysis for 4b/4c/4d above, the actual amount of increased effort and therefore protected resource impacts are best characterized as minimal (though "small negative") compared to the status quo alternative.

5c – Simplified Expanded Butterfish Fishery

A simplified (compared to the preferred alternative) expanded butterfish fishery would substantially increase trip limits for part of the year to allow a directed fishery and increase trip limits for other parts of the year to avoid causing regulatory discarding of incidentally-caught butterfish outside of the directed fishery. Avoiding regulatory discarding will not change effort or protected resource impacts. The directed fishery that is allowed by the combination of the expanded ACT as described in Alternative 4b and the increase in trip limits contemplated in 5c would likely lead to additional directed butterfish fishing. However, as detailed in the analysis for 4b/4c/4d above, the actual amount of increased effort and therefore protected resource impacts are best characterized as minimal (though "small negative") compared to the status quo alternative. The 200,000 pound trip limit proposed in 5c might cause more trips to occur than with 5b (with more transit and potential ship-strikes of marine mammals and turtles), but it is likely that approximately the same number of hauls would occur; they would just be spread out over more trips.

Research Set Aside

The RSA quota is part of the overall quota. If any portion of the 3-percent RSA quota of MSB species is not awarded to an RSA project, the remainder will be returned to the commercial quota. With the exception of exemptions from possession limits and quota closures, the RSA quota will be harvested in the same manner as the commercial fishery. Therefore, it is unlikely that the pursuit of fish under RSA projects would have negative protected resource impacts compared to if the quota had been utilized by the directed fishery, especially since differences in how an RSA project uses the quota compared to directed fishery are likely to be minor.

<u>Protected Resources Impacts Summary</u>

Status-quo impacts are described in section 6.4. Most of the action alternatives considered in this document should have similar impacts relative to the status quo. Those that may have directional impacts are: The high (1c) and low (1d) alternatives for mackerel may have negative and positive impacts for protected resources respectively compared to the status quo. 3d could have a positive impact for protected resources compared to the status quo because it may mean the cap closes longfin squid earlier than would otherwise occur, reducing overall effort. The higher butterfish catch levels (4b, 4c, 4d) may have small negative impacts compared to the status quo related to slightly higher butterfish effort, but actual effort changes should be minimal.

7.4 Socioeconomic Impacts

Alternative Set 1 – Mackerel Catch Levels

Note: As discussed in table 49 and accompanying text, the availability of the targeted species may drive effort and catch/revenue as much as quotas and other regulations.

1a/1b – status quo – The combination of the commercial and recreational ACTs, 37,350 mt, would be the likely effective U.S. catch limit. 1a would extend the status quo to 2013 while 1b would implement multi-year specs with the status quo for 2013-2015.

Alternatives 1a and 1b maintain the current catch quotas. Due to the uncertainty regarding the mackerel stock and its productivity, it is difficult to quantify impacts but given the likely effective catch limit would remain the same, impacts would be expected to be similar to the prior fishing year – the mackerel stock would continue to provide benefits to human communities related to fishing, dependent on year-to-year availability (see section 6.6.2). 2011 mackerel landings were about 531 mt generating ex-vessel revenues of about $0.4 million. The mackerel fishery usually catches 95% of its mackerel by May 1 so while incomplete, available 2012 data suggests that around 5,000-6,000 mt will be landed in 2012.

1c – high alternative – The combination of the commercial and recreational ACTs, 54,412 mt, would be the likely effective U.S. catch limit.

Due to the uncertainty regarding the mackerel stock and its productivity, it is difficult to quantify impacts but since the likely effective catch limit would be higher than the status-quo, the impact of 1c as an implemented specification could lead to higher short-term revenues but lower long-term revenues if the higher catches reduced the future productivity of the stock. The catches that would be allowed under 1c are higher than that considered acceptable biologically by the SSC so negative long-term stock consequences could be possible with this alternative compared to the status quo. Since the fishery didn't harvest anywhere close to this ACT in recent years (and only twice in the history of the domestic fishery – 2004 and 2006; see 6.6.2), there probably would be no impact but given the potential effect on productivity, impacts are still likely "negative" compared to the status quo. 1d is also negative but given the uncertainty involved a relative comparison is not feasible.

1d – low alternative – The combination of the commercial and recreational ACTs, 20,288 mt, would be the likely effective U.S. catch limit.

Due to the uncertainty regarding the mackerel stock and its productivity, it is difficult to quantify impacts but since the likely effective catch limit would be less than the status-quo, the impact of 1d as an implemented specification could lead to lower short-term revenues. While the fishery has not achieved near this ACT in recent years (see 6.6.2), this ACT would have been binding from 2002-2009. Potential long-term impacts of reducing short-term catches are unknown for this stock. Given the above, impacts are likely "negative" compared to the status quo. 1c is also negative but given the relative uncertainty involved, a comparison is not feasible.

Alternative Set 2 – Longfin Squid Closure Regulations

Note: As discussed in table 49 and accompanying text, the availability of the targeted species may drive effort and catch/revenue as much as quotas and other regulations.

2a – status quo – No changes would be made to the end-of Trimester closure procedures.

The longfin stock would continue to provide benefits to human communities related to fishing, dependent on year-to-year availability (see section 6.6.4). 2011 landings totaled 9,554 mt and generated $24.1 million in ex-vessel revenues. 2012 landings totaled more than these values by September 1 so 2012 landings and revenues should be at least somewhat higher. Currently longfin squid in Trimester 1 (Jan-April 30) and Trimester 2 (May-Aug 31) closes once 90% of the quota has been projected to be reached. Under the status quo there is a 10% closure buffer at all times during these trimesters. There could be a closure in the last weeks of a Trimester, and with the 10% closure buffer the full Trimester allocation is never reached, resulting in unnecessary disruption for the longfin squid fishery participants.

2b/2c – Update the 90% closure threshold to 95% in the last two weeks of a Trimester (1&2).

Currently longfin squid in Trimester 1 (Jan-April 30) and Trimester 2 (May-Aug 31) closes once 90% of the quota has been projected to be reached. While 90% is likely appropriate for earlier closures when the pace of the longfin squid fishery is not as well understood and there may be 1-3 months left before the next Trimester begins, reserving 10% as a closure buffer in the last week or two of the Trimester is likely unnecessary and may lead to unnecessary closures at the end of a Trimester.

These alternatives would help ensure that unnecessary closures do not occur at the end of trimesters by decreasing the closure buffer by 5%. While higher catch in a Trimester may mean lower catches later in the year (overages and underages roll over from earlier Trimesters to later Trimesters), the main benefit is that a 5% closure buffer in the last two weeks of a Trimester should be sufficient to avoid substantial overages, and lowering the buffer reduces the probability of a 1-2 week closure at the end of one trimester until the beginning of the next trimester. This would reduce disruption for the longfin squid fishery and its participants compared to the status quo. Participants have reported that avoiding such disruptions has economic benefits for producers and processors, though such benefits are difficult to quantify. Overall longfin squid catches would not necessarily be expected to change. There are also administrative costs associated with closures that would be avoided if unnecessary closures are avoided. Given the above, overall impacts are likely best characterized as likely “small positive” compared to the status quo, especially since as discussed above closures do not frequently occur in the last two weeks of a trimester. The benefit would likely be bigger with 2b than 2c and additive if both were implemented.

Alternative Set 3 – Butterfish Cap Regulations

Note: As discussed in table 49 and accompanying text, the availability of the targeted species may drive effort and catch/revenue as much as quotas and other regulations.

3a – Status Quo – No change to trip notification times or Trimester closures.

The longfin stock would continue to provide benefits to human communities related to fishing, dependent on year-to-year availability (see section 6.6.4). 2011 landings totaled 9,554 mt and generated $24.1 million in ex-vessel revenues. 2012 landings totaled more than these values by September 1 so 2012 landings and revenues should be at least somewhat higher. The 72 hour trip notification would continue to make it difficult for participants making shorter trips to plan those trips. The 80% closure threshold for the butterfish cap for the entire length of Trimester 1 would continue to pose the risk of unnecessary end-of-Trimester closures, and Trimester 2 could still use up the entire annual butterfish cap quota without any possibility of closure (thus eliminating any Trimester 3 fishery).

3b – Change the longfin squid trip notification from 72 to 48 hours.

Since the beginning of the butterfish cap for the longfin squid fishery, some fishermen have been complaining that the 72-hour notification requirement for longfin squid trips is impracticable given how they take short, variable trips. These fishermen typically take shorter trips that are more dependent on weather and local availability, making either planning trips 3 days in advance difficult or making waiting 72 hours problematic from a business planning perspective. While reducing the notification time to 48 hours will not solve all of these problems, multiple fishermen have stated to Council staff that a reduction to 48 hours would be an improvement for them in terms of efficient operation compared to the status quo. The exact monetary benefits of such an improvement cannot be estimated however. Given the above, overall impacts are likely best characterized as likely "small positive" compared to the status quo.

3c – Update the Trimester 1 butterfish cap closure to 90% on April 15 (i.e. for approximately the last two weeks of Trimester 1).

Currently the butterfish cap in Trimester 1 (Jan-April 30) closes once 80% of the butterfish cap for that Trimester has been projected to be reached. While 80% is likely appropriate for earlier closures when the pace of the longfin squid fishery is not as well understood and there may be 1-3 months left before the next Trimester begins, reserving 20% as a closure buffer in the last week or two of the Trimester is likely unnecessary and may lead to unnecessary closures at the end of a Trimester.

While higher catch in Trimester 1 may mean lower catches later in the year (overages and underages roll over from earlier Trimesters to later Trimesters), the main benefit is that a 10% closure buffer in the last two weeks of a Trimester should be sufficient to avoid substantial overages, and lowering the buffer reduces the probability of a 1-2 week closure at the end of one trimester until the beginning of the next trimester. This would reduce disruption for the longfin squid fishery and its participants. Participants have reported that avoiding such disruptions has economic benefits for producers and processors, though such benefits are difficult to quantify. Overall longfin squid catches would not necessarily be expected to change. There are also administrative costs associated with closures that would be avoided if unnecessary closures are avoided. Given the above, overall impacts are likely best characterized as likely "small positive" compared to the status quo in a manner similar to 3b.

3d – Trimester 2 Longfin Squid Fishing Would Close when 75% of the Annual Butterfish Cap was Projected to be Reached.

This alternative could resolve a potential distributional issue where under the current regulations Trimester 2 cannot close, which means that all of Trimester 3's cap can be used up before Trimester 3 begins. While this closure could mean less overall longfin squid is caught in one year (reducing revenues), it will help protect the long-term sustainability of the butterfish stock by ensuring ABCs are not exceeded. Given the above, overall human community impacts are likely best characterized as likely "small positive" compared to the status quo because the productivity of the butterfish stock would be maintained. In addition, it is not expected that closures due to this measure would be likely to frequently occur under the proposed butterfish cap for 2013. That cap is expected to be higher than previous years so the likelihood of a Trimester 2 closure due to this measure is small. If a closure did occur, it would probably mean that additional quota is available in Trimester 3, which means that overall revenues might not be impacted. The only situation where overall revenues would be impacted is if more than 100% of the butterfish cap would have been reached in Trimester 2, which again seems unlikely given the proposed (or current) butterfish cap for 2013.

Alternative Set 4 – Butterfish Catch Levels

Note: As discussed in table 49 and accompanying text, the availability of the targeted species may drive effort and catch/revenue as much as quotas and other regulations.

4a1 (Original Status Quo) and 4a2 (Current Status Quo)

4a1 and 4a2 are similar enough such that under either, the butterfish stock would likely continue to provide similar benefits to human communities related to fishing, dependent on year-to-year availability (see section 6.6.3). Butterfish catch levels must be analyzed in terms of their impact on both butterfish landings and longfin squid landings related to the butterfish cap. In 2011, the ex-vessel value of butterfish landings was $1.1 million dollars, from landings of 664 mt and a price of $1,692/mt. 2012 landings appear likely to end up around the same as 2011. These landings also have a multiplied impact related to crew and support industries but a multiplier for butterfish is unavailable. The status quos would be likely to continue to support similar landings and revenues for human communities. In terms of the butterfish cap and longfin squid landings, the status quos have not caused a shutdown of the longfin squid fishery relative to the butterfish cap as of the time this document was written so there have been no negative impacts on the longfin squid fishery related to either status-quo butterfish catch level as of yet. Longfin squid landings and revenues are described above.

4b – Preferred option with an ACT of 7,560mt.

Since there have been no longfin squid shutdowns related to status-quo butterfish catch levels yet (see details next paragraph), the primary quantifiable benefit of the higher, preferred catch levels would be additional butterfish landings. 4b would have a DAH landings level of 2,570 mt. This is 1,906 mt higher than 2011 landings, and could translate into $3.2 million dollars in additional ex-vessel revenues at 2011 prices. These additional revenues would also have a multiplied impact related to crew and support industries but a multiplier for butterfish is unavailable. It is not clear if the price of $1,692/mt could be maintained at higher landings volumes however, so the gain in revenues may be lower.

While there has not yet been an impact on the longfin squid fishery related to the status-quo butterfish catch levels and accompanying butterfish cap, 4b would implement a butterfish cap that is 1,299 mt higher than the status quo. Given the relatively high value of the longfin squid fishery ($15-$25 million in recent years), there could be substantial benefits to the longfin squid fishery of a substantially higher butterfish cap, but given the lack of a closure to date from the status-quo catch levels, and given that any closure would also depend on longfin catch levels and the ratio of incidental butterfish catch, it is difficult to predict what actual impact a higher butterfish cap might have. Given the above, overall impacts are likely best characterized as likely “positive” compared to the status quo.

4c – High option with an ACT of 9,450 mt.

Since there have been no longfin squid shutdowns related to status-quo butterfish catch levels yet (see details in next paragraph), the primary benefit of the higher, preferred catch levels would be additional butterfish landings. 4c would have a DAH landings level of 3,213 mt. This is 2,549 mt higher than 2011 landings, and could translate into $4.3 million dollars in additional ex-vessel revenues at 2011 prices. These additional revenues would also have a multiplied impact related to crew and support industries but a multiplier for butterfish is unavailable. It is not clear if the price of $1,692/mt could be maintained at higher landings volumes however, so the gain in revenues may be lower. While the work done recently by Miller and Rago suggest that these catch levels would not be likely to jeopardize the butterfish stock, these catch levels would be above the SSC-recommended ABC and if the long-term productivity of the butterfish stock was jeopardized by these higher catch levels, then there could be negative long-term socioeconomic impacts. Given the above, overall impacts are likely best characterized as likely “positive” compared to the status quo.

While there has not yet been an impact on the longfin squid fishery related to the status-quo butterfish catch levels and accompanying butterfish cap, 4c would implement a butterfish cap that is 2,460 mt higher than the status quo. Given the relatively high value of the longfin squid fishery ($15-$25 million in recent years), there could be substantial benefits to the longfin squid fishery of a substantially higher butterfish cap, but given the lack of a closure to date from the status-quo catch levels, and given that any closure would also depend on longfin catch levels and the ratio of incidental butterfish catch, it is difficult to predict what actual impact a higher butterfish cap might have.

Given the above, overall impacts are likely best characterized as likely “positive” compared to the status quo.

4d – Low option with an ACT of 5,670 mt.

Since there have been no longfin squid shutdowns related to status-quo butterfish catch levels yet, the primary benefit of the higher, preferred catch levels would be additional butterfish landings. 4d would have a DAH landings level of 1,928 mt. This is 1,264 mt higher than 2011 landings, and could translate into $2.1 million dollars in additional ex-vessel revenues at 2011 prices. These additional revenues would also have a multiplied impact related to crew and support industries but a multiplier for butterfish is unavailable. It is not clear if the price of $1,692/mt could be maintained at higher landings volumes however, so the gain in revenues may be lower.

While there has not yet been an impact on the longfin squid fishery related to the status-quo butterfish catch levels and accompanying butterfish cap, 4d would implement a butterfish cap that is 210 mt higher than the status quo. Given the relatively high value of the longfin squid fishery ($15-$25 million in recent years), there could be benefits to the longfin squid fishery of a higher butterfish cap, but given the lack of a closure to date from the status-quo catch levels, and given that any closure would also depend on longfin catch levels and the ratio of incidental butterfish catch, it is difficult to predict what actual impact a higher butterfish cap might have. Given the above, overall impacts are likely best characterized as likely "positive" compared to the status quo but less so than 4c or 4d.

Alternative Set 5 – Butterfish Management

Note: As discussed in table 49 and accompanying text, the availability of the targeted species may drive effort and catch/revenue as much as quotas and other regulations.

5a – Status Quo – Trip limits would remain as they are.

The butterfish stock would continue to provide benefits to human communities related to fishing, dependent on year-to-year availability (see section 6.6.3). In 2011, the ex-vessel value of butterfish landings was $1.1 million dollars, from landings of 664 mt and a price of $1,692/mt. The 2012 butterfish landings quota is 1,072 mt, but 2012 landings appear likely to end up around the same as 2011. These landings also have a multiplied impact related to crew and support industries but a multiplier for butterfish is unavailable. The status quo would be likely to continue to support similar landings and revenues for human communities.

The current low trip limits would not allow the higher quotas proposed in this document to be utilized. If the status quo for trip limits was maintained and the butterfish catch levels are maintained, then the current level of butterfish landings, revenues, and socio-economic benefits would continue (see above in 4a2). If the status quo for trip limits was maintained and the butterfish catch levels are increased (see above in 4b), then the current trip limits would prevent the higher landings levels from being caught since the current trip limits are restrictive. So while there would be no change from the status quo overall, the current trip limits would be inefficient compared to 5b and 5c if butterfish catch/landings levels are increased as there would be a mismatch between the quotas and the ability of the fleet to catch those quotas given the currently restrictive trip limits.

5b – 3 Phase Butterfish Management System

5b creates a system of trip limits that should allow the higher quotas proposed in this document to be achieved while minimizing risks of quota overages. 5b also segments the higher quota into several phases that would allow several components of the butterfish fishery to participate – both the historical larger participants as well as smaller participants would benefit. The stepped closure thresholds that reserve less and less quota for post-closure incidental landings as the year progresses should allow most of the quota to be utilized which minimizing the risk of an overage (from the reverse perspective more and more quota is reserved for post-closure incidental landings the earlier a closure occurs). From this perspective, 5b facilitates achieving the benefits of a higher butterfish quota described in the impacts for Alternative Set 4 above. Given the above, overall impacts are likely best characterized as likely “positive” compared to the status quo.

5c – A simplified expanded butterfish fishery.

5c would likely allow much of the higher quotas described in this document to be achieved by implementing a 200,000 pound trip limit for butterfish until a closure of the directed fishery. However, operation of the directed butterfish fishery would not occur as efficiently as with 5b. First, the historical larger participants fished at trips more than 400,000 pounds per trip and have reported that trip limits may not allow them to fish as efficiently as would be necessary to achieve a low enough price to successfully re-enter traditional international butterfish markets. Second, the simple closing at 80% of the DAH may leave substantial butterfish quota unused if reached late in the year or may not reserve enough butterfish quota for incidental landings if reached early in the year. The phased approach proposed in 5b, by changing the reserve threshold as the year progresses, should simultaneously ensure most quota is utilized while also ensuring enough is kept in reserve to avoid landings overages. Given the above, overall impacts are likely best characterized as likely “positive” compared to the status quo, but less positive than 5b.

Research Set Aside

Under this program, successful applicants receive a share of the annual ACT for the purpose of conducting scientific research. The Nation receives a benefit in that data or other information about that fishery is obtained for management or stock assessment purposes that would not be obtained otherwise. In fisheries where the entire DAH is taken and the fishery closes earlier than would have occurred if the RSA program was not allocated a portion of the ACT, the economic and social costs of the program are shared among the non-RSA participants in the fishery. That is, each participant in a fishery that utilizes a resource that is limited by the annual DAH relinquishes a share of the amount of quota retained by the RSA program. Given the impacts of using a minimal amount of the ACT are spread among the fishery, impacts to vessels are not expected to be substantial. Also, even these losses should be recouped in the long term because the scientific benefits derived from RSA projects should lead to more efficient and effective management of the fisheries.

<u>Socioeconomic Impacts Summary</u>

All of the preferred alternatives should maintain similar impacts compared to the status quo or lead to positive impacts compared to the status quo. 4b and 5b appear likely to have the largest benefits (especially when combined together), with 2b, 2c, 3b, 3c, 4c, 4d, and 5c having smaller benefits.

7.5 Impacts on non-Target Fish Species

Note: Non-target species interactions in the MSB fisheries are summarized in Section 6.5.

Alternative Set 1 – Mackerel Catch Levels

Note: As discussed in table 49 and accompanying text, the availability of the targeted species may drive effort as much as quotas and other regulations.

1a/1b – status quo/preferred (1b would be for 3 years however) – The combination of the commercial and recreational ACTs, 37,350 mt, would be the likely effective U.S. catch limit.

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 status-quo prosecution of the mackerel fishery (see 6.5). Due to the year-to-year variation in catch and effort in the mackerel fishery, it is difficult to quantify non-target impacts and the status-quo quotas would allow the fishery activity to expand beyond recent years (see 6.6.2) if availability is high. 1b would just involve the status-quo impacts being extended for 3 years rather than 1 year.

1c – high alternative – The combination of the commercial and recreational ACTs, 54,412 mt, would be the likely effective U.S. catch limit with an assumed Canadian catch assumption of 36,219 mt. A full breakdown of all specifications is available in 5.1.c.

Due to the year-to-year variation in catch and effort in the mackerel fishery, it is difficult to quantify non-target impacts but since the likely effective catch limit would be higher than the status-quo, the impact of 1c as an implemented specification should be less protective than the status quo. However, since catch has recently been below even the status quo alternative's specifications (see 6.6.2), impacts may be similar to the prior fishing year. Given the above, overall impacts are likely best characterized as "negative" compared to the status quo.

1d – low alternative – The combination of the commercial and recreational ACTs, 20,288 mt, would be the likely effective U.S. catch limit with an assumed Canadian catch assumption of 36,219 mt. A full breakdown of all specifications is available in 5.1.d.

Due to the year-to-year variation in catch and effort in the mackerel fishery, it is difficult to quantify non-target impacts but since the likely effective catch limit would be less than the status-quo, the impact of 1d as an implemented specification should be more protective than the status quo. However, since catch has recently been below this alternative's specifications, impacts may be similar to the prior fishing year. Given the above, overall impacts are likely best characterized as "positive" compared to the status quo.

Alternative Set 2 – Longfin Squid Closure Regulations

Note: As discussed in table 49 and accompanying text, the availability of the targeted species may drive effort as much as quotas and other regulations.

Status Quo: Various species are caught incidentally by the longfin squid 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 status-quo prosecution of the longfin squid fishery (see 6.5). Due to the year-to-year variation in catch and effort in the fishery, it is difficult to quantify non-target impacts and the status-quo measures would allow the fishery activity to expand beyond recent years (see 6.6.4).

The action alternatives (2b, 2c) for closures may slightly alter the temporal distribution of longfin squid effort, which could theoretically impact non-target interactions. However, they are not expected to impact overall longfin squid effort and only slightly alter the temporal distribution of effort so impacts should be similar to the status quo (see 7.2 above for temporal details).

Alternative Set 3 – Butterfish Cap Regulations

Note: As discussed in table 49 and accompanying text, the availability of the targeted species may drive effort as much as quotas and other regulations.

Status Quo: Various species are caught incidentally by the longfin squid 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 status-quo prosecution of the longfin squid fishery (see 6.5). Due to the year-to-year variation in catch and effort in the fishery, it is difficult to quantify non-target impacts and the status-quo measures would allow the fishery activity to expand beyond recent years (see 6.6.4).

3b (observer notification) is not expected to change effort at all. 3c (reducing the Trimester 1 closure buffer) may slightly alter the temporal distribution of longfin squid effort, which could theoretically impact non-target interactions. However, 3c is not expected to impact overall longfin squid effort and only slightly alter the temporal distribution of effort, so impacts should be similar to the status quo (see 7.2 above for temporal details). 3d, which as described above could lead to less overall longfin squid effort, could lead to and positive impacts compared to the status quo because it could mean the butterfish cap closes the longfin squid fishery earlier than the status quo.

Alternative Set 4 – Butterfish Catch Levels

Note: As discussed in table 49 and accompanying text, the availability of the targeted species may drive effort as much as quotas and other regulations.

Status Quo (4a2): 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. The list of species taken incidentally and discarded in the butterfish fishery has not been calculated recently because currently there is very limited directed fishing for butterfish because of regulations and market demand. It is also very difficult to identify a directed butterfish trip in the observer database and double counting with other fisheries would likely occur due to the 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. These species are likely minimally impacted by the status-quo low-level butterfish fishery. The same would be true for 4a1, the original status quo as the two are very similar.

All of these species would be expected to be negatively impacted to some degree by the re-establishment of the butterfish fishery compared to the status quo. Impacts would be greater with 4b, greater yet again with 4c, and between 4b and 4c for 4d.

However, in previous years when the butterfish fishery operated there was no minimum mesh and the attitude toward discarding fishery-wide was different. It is also expected that the 3” minimum mesh proposed as part of the reestablishment of the butterfish fishery would minimize bycatch, and any observer data from trips targeting butterfish will be examined to determine if additional steps are needed in the future. In addition, since the effort that is expended toward butterfish is effort that may have been expended toward longfin squid fishing, and longfin squid fishing has fairly high incidental catch rates, there may be minimal overall change in impacts on effort and therefore minimal change to impacts on non-target species. Also, any of the increased butterfish landings levels may only allow 7-10 directed trips if trips with historical levels of catch are taken, further suggesting that overall impacts on non-target species may be minimal for the action alternatives compared to the status quo.

Since the butterfish ABC/ACT is tied to the longfin squid’s butterfish mortality cap, the higher the butterfish ABC/ACT is, the less likely a related closure would be (i.e. more longfin squid effort). Various species are caught incidentally by the longfin squid fishery, as detailed in section 6.5. 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. Higher butterfish caps could theoretically impact non-target species in the longfin squid fishery (by allowing more effort) but since there has not yet been a closure related to the butterfish cap at the status-quo cap levels, the impact may be neutral compared to how the fishery operates under the status-quo.

Alternative Set 5 – Butterfish Management

Note: As discussed in table 49 and accompanying text, the availability of the targeted species may drive effort as much as quotas and other regulations.

5a – Status Quo

Status Quo: 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. The list of species taken incidentally and discarded in the butterfish fishery has not been calculated recently because currently there is very limited directed fishing for butterfish because of regulations and market demand. It is also very difficult to identify a directed butterfish trip in the observer database and double counting with other fisheries would likely occur due to the 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. These species are likely minimally impacted by the status-quo low-level butterfish fishery.

5b – Preferred – 3-Phase Butterfish Management System

The proposed new 3-Phase Butterfish Management System eliminates trips limits for part of the year to allow a directed fishery and increases trip limits for other parts of the year to avoid causing regulatory discarding of incidentally-caught butterfish outside of the directed fishery. Avoiding regulatory discarding will not change effort or non-target impacts. The directed fishery that is allowed by the combination of the expanded ACT as described in Alternative 4b and the partial elimination of trip limits contemplated in 5b would likely lead to additional directed butterfish fishing. However, as detailed in the analysis for 4b/4c/4d above, the actual amount of increased effort and therefore non-target impacts are best characterized as minimal (though "small negative") compared to the status quo alternative.

5c – Simplified Expanded Butterfish Fishery

A simplified (compared to the preferred alternative) expanded butterfish fishery would substantially increase trip limits for part of the year to allow a directed fishery and increase trip limits for other parts of the year to avoid causing regulatory discarding of incidentally-caught butterfish outside of the directed fishery. Avoiding regulatory discarding will not change effort or non-target impacts. The directed fishery that is allowed by the combination of the expanded ACT as described in Alternative 4b and the increase in trip limits contemplated in 5c would likely lead to additional directed butterfish fishing. However, as detailed in the analysis for 4b/4c/4d above, the actual amount of increased effort and therefore non-target impacts are best characterized as minimal (though "small negative") compared to the status quo alternative. The 200,000 pound trip limit proposed in 5c might cause more trips to occur than with 5b, but it is likely that approximately the same number of hauls would occur; they would just be spread out over more trips.

Research Set Aside

The RSA quota is part of the overall quota. If any portion of the 3-percent RSA quota of MSB species is not awarded to an RSA project, the remainder will be returned to the commercial quota. With the exception of exemptions from possession limits and quota closures, the RSA quota will be harvested in the same manner as the commercial fishery. Therefore, it is unlikely that the pursuit of fish under RSA projects would have negative non-target species impacts compared to if the quota had been utilized by the directed fishery, especially since differences in how an RSA project uses the quota compared to directed fishery are likely to be minor.

Non-Target Species Impacts Summary

Most of the action alternatives considered in this document should have similar impacts relative to the status quo (detailed in Section 6.5). Those that may have directional impacts compared to the status-quo are: The high (1c) and low (1d) alternatives for mackerel may have negative and positive impacts for respectively. 3d could have a positive impact because it may mean the cap closes longfin squid earlier than would otherwise occur. The higher butterfish catch levels (4b, 4c, 4d) may have small negative impacts compared to the status quo related to higher effort but should be minimal.

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7.6 Cumulative Impacts of Preferred Alternatives on Identified Valued Ecosystem Components

The impacts of the proposed specifications (preferred alternatives) for 2013 considered herein are expected to be positive since they are likely to provide positive socioeconomic benefits without inducing substantial negative impacts to the managed species, habitat, protected resources, or other non-target species. 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 Tables 1 and 2 in the Executive Summary for the 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, 2013) and Dec 31, 2015, the years where the multi-year specifications for mackerel would expire if implemented. The temporal scope of this analysis does not extend beyond 2015 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 and *Illex* squid and butterfish which occur primarily from the U.S.- Canada border to Cape Hatteras, 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 gradual development of 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. 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 will be revisited in a new upcoming amendment. Amendment 13 to the MSB FMP implemented Annual Catch Limit and Accountability Measures.

In the near future Amendments 14 and 15 are likely to result in additional mitigation of non-target catch of river herring and shads. Amendment 14 will both increase and improve monitoring (vessel, dealer, and observer) of the mackerel and longfin squid fisheries and implement a cap catch of river herrings and shads in the mackerel fishery in 2014. Monitoring improvements include minimization of unobserved catch, observer facilitation and assistance, partial industry funding of higher observer coverage levels, weekly vessel trip reporting, additional trip notification, electronic vessel monitoring systems and reporting, and additional dealer reporting requirements. Amendment 15 will consider adding river herrings and shads as directly managed species by the Council, which could require the Council and NMFS to implement a variety of management and conservation measures ranging from EFH designation to implementation of annual catch limits and accountability measures to ensure catch limits are adhered to.

Amendment 5 to the Atlantic Herring FMP will institute similar river herring measures for the Atlantic Herring fishery (many MSB-permitted vessels have Atlantic herring permits as well) and implementation should be in parallel to Amendment 14. It is not totally clear if a catch cap on river herring will be implemented for the Atlantic herring fishery in the near future.

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 the past fishery actions described in the above section 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.

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. 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 MSFMCA, 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. A database which could facilitate documentation regarding cumulative impacts of non-fishing activities on the physical and biological habitat in the management unit covered by this FMP is not available at this time. The development of a habitat and effect database would expedite the review process and outline areas of increased disturbance. Additional inter-agency coordination would also prove beneficial.

Cumulative Effects Analysis

The cumulative impacts of this FMP were last fully addressed in final form by the EIS for Amendment 11 (http://www.nero.noaa.gov/nero/regs/com.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 also reviewed annually. As noted above, the cumulative impact of this FMP and annual specification process has been positive since its implementation after passage of the Magnuson Act for both the resources and communities that depend on them. Limited access and control of fishing effort through implementation of the 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 significant 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 will 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 and the United States fishing industry. Mackerel were overfished prior to US management under the Magnuson Act and then were subsequently rebuilt under the FMP and subsequent Amendments. While the current 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 in no longer considered overfished. *Illex* has never been designated as overfished since passage of the Sustainable Fisheries Act. In the case of butterfish, the current status is unknown and the Council is maintaining the butterfish mortality cap for the longfin squid fishery to help limit butterfish mortality at SSC-approved levels that should avoid overfishing.

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, but these are generally not quantifiable at present. 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 substantially impacts these populations, especially in comparison to the direct effects on these populations as a result of fishing. However, there is a degree of uncertainty regarding the overall impact of non-fishing activities.

The specifications and other measures under the preferred alternatives for 2013 serve to continue to achieve the objectives of the FMP. The impacts on the environment for each of these alternatives are described in section 7.0. The specifications proposed under the preferred alternative for each species 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), energy of the environment (high energy and variable or low energy and stable), and 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. However since the EFH for most MSB species is the water column, MSB species are generally not susceptible to impacts from the MSB fisheries. 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 for 2013 under the preferred alternatives are expected to result in substantial changes to levels of effort relative to the status quo.

Johnson et al 2008 (available at http://www.nefsc.noaa.gov/publications/tm/tm209/index.html) suggest that for non-fishing impacts, given the wide distribution of the MSB species and their use of EFH (the water column), minor overall negative effects to their habitat are anticipated since the affected areas are localized to specific project sites, which involve a small percentage of the fish populations and their habitat. However, there is a degree of uncertainty regarding the overall impact of non-fishing activities.

7.6.3 Protected Species

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 Marine Mammal Protection MMPA. Eleven are classified as endangered or threatened under the ESA, while others are protected by the provisions of the MMPA. The species protected either by the ESA, the MMPA, or the Migratory Bird Act of 1918, that be found in the environment utilized by mackerel, squid and butterfish fisheries are listed in section 6.4.

As noted above, none of the management measures for 2013 under the preferred alternatives are expected to result in substantial changes to levels of effort relative to the status quo. Prior to the passage of the Magnuson 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. 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 for 2013 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.

Although the negative effects associated with non-fishing activities may have increased negative effects on protected species, it is likely that those actions were minor due to the limited scale of impact compared with the populations at large and their geographical range. However, there is a degree of uncertainty regarding the overall impact of non-fishing activities.

Sturgeon

Compared to gillnet gear, small-mesh otter trawl gear accounts for relatively few sturgeon mortalities (see Section 6 for details). An analysis of observer data has suggested that the proportions of small-mesh gear mortalities by DPS are approximately: 11% Gulf of Maine, 49% New York Bight, 14% Chesapeake Bay, 4% Carolina, 20% South Atlantic, and 2% Canada (which are not listed). NMFS is undertaking a biological opinion to determine what fishery restrictions might be necessary for Council fisheries. The Council has also established a Sturgeon Advisory Panel to help guide its efforts and will consider appropriate measures once the biological opinion is finalized. Because estimated encounters and expected mortalities are lower in recent years than have been estimated in the past, and because small-mesh gear typically accounts for a small proportion of encounters, it is unlikely that the implementation of 2013 Specifications for the MSB fisheries would result in significant impacts to any DPS of Atlantic sturgeon.

River Herring

NMFS is currently reviewing if river herrings (blueback and alewife) need protection as endangered or threatened species under the ESA. The MSB fishery that does have substantial interactions with river herrings is the Atlantic mackerel fishery. No changes are proposed to the Atlantic mackerel specifications, so it is unlikely that the implementation of the proposed 2013 Specifications for the MSB fisheries would result in significant impacts to river herrings. In addition, the Council has approved an Amendment that will improve monitoring of river herring interactions in both the mackerel and longfin squid fisheries and will institute catch caps on river herrings in the mackerel fishery. The Council has also begun an amendment to consider adding river herrings and shads as directly managed species. If NMFS lists any DPS of river herrings, then additional evaluations will take place to determine if additional restrictions might be necessary for Council fisheries.

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 effect of the FMP has been to end foreign exploitation of these resources and 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 harvests at 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 for 2013, in conjunction with the past and future actions described above, should have positive cumulative impacts for the communities which depend on these resources by maintaining stock sizes that provide for optimal sustainable harvests. However, there is a degree of uncertainty regarding the overall impact of non-fishing activities on fishing communities, which may be faced with a variety of challenges.

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 and regulatory discards, and fishing mortality due to an encounter with fishing gear that does not result in capture of fish (i.e., unobserved fishing mortality). Bycatch does not include any fish that legally are retained in a fishery and kept for personal, tribal, or cultural use, or that enter commerce through sale, barter, or trade. Bycatch can substantially increase the uncertainty concerning total fishing-related mortality, which makes it more difficult to assess the status of stocks, to set the appropriate Optimal Yield and define overfishing levels, and to ensure that OYs are attained and overfishing levels are not exceeded. Bycatch may also preclude other more productive uses of fishery resources.

None of the management measures recommended by the Council for 2013 under the preferred alternatives is expected to substantially promote or result in increased overall levels of bycatch relative to the status quo because none are expected to substantially increase 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 catch allowances, and 3) minimum mesh requirements. Other FMPs have also regulated MSB fishing to minimize bycatch (such as the Scup Gear Restricted Areas implemented through its 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. Related to the increase in the butterfish quota for 2013, maintenance of a 3” mesh for directed butterfish fishing, coupled with the fact that the increased quota may only translate into roughly 7 directed trips, means that overall bycatch should continue to be minimized bycatch to the extent practicable. Also, the primary butterfish producer might target longfin squid at the same time it targets butterfish, which means overall non-target impacts may be minimal given the relatively high incidental catch rates currently in the longfin squid fishery.

In addition to mortality on these stocks due to fishing, there are other indirect effects from non-fishing anthropogenic activities in the Atlantic Ocean, but these are generally not quantifiable at present. 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 substantially impacts these populations, especially in comparison to the direct effects on these populations as a result of fishing. However, there is a degree of uncertainty regarding the overall impact of non-fishing activities.

In the near future Amendments 14 and 15 are likely to result in additional mitigation of non-target catch of river herring and shads.

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 interactions of improvements in the efficiency of the fisheries are expected to generate positive impacts. These impacts will be felt most strongly in the social and economic dimension of the environment. These benefits are also summarized in the Regulatory Impact Review and Initial Regulatory Flexibility Analysis, which are appended to this document. Indirect benefits of the preferred alternatives are likely to affect consumers and in 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. The cumulative effects of past actions in conjunction with the proposed measures for 2013 and possible future actions are discussed above. Within the construct of that analysis, the Council has concluded that no significant impacts will result from the specifications proposed for 2013.

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

8.1 Magnuson-Stevens Fishery Conservation and Management Act

The Council manages these resources in accordance with the National Standards required under the Magnuson-Stevens Act. First and foremost the Council strives to meet the obligations of National Standard 1 by adopting and implementing 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 will insure that impacts of its actions remain positive for the benefit of the Nation.

8.1.1 Essential Fish Habitat (EFH) 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 adverse impacts on EFH other than those that may currently exist. 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 for 2013 are expected to jeopardize the sustainability of any target species affected by the action (see section 7 of this document). The proposed quota specifications under the preferred alternatives for each species are consistent with the FMP overfishing definitions 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 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 for 2013 are expected to jeopardize the sustainability of non-target species relative to the 2012 specifications. The butterfish mortality 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 rejuvenation of the butterfish fishery will be examined to see if it causes any issues with non-target species.

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 for 2013 should cause any substantial increase in fishing effort relative to status quo, they are not expected to have any substantial negative impact on EFH or on coastal and ocean habitats relative to the 2012 specifications.

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 mackerel, longfin squid, *Illex* and butterfish 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 specifications of ACT 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, *Illex* and butterfish fisheries are not known to interact with any endangered or threatened 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 either of these endangered species of sea turtles.

Sturgeon

On February 6, 2012, NMFS issued two final rules listing five Distinct Population Segments (DPS) of Atlantic sturgeon as threatened or endangered. However, compared to gillnet gear, small-mesh otter trawl gear used in MSB fisheries accounts for relatively few sturgeon mortalities (see Sections 6 and 7 for details). NMFS is currently undertaking a biological opinion to determine what fishery restrictions might be necessary for Council fisheries. Because estimated encounters and expected mortalities are lower in recent years than have been estimated in the past, and because small-mesh gear typically accounts for a small proportion of encounters, it is unlikely that the implementation of proposed 2013 Specifications for the MSB fisheries would result in significant impacts to any DPS of Atlantic sturgeon. As noted in the August 28, 2012, memo on reinitiating the Section 7 consultation for the MSB fisheries, allowing the MSB fisheries to continue to operate during the consultation process will not violate section 7(a)(2) or 7(d). In addition, the Council has also established a Sturgeon Advisory Panel to help guide its efforts and will consider appropriate measures once the biological opinion is finalized.

River Herrings (Candidate Species)

NMFS is currently reviewing if river herrings (blueback and alewife) need protection as endangered or threatened species under the ESA. The MSB fishery that does have substantial interactions with river herrings is the Atlantic mackerel fishery. No changes are proposed to the Atlantic mackerel specifications, so it is unlikely that the implementation of the proposed 2013 Specifications for the MSB fisheries would result in significant impacts to river herrings. In addition, the Council has approved an Amendment that will improve monitoring of river herring interactions in both the mackerel and longfin squid fisheries and will institute catch caps on river herrings in the mackerel fishery. The Council has also begun an amendment to consider adding river herrings and shads as directly managed species. If NMFS lists any DPS of river herrings, then additional evaluations will take place to determine if additional restrictions might be necessary for Council fisheries.

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 and ecosystem function within the affected area.

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

These fisheries are primarily prosecuted using mid-water and bottom otter trawls. Bottom otter trawls 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 action. 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. As noted in Section 7 of this Environmental Assessment, the proposed action is not expected to have any substantial natural or physical effects within the affected area. Therefore, there are no social or economic impacts interrelated with significant natural or physical environmental impacts that are expected.

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 been in place for many years. In addition, the scientific information upon which the annual quotas are based has been reviewed by the Council's SSC and is the most recent information available. As a result of these facts, the specifications in 2013 are not expected to be controversial. The management framework for butterfish is somewhat different than previous years but still utilizes the same general concept of changing trip limits at certain landings thresholds to keep below a certain overall quota.

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 mackerel, longfin squid and *Illex* squid and butterfish fisheries are prosecuted primarily using bottom otter trawls in the open ocean throughout the Mid-Atlantic Bight and New England. Most of the fishing effort in these fisheries occurs over featureless sand and sand/mud bottoms along the Atlantic Coast. These fisheries are not known to be prosecuted in any unique areas such as historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers or ecologically critical areas. Therefore, the proposed action is not expected to have a substantial impact on any of these areas (see section 7.0 of this document).

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 uncertainty in the year to year performance of the relevant fisheries, the proposed actions are not expected to substantially increase effort or to substantially alter fishing methods and activities. As a result, the effects on the human environment of the proposed specifications for 2013 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 mackerel, longfin squid, *Illex*, and butterfish fisheries are prosecuted primarily using bottom otter trawls in the open ocean throughout the Mid-Atlantic Bight and New England. Most of the fishing effort in these fisheries occurs over featureless sand and sand/mud bottoms along the Atlantic Coast. These fisheries are not known to be prosecuted in any areas that might affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or cause the loss or destruction of significant scientific, cultural or historical resources (sections 6.0 and 7.0 of this document). Therefore, the proposed action is not expected to affect any of these areas.

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 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?

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?

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 2013 mackerel, Squid and Butterfish fisheries, it is hereby determined that the proposed specifications for 2013 will not significantly impact the quality of the human environment as described above and in the supporting Environmental Assessment. In addition, all beneficial and adverse impacts of the proposed action have been addressed to reach the conclusion of no significant impacts. Accordingly, preparation of an EIS for this action is not necessary.

Harold C Mears
Northeast Regional Administrator, NOAA

12/26/12
Date

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 for the 2013 mackerel, squid and butterfish fisheries 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 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 2013 specifications for mackerel, *Illex* and butterfish 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 Section 6.4 of this document.

Formal consultation on the MSB fishery was last completed on October 29, 2010. The October 29, 2010, Biological Opinion concluded that the operation of the MSB fishery is not likely to jeopardize the continued existence of listed species. An ESA Section 7 consultation for 2012 MSB Specifications was completed on September 9, 2011. The consultation concluded that the proposed specification measures do not constitute a modification to the operations of the MSB fisheries under the FMP that would cause an effect to ESA-listed species or critical habitat not considered in the October 29, 2010 Biological Opinion.

In 2012 NOAA's Fisheries Service announced a final decision to list five distinct population segments of Atlantic sturgeon under the Endangered Species Act. The Chesapeake Bay, New York Bight, Carolina, and South Atlantic populations of Atlantic sturgeon were listed as endangered, while the Gulf of Maine population was listed as threatened. Atlantic sturgeon from any of the five DPSs could occur in areas where MSB fisheries operate, and the species has been captured in gear targeting longfin squid (Stein et al. 2004a, ASMFC 2007). The Council and NMFS have begun an evaluation of the Council's fisheries to determine if specific changes to specific fisheries are needed related to the listing of Atlantic sturgeon under the Endangered Species Act. While it is possible that there may be interactions between Atlantic sturgeon and gear used in the MSB fisheries before this evaluation is complete, the number of interactions in MSB fisheries is not likely to cause an appreciable reduction in survival and recovery.

The effects of the MSB fishery on loggerhead sea turtles were assessed in the October 2010 Biological Opinion on the Atlantic Mackerel, Squid and Butterfish FMP. A revised listing for loggerhead sea turtles, published on September 16, 2011, establishes nine DPSs, four of which are listed as threatened and five of which are listed as endangered. The October 2010 Opinion concluded that the fishery may affect, but was not likely to jeopardize, loggerhead sea turtles. In reaching that conclusion, the Opinion considered the effect of the estimated take on nesting beach aggregations and ultimately to the global species as listed. The analysis contained in the 2010 Opinion was conducted at the level of the global species, and was conducted for a species listed as threatened. Only the Northwest Atlantic DPS is likely to be affected by the MSB fishery and is listed as threatened. The effects analysis was conducted by examining the estimated number of takes against what is known about the biological status of loggerhead sea turtles and did not explicitly include any specific variable that would be affected by the listing status *(e.g.,* threatened or endangered). Since the 2010 Opinion considered effects at the nesting beach aggregation level first and then worked up to consider effects at the species level, an analysis considering effects at the DPS rather than species level and on an endangered rather than threatened species would not change the jeopardy conclusion of the Opinion.

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.

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.

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 NOAA Fisheries Service.

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 Northeast Regional 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 Service adheres to the standards set out in Appendix III, ASecurity of Automated Information Resources,@ 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 ANatural 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 Service 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 2011 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, the number of reports made annually by these dealers, and the types of permits held 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 section 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 Northeast Regional Office, and NOAA Fisheries Service 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 Service 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. To this end, 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 E.O. 12866 (Regulatory Planning and Review)

The purpose of E.O 12866 is to enhance planning and coordination with respect to new and existing regulations. This E.O. 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 represents the Regulatory Impact Review, which includes an assessment of the costs and benefits of the proposed action, in accordance with the guidelines established by E.O. 12866. The analysis included in the Regulatory Impact Review 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 E.O. 13132 (Federalism)

This E.O. established nine fundamental federalism principles for Federal agencies to follow when developing and implementing actions with federalism implications. The E.O. 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 E.O. 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 be 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 members 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 Northeast Region website at http://www.nero.noaa.gov/nero/regs/com.html.

12.0 INITIAL REGULATORY FLEXIBILITY ANALYSIS & REGULATORY IMPACT REVIEW FOR THE 2012 CATCH SPECIFICATIONS FOR ATLANTIC MACKEREL, SQUID, AND BUTTERFISH

12.1 INTRODUCTION

The applicable laws pertaining to this action are summarized above in Section 8. E.O. 12866 requires the preparation of a Regulatory Impact Review for all regulatory actions that either implement a new FMP or significantly amend an existing plan or regulation. The Regulatory Impact Review is part of the process of preparing and reviewing FMPs and provides a comprehensive review of the changes in net economic benefits to society associated with regulatory actions. The analysis also provides a review of the problems and policy objectives prompting the regulatory proposals and an evaluation of the major alternatives that could be used to solve the problems. The purpose of the analysis is to ensure that the regulatory agency systematically and comprehensively considers all available alternatives so that the public welfare can be enhanced in the most efficient and cost-effective way.

Purpose of and Need for the Action

The purposes (objectives) of this action are to establish annual quotas and other measures, where necessary, that will meet the need to prevent overfishing and achieve optimum yield. Optimum yield is defined as the amount of fish which will provide the greatest overall benefit to the Nation in terms of food production and recreational opportunities and is based on the maximum sustainable yield for each managed species. Failure to implement the preferred measures described in this document could result in overfishing and stock depletion or failure to reach optimum yield.

Regulations at 50 CFR Part 648 stipulate that the Secretary will publish a notice specifying the initial annual amounts of the initial optimum yield (IOY) as well as the amounts for allowable biological catch (ABC) domestic annual harvest (DAH), domestic annual processing (DAP), joint venture processing, and total allowable levels of foreign fishing (TALFF) for the species managed under the MSB FMP. The term IOY is used in these fisheries to reinforce the fact that the Regional Administrator may alter this specification up to the ABC if economic and social conditions warrant an increase. Therefore, this specification is no different than optimum yield.

Current regulations allow for the specification of measures for a period of up to three years (subject to annual review). However, the Council has chosen to specify the butterfish measures for one year and the mackerel measures for 3 years. The squids are in year two of three-year multi-year specifications.

Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements

This action does not contain new collection-of-information, reporting, recordkeeping, or other compliance requirements. It does not duplicate, overlap, or conflict with any other Federal rules.

12.2 EVALUATION OF E.O.12866 SIGNIFICANCE

The proposed action does not constitute a significant regulatory action under Executive Order 12866 for the following reasons. (1) It will not have an annual effect on the economy of more than $100 million. Based on unpublished NMFS preliminary data (Maine-North Carolina) the total commercial value for the Atlantic mackerel, squid and butterfish fisheries combined was estimated at $44.4 million in 2011 so the measures considered in this regulatory action should not affect total revenues generated by the commercial industry to the extent that a $100 million annual economic impact will occur (especially since the proposed specifications could allow the 2011 landings to occur again or increase). The proposed actions are necessary to maintain the harvest of Atlantic mackerel, squid and butterfish at sustainable levels. The proposed action benefits in a material way the economy, productivity, competition and jobs. The proposed action will not adversely affect, in the long-term, competition, jobs, the environment, public health or safety, or state, local, or tribal government communities. (2) The proposed actions will not create a serious inconsistency or otherwise interfere with an action taken or planned by another agency. No other agency has indicated that it plans an action that will affect the Atlantic mackerel, squid and butterfish fisheries in the EEZ. (3) The proposed actions will not materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of their participants. (4) the proposed actions do not raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in this Executive Order.

A more detailed description of the economic concepts involved in this analysis can be found in "Guidelines for Economic Analysis of Fishery Management Actions" (US Dept of Commerce 2000 - http://www.nmfs.noaa.gov/sfa/RFA%20Guidelines.PDF), as only a brief summary of key concepts will be presented here.

The law of demand states that price and quantity demanded are inversely related. Given a demand curve for a commodity (good or service), the elasticity of demand is a measure of the responsiveness of the quantity that will be taken by consumers giving changes in the price of that commodity (while holding other variables constant). Price elasticity of demand is elastic when a change in quantity demanded is large relative to the change in price. Price elasticity of demand is inelastic when a change in quantity demanded is small relative to the change in price. Price elasticity of demand is unitary when a change in quantity demanded and price are the same.

There are several major factors that influence the elasticity for a specific commodity. These factors largely determine whether demand for a commodity is price elastic or inelastic: 1) the number and closeness of substitutes for the commodity under consideration, 2) the number of uses to which the commodity can be put; and 3) the price of the commodity relative to the consumer's purchasing power (income). There are other factors that may also determine the elasticity of demand but are not mentioned here because they are beyond the scope of this discussion. As the number and closeness of substitutes and/or the number of uses for a specific commodity increase, the demand for the specific commodity will tend to be more elastic. Demand for commodities that take a large amount of the consumer's income is likely to be elastic compared to services with low prices relative to the consumer's income. It is argued that the availability of substitutes is the most important of the factors listed in determining the elasticity of demand for a specific commodity (Leftwich 1973; Awk 1988). Seafood demand in general appears to be elastic. In fact, for most species, product groups, and product forms, demand is elastic (Asche and Bjørndal 2003).

Benefit-cost analysis is conducted to evaluate the net social benefit arising from changes in consumer and producer surpluses that are expected to occur upon implementation of a regulatory action. Total Consumer Surplus (CS) is the difference between the amounts consumers are willing to pay for products or services and the amounts they actually pay. Thus CS represents net benefits to consumers. When the information necessary to plot the supply and demand curves for a particular commodity is available, consumer surplus is represented by the area that is below the demand curve and above the market clearing price where the two curves intersect. Since an empirical model describing the elasticities of supply and demand for these species is not available, it was assumed that the price for these species was determined by the market clearance price market or the interaction of the supply and demand curves. These prices were the base prices used to determine potential changes in prices due to changes in landings.

Net benefit to producers is producer surplus (PS). Total PS is the difference between the amounts producers actually receive for providing goods and services and the economic cost producers bear to do so. Graphically, it is the area above the supply curve and below the market clearing price where supply and demand intersect. Economic costs are measured by the opportunity cost of all resources including the raw materials, physical and human capital used in the process of supplying these goods and services to consumers.

One of the more visible costs to society of fisheries regulation is that of enforcement. From a budgetary perspective, the cost of enforcement is equivalent to the total public expenditure devoted to enforcement. However, the economic cost of enforcement is measured by the opportunity cost of devoting resources to enforcement vis à vis some other public or private use and/or by the opportunity cost of diverting enforcement resources from one fishery to another.

Alternatives - Tables 2 and 3 above are reproduced below to provide a review of the status quo and preferred alternatives considered in the proposed action. Additional details and the non-preferred alternatives can be found in Section 5.

Table 50. Expected impacts of status quo and preferred specifications.
("+" signifies a positive impact, "-" a negative impact, and "0" a similar impact to the year before. "0/" before "+" or "-" indicates a likely small impact; Impacts for non-preferred alternatives are discussed in Section 7)

	Valued Ecosystem Components/Environmental Dimensions				
Specification Alternatives - JVP and TALFF are not listed in the table because they are both zero throughout. DAHs may be reduced to provide RSA quota as described in this document.	Managed Resource	Non-target Species	Human Communi-ties	Protected Resources	Essential Fish Habitat
Alt 1a - Mackerel No Action/Status Quo - ABC = 80,000mt; U.S. ABC = 43,781mt; DAH = 33,821mt; Rec Target = 2,443mt	0	0	0	0	0
Alt 1b - Mackerel Preferred - ABC = 80,000mt; U.S. ABC = 43,781mt; DAH = 33,821mt; Rec Target = 2,443mt *FOR 3 YEARS 2013-2015*	0	0	0	0	0
Alt 4a2 - Butterfish No Action/Status Quo - ABC = 4,200 mt; DAH = 872; Butterfish Cap = 3,165mt	0	0	0	0	0
Alt 4b - Butterfish Preferred - ABC = 8,400mt; DAH = 2,570mt; Butterfish Cap = 4,500mt	0	0/-	+	0/-	0/-

Table 51. Expected impacts of status quo and preferred other management measures.
("+" signifies a positive impact, "-" a negative impact, and "0" a similar impact to the year before. "0/" before "+" or "-" indicates a likely small impact; Impacts for non-preferred alternatives are discussed in Section 7)

	Valued Ecosystem Components/Environmental Dimensions				
Management measures besides specifications.	Managed Resource	Non-target Species	Human Communi-ties	Protected Resources	Essential Fish Habitat
Alt 2a - Longfin Status Quo/No Action - No changes to longfin squid closure thresholds	0	0	0	0	0
Alt 2b - Longfin Preferred - Effective April 15 of each year, update the 90% closure threshold for longfin squid to 95% in Trimester 1.	0	0	0/+	0	0
Alt 2c - Longfin Preferred - Effective August 15 of each year, update the 90% closure threshold for longfin squid to 95% in Trimester 2.	0	0	0/+	0	0
Alt 3a - Longfin Status Quo/No Action - No changes to butterfish cap	0	0	0	0	0
Alt 3b - Longfin Preferred - Change the longfin squid trip notification from 72 to 48 hours.	0	0	0/+	0	0
Alt 3c - Longfin Preferred - Effective April 15 of each year, update the 80% closure threshold for the butterfish cap to 90% in Trimester 1.	0	0	0/+	0	0
Alt 3d - Longfin Preferred - Trimester 2 Longfin Squid Fishing Would Close when 75% of the Annual Butterfish Cap was Projected to be Reached.	+	+	0/+	+	+
Alt 5a - Butterfish Status Quo/No Action - No changes to butterfish management measures.	0	0	0	0	0
Alt 5b - Butterfish Preferred - Implement a new butterfish fishery management structure to allow a limited direted fishery.	0/+	0/-	+	0/-	0/-

Atlantic mackerel

The alternatives considered for Atlantic mackerel specifications for 2013 are fully described in section 5. Up to 3% of the ACT may be set aside for scientific research. Due to a lack of an empirical model for these fisheries and knowledge of elasticities of supply and demand, a qualitative approach to the economic assessment was used. Nevertheless, quantitative measures are provided whenever possible.

Landings
Prices
Consumer Surplus
Harvest Costs
Producer surplus
Enforcement Costs
Distributive Effects

Since status quo specifications are being recommended, this action should not impact these.

Illex Squid

No actions are considered relative to *Illex* squid.

Alternatives for butterfish

The alternatives considered for Atlantic mackerel specifications for 2013 are fully described in section 5. Up to 3% of the ACT may be set aside for scientific research. A new framework for a directed butterfish fishery is also considered (there has been no substantial butterfish fishery recently). Due to a lack of an empirical model for these fisheries and knowledge of elasticities of supply and demand, a qualitative approach to the economic assessment was used. Nevertheless, quantitative measures are provided whenever possible.

Landings

The preferred specifications for 2013 would allow an increase in landings.

Prices

While some additional landings may go into the fresh fish market, most of the additional landings are expected to go into a frozen export market. This export market does not exist now. Given the absorption by the export market of most of any increase in landings, prices may not be impacted substantially in the fresh market. If the higher quota translates into much greater fresh market landings, this could exert downward price pressure.

Consumer Surplus

Assuming butterfish prices will not be affected under the alternatives considered there should be no corresponding change in consumer surplus associated with these alternatives related to price. Lower prices would increase consumer surplus and the higher amount of product available could increase consumer surplus.

Harvest Costs

Harvest costs may be reduced because of the proposed liberalization of trip limits.

Producer surplus

Assuming the fresh fish market prices will not be affected under the alternatives considered, there should be no corresponding change in producer surplus associated with these alternatives for that market related to price. If price falls there could be some per unit loss in producer surplus but that could be made up by the higher allowed landings. Fish that go into the frozen export market should increase producer surplus regardless of the price as long as the fish is sold at a profit since this market does to exist currently. Lower harvest costs would also increase producer surplus.

Enforcement Costs

The alternatives considered are not expected to change enforcement costs.

Distributive Effects

The new butterfish fishery framework was designed so that multiple levels of participants should benefit. Historical large-scale participants will have access to some of the increase in quota, and vessels which encounter butterfish in smaller quantities should be able to retain more fish for sale than previous regulations allowed.

Alternatives for Longfin Squid

The alternatives considered for longfin squid specifications for 2013 are fully described in section 5. Only minor changes in closure thresholds and trip notifications are considered, all of which should only have a minor impact on landings but could decrease harvesting costs by avoiding unnecessary disruptions to fishing, which would increase producer surplus by lowering harvesting costs and increase consumer surplus to the extent that part of those cost savings are passed onto the consumer.

Summary of Impacts

The overall impacts of Atlantic mackerel, longfin squid, *Illex* and butterfish landings on prices, consumer surplus, and consumer surplus are difficult to determine without detailed knowledge of the relationship between supply and demand factors for these fisheries. In the absence of detailed empirical models for these fisheries and knowledge of elasticities of supply and demand, a qualitative approach was employed to assess potential impacts of the management measures, which appear to be positive. The Council has concluded that no change in the competitive nature of these fisheries should result from implementation of the quota specifications under the preferred alternatives. No negative changes in enforcement costs or harvest costs have been identified for any of the alternatives considered for each species. It is important to note that Section 7 of this Environmental Assessment also has a description of the cumulative impacts of the measures established under the FMP since it was implemented.

12.3 ANALYSIS OF IMPACTS

12.3.1 INTRODUCTION AND METHODS INCLUDING NUMBER OF REGULATED ENTITIES

The Regulatory Flexibility Act requires the Federal rulemaker to examine the impacts of proposed and existing rules on small businesses, small organizations, and small governmental jurisdictions. In reviewing the potential impacts of proposed regulations, the agency must either certify that the rule Awill not, if promulgated, have a significant economic impact on a substantial number of small entities or prepare a final regulatory flexibility analysis. The Small Business Administration defines a small business in the commercial fishing sector as a firm with receipts (gross revenues) of up to $4.0 million. Party/charter small businesses are included in NAICS code 487210 and are defined as a firm with gross receipts of up to $7 million.

The measures regarding the 2013 quotas could affect any vessel holding an active Federal permit for Atlantic mackerel, longfin squid, *Illex* or butterfish, as well as vessels that fish for any one of these species in state waters. According to NMFS permit file data, in 2011, 3,405 commercial or charter vessels possessed MSB permits in 2011. In most years all but a few of these participants are small businesses and one that is not considered a small business in one year may have lower revenues and qualify as a small business the next year. Many of these vessels do not land MSB species in a given year, but since they hold permits and could catch MSB species in 2013 they are included in the total potentially impacted businesses. There are also some vessels that fish for these species in state waters that hold no federal permits but if they hold no federal permits they should not be substantially impacted by these federal actions.

Not all landings and revenues reported through the Federal dealer data can be attributed to a specific vessel. Vessels with no Federal permits are not subject to any Federal reporting requirements with which to corroborate the dealer reports. Thus, it is possible that some vessel activity cannot be tracked with the landings and revenue data that are available. Thus, these vessels cannot be included in the threshold analysis, unless each state were to report individual vessel activity through some additional reporting system - which currently does not exist. This problem has two consequences for performing threshold analyses. First, the stated number of entities subject to the regulation is a lower bound estimate, since vessels that operate strictly within state waters and sell exclusively to non-Federally permitted dealers cannot be counted. Second, the portion of activity by these uncounted vessels may cause the estimated economic impacts to be over- or underestimated. However, vessels with no federal permits should not be substantively impacted by these federal management measures.

The effects of actions were analyzed by employing quantitative approaches to the extent possible. In the current analysis, effects on profitability associated with the management measures should be evaluated by looking at the impact the measures on individual vessel costs and revenues. However, in the absence of cost data for individual vessels engaged in these fisheries, changes in gross revenues are used a proxy for profitability.

12.3.2 ANALYSIS OF THE IMPACTS OF ALTERNATIVES

For the purpose of ease of comparison, the specifications in recent years compared to actual fishery performance are given by species for mackerel and butterfish, the two species that have specifications being considered in this potential action.

Table 52. Summary of specifications and landings for Mackerel (mt).

	2008	2009	2010	2011	2012	2013
ABC[1]	156,000	156,000	156,000	47,395	47,395	47,395
IOY	115,000	115,000	115,000	46,779	46,779	46,779
DAH[2]	115,000	115,000	115,000	46,779	46,779	46,779
DAP	100,000	100,000	100,000	31,779	31,779	31,779
Joint Venture Proc.	0	0	0	0	0	0
TALFF	0	0	0	0	0	0
US Commercial	21,748	22,634	9,891	531	NA	NA
US Value (m $)	6.2	8.0	3.2	0.4	NA	NA
US Recreational	691	747	778	932	NA	NA
Total US	22,439	23,381	10,669	1,463	NA	NA
Canadian	50,578	28,288	36,219	11,700	NA	NA

[1] ABC = F_{target} - estimated Canadian landings.
NA = not yet available

Table 53. Summary of specifications and landings for butterfish (mt).

	2008	2009	2010	2011	2012	2013
Max. optimum yield	12,175	12,175	12,175	12,175	Unkn	Unkn
ABC	4,545	1,500	1,500	1,500	4,200	8,400
Init. Optimum yield	1,681	500	500	500	872	2,570
DAH	1,681	500	500	500	872	2,570
DAP	1,681	500	500	500	872	2,570
Joint Venture Proc.	0	0	0	0	0	0
TALFF[2]	0	0	0	0	0	0
Landings (mt)	451	435	576	664	NA	NA
Value (millions $)	0.8	0.6	.8	1.1	NA	NA

NA = not yet available

12.3.2.1 Impacts of Alternatives for Atlantic mackerel

No changes are proposed for mackerel. Thus impacts should be similar to previous years (see 6.6.2). Mackerel abundance and availability will likely drive landings and revenues more than any regulation, since the current and proposed quotas have not been achieved in recent years. It is not believed that any regulations stemming from the MSB FMP are restricting catches but rather that abundance and availability are currently the primary determinant of mackerel landings and revenues.

12.3.2.2 Impacts of Alternatives for butterfish

The alternatives considered for this species are fully described in section 5. Changes in the butterfish ABC, ACT, and ACL have two possible economic effects. The first potential effects are the direct changes in revenues. The second set of potential effects are related to the “shadow value” of butterfish for the longfin squid fishery (longfin Squid and butterfish are often caught together). 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. Since the proposed specifications are not likely to cause a reduction in revenues from the status quo and should in fact raise revenue, the 2013 specifications are not expected to have substantial negative impacts on businesses involved in this fishery as compared to 2012.

12.3.2.3 Impacts of Alternatives for Longfin squid

The only changes proposed for longfin squid are regulatory changes that decrease the pre-trip notification from 72 to 48 hours and several changes to closure thresholds that should reduce harvest costs by avoiding certain unnecessary end-of-trimester closures that disrupt fishing businesses. Since the proposed specifications are not likely to cause a reduction in revenues from the status quo and may in fact raise revenue, the 2013 specifications are not expected to have substantial negative impacts on businesses involved in this fishery.